The Impact of Music's Volume on Consumer Reactions

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This article describes the impact of a variation of the loudness on the responses of the customers in a supermarket. Following experiments on the field, the results revealed the existence of some variations of some cognitive and emotional answers of the customers due to the variation of musical volume (low vs. high). Also, comparisons of the responses between the Individuals Subjected to a position of lack of music and others Subjected to a musical condition (low volume and high volume) Revealed-have notable differences in Some Behaviors.

Key words: *music volume, cognitive responses, emotional responses, behavioral responses*

INTRODUCTION

Several authors have studied the importance of environmental factors as variables that may affect customer feedback at the point of sale. An investigation on this subject shows more interest displayed to the auditory factor. Without suggesting that other factors are incidental or less important to our interest in this research focuses on the auditory factor. Indeed, understanding the impact of music is particularly interesting for the managers of the business entities to the extent that this aspect of the store atmosphere is not very expensive and is easily controllable. Music can vary in several dimensions: rhythm, volume, reputation, etc. (Gueguen et *al.,* 2002). Kellaris and Kent (1991) think it is interesting to separate the different components of the music to better understand the impact of each on the reactions of individuals. But the authors do not fail to point out that these components are interdependent and can encourage some behaviors more than others. The literature review allowed us also to see that some components of music, although important in-apparently the explanation of customer feedback, were not sufficient object of investigation . Indeed, often the authors suggested that the volume of transmission of music can have an impact on the responses of consumers, to our knowledge, only a small number of researchers measured under actual point of sale impact the volume on customer feedback. But to achieve a more valid assessment of the effect of the volume, the field experiments seem necessary. Kellaris et *al* (1996) suggests that the volume is an objective and tangible dimension of music. It would be interesting to study the impact of this dimension on customer feedback that this particular aspect of music is easily controllable against other dimensions such as the reputation of the music that seems to

be rather dependent on the target issue. Moreover, during exploratory interviews we conducted on the importance of environmental factors as a mean to achieve organizational goals, some retail chains to marketers spoke volumes as a determinant of customer satisfaction and stressed that the Tunisian culture people tend to put music at a high volume. It is thus easy to notice that in the point of sale, the sellers (or managers) when disseminating background music, they spread at a very high volume. The music refers, moreover, to tens of meters of the store and she often mixed with other sounds, such as Rohrmann (2003) points, the same from the point of sale (noise vendors and customers, noise from operating machinery, etc.) or outside the point of sale (road traffic noise sites, music from other commercial places, etc.). All these sounds are often likely to cause very different auditory sensations and reactions very confusing for the consumer. Indeed, music can cause discomfort if it reaches a certain intensity perceived by the consumer as a harmful noise, which may even lead him to flee the environment or the point of sale where it is located. We propose, and through this research to answer the question: what reactions the volume of music involves the part of consumers in a store?

THEORETICAL FRAMEWORK

Music has always been considered as a source of emotional and intellectual pleasure. It causes different reactions of the listener. In fact, these reactions acting on different dimensions. Galan (2003) presented a summary of the different dimensions of musical experience in marketing research. These dimensions are, according to the author, the first sensory dimension that refers to the most primary reaction and is described as the awareness of a need towards or away from the music source. A second emotional dimension that reflects the feelings listening to music. A third imaginative dimension which refers to images or situations that music evokes. A fourth nostalgic dimension that translates refreshed memories through music. This dimension represents the tendency to postpone sensations, emotions and meanings related to past experience of the individual on the music. A fifth analytical dimension that reflects the auditor's engagement in a sober sense of music. In fact, repeated exposure of the individual to the music develops in her expectations for the structural elements of music *(tempo,* volume, mode, etc.). A sixth behavioral dimension demonstrated by the desire to reach an exhibit or a souvenir. Finally, a seventh symbolic dimension corresponding meanings and symbolic and abstract content that music can convey. More generally, the impact of the music and its various dimensions on consumer reactions in a commercial venue was most often listed three types of reactions: cognitive, affective and behavioral.

In fact, music is multidimensional in that it is composed of several dimensions *(tempo,* volume, style etc.), although they are likely to be significantly different are interdependent. But as we mentioned above, few researchers have focused on measuring the impact of the volume of music on customer feedback especially in a commercial venue. Other components of music were most often studied. We will, in this first part of our research, present the main results

relating to consumer reactions in the first place at the lack of music, second face dimensions of the most frequently studied music, third face the music volume[1] .

Reactions to the lack of background music

The absence of music situations was repeatedly tested. Indeed, often to better assess the impact of various musical components, including volume, an absence of music situation is used to control effects (Gueguen and Jacob, 2002). The results often show that the absence of music influences negatively the actual time spent, time spent perceived, and the number of vendors with whom the client discussed. In other words, customers spend less time in the store and talk less with sellers when shopping without music (vs. music) (Rieunier, 2000).

Responses to the most frequently studied dimensions of music

The impact of several components of the music has been studied by researchers. The results attest to a variety of possible reactions from customers.

- Cognitive reactions: Music can have an impact on attentional resources clients in the purchase. Rieunier (2000) thus found that a known music has a disruptive effect on these resources. Yalch and Spangenberg (1990) state that the music played is actually a message transmission means. Music while participating in the development of store image and positioning (Morrison, 2002). Ben Zoubir et Chandon (2006), moreover, showed that more favorable customer reactions are recorded when they perceive that the image of the store, inferred from the musical atmosphere (music *tempo)* is congruent with their own image. The music is in their positioning means and segmentation can attract a very specific clientele. Influenced the music played and the image of the store, if the customer feels good consistency between the store image (or sign) and its own image, it will have reactions (attitudes, emotions, cognitions, shopping behavior) positive. These results seem very interesting because they highlight the fact that even in the absence of direct links between some components *(tempo,* style, etc.) and some customer feedback (cognitive, affective and behavioral) in the point sales, indirect links can still be seen whether the congruence with self-image is introduced as a mediating variable. Areni and Kim (1993) also argue that the style of the music leads the consumer to the connotations associated with such products. Classical music communicates the class, sophistication, prestige, only expensive products will then be considered by customers. In addition, Yalch and Spangenberg (1993) showed that the style of music affects the perception of store image and prices. The diffusion of classical music (vs variety of music) then gives the store an image of prestige. In the words of Rieunier (2004), the broadcast style of music allows customers to categorize the store. The *tempo* of the music seems so intimately associated with the perception of time spent by the customer (Caldwell and Hibbert, 1999). It seems that customers subjected to a slow *tempo* music underestimate the

time spent in relation to those who are subjected to a fast *tempo* music, only Caldwell and Hibbert (1999) added that this result is not as clear.

- The affective reactions: music congruent with the likes of clients increases the pleasure of the latter and their excitations (Yalch and Spangenberg, 1990) in the point of sale. It seems then that the customers are in a better mood when the music they like. Sibéril (2000) also states that background music influences emotions. Indeed, the author has found, among other things, that the style "top 50" of music has a direct positive impact on feelings of pleasure, joy, relaxation and stimulation. In addition, the slow *tempo* significantly promotes feelings of relaxation, while the fast *tempo* increases the feeling of gaiety.

- The behavioral reactions: Music affects the time spent by the store client (Rieunier, 2000; Morrison, 2002). Caldwell and Hibbert (1999), who tested the impact of the *tempo* of the music in a restaurant, have shown that when the *tempo* of the music is slow customers spend more time to eat, and spend more money than when a fast *tempo* music is played. Consumers spend more time at the store and spend more when the music is his musical tastes (Yalch and Spangenberg, 1993). Only Rieunier (2000) found that in the presence of music known customers buy fewer items and spend less. Nevertheless, Gueguen et *al.* (2002) found that when popular music is played on an open market, customers spend more time in the stand and tend to buy more favorably an article. The individual's movement speed can also be significantly affected, it moves faster with fast music with slow music (Milliman, 1982). Classical music (vs variety of music) seems to affect the customer's expense, they are buying more products more expensive (Areni and Kim, 1993). Sibéril (1994) adds that the musical style affects impulse purchases and therefore unplanned purchases (Sibéril, 2000). In addition, the author argues that in the supermarket, at peak times, consumers buy more items with the variety of music with a fast *tempo* while at peak times it buys more classical music with slow *tempo* (Sibéril 1994). Furthermore, Sibéril (2000) found that the style of music affects overall purchases, they are favored by music style "top 5". Rieunier (2000) states that the *tempo* of the music affects the number of vendors with whom the client has discussed and the duration of their discussion. A slow *tempo* (fast vs) and encourages further discussion with several vendors.

The reactions to the music volume

We have already noted the poverty of the theoretical framework on the impact of the volume of the music on customer feedback. It still appears that this effect appears in turn affect the three aforementioned types of reactions, namely:

- Cognitive reactions Kellaris et *al.* (1996) noted that the volume of the music affects the perception of the past. Although the authors did not test this effect in a commercial place, they noted that the time spent perceived seems to be shorter when the volume of the music is soft

(vs. strong). Gueguen et *al.* (2002) supported this by arguing that probably loud music leads to a perception of the fastest time.

- The Affective reactions: The volume of the music can affect the emotional reactions of customers. Loud music can be a source of aggression to the consumer (Gueguen et *al.,* 2002). In addition, Cain-Smith and Curnow (1966) (cited by Gueguen et *al.,* 2002) emphasized that soft music is best appreciated that loud music which in turn may have an impact on customer behavior (including time spent in the highest store). In addition, Rohrmann (2003) found, in a study on consumer preferences with respect to the volume of the music in restaurants, customers prefer a low volume. This result was explained by the fact that customers frequenting a restaurant accompanied by friends or family members hope to discuss with each other, a high volume of music is a barrier to communication.

- The behavioral reactions: Morrison (2002) noted that the presence of the customer time in the store can be affected by the volume used. Moreover, Jacob and Gueguen (2002) have focused on the study of the impact of the volume of the music on the number of orders placed by the customer. The authors analyzed the impact in two bars (bar an urban and a rural bar) for male and female customers. The results show the existence of a positive effect of the volume of music on consumer behavior. High volume leads to a significant increase in customer usage, regardless of the geographical area of the experiment (rural / urban), or even the customer's gender (male / female). But the author adds that the impact is even more important in rural areas and men consume more than women. The author explains the greater impact of the high volume of customer consumption in rural areas by the fact that in these environments such listening is more consistent with the habits and musical choices of the inhabitants which probably led to an over -accentuation the influence of the volume on the number of orders. But in general, high volume, compared to a low or usual volume, resulting in an increase in consumption was partly explained by an increased effect of activation that leads to a higher frequency issuing generally expected behaviors (strengthening behavioral response measured by the number of command) in the places of exposure to these stimuli. However, Cain-Smith and Curnow (1966) (cited by Gueguen et *al.,* 2002) have shown that the intensity of the music has no impact on the average amount of purchases. However, provided that qualified scattering intensity of "mild", customers spent significantly more time in the store that provided intensity "strong". It appears, however, according Yalch and Spangenberg (1990) that the time spent by customers in the store depends not only on the volume of the music but also the age of the clients. Thus, young people spend more time in the store when the volume is high, while older people spend more time at the store when the music volume is low.

The little research that tested the impact of the volume of the music do not have a fixed idea on all customer feedback which can be determined by varying the loudness, we believe that only a few proposals Research can be set. This is even easier to operate to the extent that the volume of the music is one of the components of the auditory factor. We believe while the

volume of the music, as well as other musical components can act on all aspects of customer behavior.

Fitting into a rather exploratory approach, three research proposals will guide our empirical work:

P1: The volume of the music is on cognitive responses of the consumer.
P2: The volume of the music acts on the emotional reactions of consumers.
P3: The volume of the music is on Behavioral consumer reactions.

METHODOLOGY

As we have already pointed out, we want in this research, determine the effects of handling the volume of the music played on cognitive responses, affective and behavioral reactions of the consumers, specifically in a commercial context. To do this, we have chosen to make our empirical study in a medium or large distribution surface. This choice is motivated by the following facts:

First, the distribution sector in Tunisia has for some years modernization, especially with the arrival of new retailers (Carrefour, Géant and Champion). Or find ways to attract and retain customers is of great importance in this sector. Then, the majority of studies on the impact of music on customers in such outlets do not focus on this dimension (volume) of music, although this musical component is firstly easy to handle and also strongly connected to the other components. It would be interesting to study the impact of music and especially its volume consumer reactions attending this kind of trade.

To implement our empirical investigation, three methodological steps were necessary:

- A specification phase measurements for use with a reflection on the one hand the music stimuli and secondly the choice of the measurement scales.
- A data collection phase specifying the procedure for collecting information about the terrain and sample characteristics.
- A cleansing of the measurement scales again checking the quality of the measures used in terms of dimensionality and reliability.

Specifying measures used

Recall that the authors most often studied several reactions of customers face different components of music. To better understand the reactions to the volume of the music, we borrowed from literature some measures deemed relevant [2]. Especially two measurement scales were borrowed.

A first scale Rieunier (2000) (comprised of 7 items, annex2) indicates the evaluation of the music store atmosphere.

The second scale Mehrabian and Russel (1974) (cited by Rieunier 2000) (composed of 12 items, annex2) reflects the emotional states of consumers as to the musical atmosphere of the store.

Respondents' answers to the various items related to these two scales were assessed according to a Likert scale five points with 1: not at all agree, 2 disagree, 3 moderate agree, 4: agree and 5: totally agree.

Furthermore, concerning the operationalization of the variable-volume music, the authors have incorporated this variable retained a low and high volume. Kellaris et *al* (1996) then chose a volume of 60 decibels to 90 decibels and low to the high level. But the question that arises at this level, is what level of music is perceived as sweet and what level of music is perceived to be strong. These perceptions are the result of cultural differences, individual in terms of perceptual sensitivity, socio-demographic category, gender, or any other clues. In order to choose the volume levels to operationalize at our main experiment and the different reactions to measure, we found it necessary to conduct a preliminary study. The latter was carried out on two laboratories in which we brought together 70 students with an average age of 25 years. The objective of this work was actually twofold:

- Guide the choice of an experimental design and variables to handle during the experiment. Thus, we conducted a preliminary test of perception of the volume level of the music.
- Build a relevant measurement tool.

Indeed, during the experiment test, conducted on two laboratories, we varied the volume of a song from the album Buddha Bar VII. The choice for the music of this album is motivated by the fact that we looked for a music that can meet the varied volume expectations from customers. Indeed, the music of this album includes several songs with *tempos* and styles. She was instrumental in pleasant character that was the subject of an evaluation of several types of instrumentals, which allowed us to estimate that this music can be broadcast at varying volumes without going against expectations of listeners (clients). Note that in the phase of selecting the volume level of the musical stimulus, disseminated through a portable stereo, students were subjected to a preliminary test of volume level of perception. We have recorded two volumes of music: low volume and high volume.

Noted, moreover, that the students submitted (under laboratory conditions) in various musical volumes were also surveyed to test the different measurement scales of likely responses to different musical stimuli. This test survey was to firstly ensure the reliability and dimensionality of the measurement scales selected. Second, to test the questionnaire in its final

form (content, form, sequence of questions, adopted terms, etc.). After this step, we wanted to succeed in building a relevant tool to measure the influence of the volume of the music on the responses of individuals, including the consumer in a retail outlet.

Result of principal component analysis and reliabilities tests performed on the collected data, we undertook two major changes to the measuring instrument (questionnaire):

1. The scale of consumer emotional states showed different results compared to its dimensionality and internal consistency. In view of the results found and adopting offs and adjustments, we eliminated items: 5, 6, 7, and 12. In the end, eight items were retained.
2. The scale of the assessment of the musical atmosphere has also undergone a first purification work to ensure its quality. The results have led us to the removal of items 1 and 5 to improve the consistency of the scale. Ultimately 5 items were selected.

Main survey

The main study was carried out in the general store supermarket El Menzah 7. In fact, to achieve our field investigation we chose three days in midweek. We avoided the weekend, where consumers are generally less hurried and where outlets are often crowded by customers. We have also ensured conduct the study in similar temporal conditions during the three days selected from 10h to 14h. Almost three experiments were conducted as well (one per day):

1. The first corresponds to a state of absence of music: Indeed, following several authors (Gueguen et *al.,* 2002), we believe that to really measure the effect of music or volume, a condition of absence of music is probably interesting to introduce.
2. The second went low music volume.
3. The third went high music volume.

During the two quasi-experiments in which a musical status was operationalized, individuals have been subjected to an instrumental album Buddha Bar VII. The CD had used one-time and turned in a loop. It was broadcast at different levels of intensity without these volumes are incongruous with the place of assessment (Gueguen et *al.,* 2002). In this regard, we evaluated previously in the place of study (General Store) the perceived volume corresponding to different levels of intensity [3] . But in this we have also taken into account the requirements of those responsible for the establishment who wanted the music is not too strong a broadcast level not to hinder the one hand customers and other vendors. In fact, the music volume has been manipulated and adjusted by a measurement in decibels. A musical volume of 60 decibels corresponds to a low volume. A musical volume of 90 decibels corresponds to a high volume. These volume levels are also chosen to stimulate hearing subjects (Yalch and Spangenberg, 1990). We stress that our choice for the same music being played for the two

groups under a different musical volume requirement is driven by the desire to control for other determinants of music as the reputation of the music, style music, etc.

Data were collected through direct observation and a questionnaire survey. Note that as the data collection should be done in real environment, it was essential to work with a short questionnaire to reduce the risk of fatigue linked to a long questionnaire. In fact, we placed near the reception. This client crossing point (located near the front door and crates) allowed us to observe and record discreetly on a grid for each client arrival time and the store exit time. These measurements were used to calculate the time actually spent in the store and compare it to the time spent perceived by customers. Furthermore, at the exit of funds, customers were asked to answer a questionnaire. Note that when the client was accompanied by other people, we made sure to question them separately.

We have thus made a total sample of 150 individuals, 50 individuals for the first experimental situation (no music), 51 individuals for the second (low volume) and 49 individuals for the third (high volume). The size of these samples was determined by following the rule that a scale should be tested on a sample of at least five times the number of items of the scale (Evrard, Pras and Roux, 2003). Precision that made sample is composed of 70% women and 30% men. The age of respondents varies mainly focusing on the age group of 15 to 64 years. Respondents are essentially a higher level of education. In our sample, we found answers to 30% of managers and 20% of students (the store being located near a university campus girls leaving the heavily frequented by students). Finally, a large majority of respondents (44%) have no income but also note that 23% of respondents with a higher income 1000D (Appendix 3).

Purifications steps

Following data collection in the field, we have for the scale of emotional states of consumers as to the musical atmosphere of the store and the scale of the assessment of the musical atmosphere again begun principal components analysis and reliability tests. After this work of purification, we note in the scale of emotional states of consumers as to the musical atmosphere of the store the existence of three factors with a recovery of 71.667% of the information (tableau1a). The three consist dimensions (Awakening Joy, excitement) are presented successively with acceptable internal consistency (Cronbach's α is greater than 0.6 for the 3 dimensions). It should be noted that the removal of any item may degrade the internal consistency of the scale.

Table 1a: Results of principal component analysis and reliability testing relating to the scale of emotional states of consumers as to the musical atmosphere of the store

Items	Factors		
	F1	**F2**	**F3**
I'm happy		0.815	
I'm anxious			0.814
I am satisfied		0.818	
I'm awake	0.686		
I'm gay	0.572		
I'm pissed			0.798
I'm happy	0.656		
I am full of energy	0.875		
Eigenvalue	2.176	1.860	1.577
Explained variance	27.202	23.255	19.714
Cronbach's alpha	0.797	0.607	0.635
KMO	0.663		
Released Dimensions	**Awakening**	**Joy**	**Feeling nervous**

Purification tests of the scale of the assessment of the musical atmosphere from two samples each subjected to a musical condition (low volume / high volume) showed two assessments. The first, consisting of four items, reflects the state of relaxation caused by the music. The second, consisting of a single item, said the state of stimulation can be driven by the musical situation and especially by the volume of the music. These two factors together recover 75.668% of the explained variance (Table 1b). The first dimension relates to the concept of relaxation is a good internal consistency with Cronbach α of 0.846 and the elimination of any item deteriorating reliability.

Table 1b: Results of principal component analysis and reliability testing relative to the scale of the evaluation of the musical atmosphere

Items	Factors	
	F1	**F2**
The diffuse music is relaxing	0.897	
The diffuse music is stressful	-0.838	
The diffuse music is pleasant	0.732	
The diffuse music is sweet	0.799	
The diffuse music is stimulating		0.970
Eigenvalue	2.689	1.095
Explained variance	53.776	21.892
Cronbach's alpha	0.846	-
KMO	0.842	
Released Dimensions	**Relaxation**	**Stimulation**

RESULTS

To answer our research question, we will in the following try to raise the impact of the music volume on the reactions of the consumer. So, we will look first to the cognitive, affective reactions and then finally to the behavioral reactions. To do this, we will sometimes use the analysis of variance (ANOVA), sometimes the chi-square test. Indeed, seeking to test the links between musical condition (no music / low volume / high volume) which is a nominal variable and customer feedback (cognitive, affective, behavioral) measured sometimes on metric scales sometimes on scales nominal, we will then adopt an Anova is a chi-square test.

Cognitive reactions

Regarding the impact of different musical situations on cognitive reactions of respondents, three impact indicators were selected: the perception of time spent at the store, the perception of waiting times at the checkout and the perception of very presence of the music played in the point of sale. To study the influence of the volume of the music on the first two cognitive responses, we used the variance test. For the third response we used the chi-square test. The results (Table 2) indicate that only a few cognitive responses seem to be determined by the adopted musical volume. Indeed, it seems that the volume has no impact on the perceived time spent in the store or on the perceived waiting time at checkout. Nevertheless, the music volume increases the sensitivity of responding to the very presence of music in the store (chi-square = 14.141, P = 0.00). Our results regarding the lack of connection between the perception of time (past and pending) contradict those advanced by some authors as Kellaris and *alii* (1996), and Gueguen *al.* (2002). These authors often conclude that a high volume leads to a perception of fastest time. This conclusion cannot be advanced as a result of our research.

Table 2: Summary THE FINDINGS variance tests and chi-square

R cognitive reactions	Tests
Pass time perceived	F = 0.88 P = 0.417 NS
Time perceived wait	F = 2.038 P = 0.134 NS
Presence of music	**chi-square = 14.141 P = 0.00 S**

Affective reactions

Before analyzing the results on affective reactions, recall that for the scale of affective states of consumers as to the musical atmosphere of the store (Table 1a) three dimensions seem relevant. The first is a sense of awakening. The second is a sense of joy. And the third is a sense of nervousness. For the scale of the assessment of the musical atmosphere, we selected two dimensions (Table 1b). The first refers to a feeling of relaxation. The second is a stimulating sensation. These two scales and different dimensions translate emerged, apparently, it actually, emotional states through which passed respondents. Indeed, the observation of the behavior of respondents as they cross the shelves and in their expectations on hand allowed us to find that

they were going through different states of relaxation, stimulation, arousal, joy and nervousness by musical condition to which they are subject.

To test the impact of the volume of the music on the emotional reactions of customers (Relaxation, Stimulation, enlightenment, joy and excitement), we used analysis of variance (the musical noise is the independent variable and the different affective dimensions being the dependent variables). The results (Table 3a) show that the music volume has a significant effect on some emotional reactions therefore some emotional dimensions namely relaxation dimension (F = 3.328; P = 0.041) and the stimulation dimension (F = 2.730 P = 0.071) corresponding to the scale of the evaluation of the musical atmosphere. Indeed, respondents seem aware of the presence of music. They have determined in some cases if the music was relaxing, or not stimulating. However, the music volume issued during the visit of the respondent does not appear to have affected his feelings about the atmosphere of the store. There is no significant relationship with the three dimensions (Awakening Joy and excitement).

To better interpret the links found, we conducted a comparison test of means (t test). This test revealed a significant difference between the second and third group and that for two-dimensional relaxation (t = 2.596, P = 0.011) and stimulation (T = -2.352; P = 0.021) (Table 3b). Respondents seem to associate their respective states of relaxation or stimulation to the situation of the music volume to which they are subjected. These respondents feel a distinct difference between the low noise and high noise levels. Indeed, the respective averages of the groups show that respondents feel more relaxed in low music volume and high volume requirement. Moreover, they feel less stimulated low volume situation (-0.2929) in a situation of high music volume (0.2181). This result is on the same line of the findings of Gueguen and *al.* (2002), Cain-Smith and Curnow (1966) thus confirming that a low volume soft music is best appreciated as supposedly more relaxing. However, loud music can be a source of aggression, therefore, supposed to stimulating even stressful.

Table 3a: THE FINDINGS Summary of variance tests

R affective reactions	Fisher tests
Relaxation	**F = 3.328 P = 0,041S**
Simulation	**F = 2.730 P = 0,071S**
Awakening	F = 2.310 P = 0,103NS
Joy	F = 1.039 P = 0,357NS
Feeling nervous	F = 0.054 P = 0,947NS

Table 3b: difference test averages

R affective reactions	Average groups		Student tests
	Group 2 (low volume)	Group 3 (volume high)	
Relaxation (2-3)	0, 3211	- 0.2391	**T = 2.596 P = 0.011**
Stimulation (2-3)	- 0.2929	0, 2181	**T = -2.352 P = 0.021**

2- low volume

3- high volume

Behavioral reactions

The choice of variables reflecting the behavioral reactions of consumers is justified having regard to the relevance of the results of previous work (Areni and Kim, 1993; Yalch and Spangenberg, 1993). Following these authors, we have for our entire sample of 150 individuals tested the impact of different musical terms the following behavioral responses:

- The actual time spent in the store
- The ticket for the full number of items purchased
- Unplanned purchases [4]
- The number of items for unplanned purchases
- The amount of the unplanned purchases.

To see if the musical noise influences the possibility to make an unplanned purchase, we conducted a chi-square test (nominal independent variable - nominal dependent variable). The results showed that there was no significant association between the two variables (chi-square = 3.538, P = 0.170) . Consumer unplanned purchases do not seem to be determined by any musical situation. Moreover, to test the impact of the volume of the music on the rest of the selected behavioral responses, we performed analyzes of variance. The results (Table 4) show that no significant relationship cannot be reached. It seems then that the volume of the music, whatever its intensity, cannot have any influence consumer behavior and this has been verified in particular: the actual time spent, the total amount of purchases, the number of unplanned items purchased, and the amount of unexpected purchases.

Table 4: Summary of THE FINDINGS variance tests and chi-square

Reactions behavioral	Tests
Effective time	F = 1.472 P = 0.233
Ticket	F = 0 , P = 0.989 011
Purchasing	chi-square = 3.538 P = 0.170
Number of items	F = 2.499 P = 0.599
Amount	F = 0.517 P = 0.666

As part of this research, we note that none of behavioral reactions is determined and is explained by the volume of the music. This contradicts the findings of several authors (Morrison, 2002; Jacob and Gueguen, 2002) who themselves by cons, show the significance of the relationship between loudness and some behavioral variables such as time spent in the store and the number of orders. Although the volume of the music has no significant effect on the time in the store, however, we see a slightly higher time (20.92 minutes) to soft music as loud music (19.67 minutes). In condition of no music customers remained in the least possible

time magazine (16.74 minutes). Furthermore, viewing the group means, we also noted that the presence of music, customers spent more. This is even more visible to the status of music on low volume. The expenditure (ticket) is more important to a situation of weak and soft volume (13 dinars) than in high volume situations (12.65 dinars).

Impact of the presence of music on consumer reactions

We further interesting thought the scope of the presence of music with respect to the absence of music on the following reactions in individuals that Rieuner (2000). Indeed, the author states that observing the condition of no music is useful in that it allows to quantify the added value of music. Therefore, we looked for a link between the presence of possibility music as independent variable and the cognitive, affective and behavioral responses of consumers as dependent variables. Following analysis of variance and average difference tests (Table 5), we found a set of results that seem interesting.

Table 5: Impact of the presence of music on consumer reactions

	Average groups		ANOVA	T is the average difference
	Presence music	No music		
Time spent perceived	18.50	12.50	F = 4.328 P = 0.040	T = 2.080 P = 0.040
Purchasing amount	4.0824	8.8963	F = 4.050 P = 0.051	T = -2.012 P = 0.051

The above results (Table **5**), we note the impact of the presence of music on a single cognitive variable (perceived time spent) and a behavioral variable: the amount of unexpected purchases. Thus, we find a significant difference in the perception of time spent and the amount of unplanned purchases and between groups that are subject to music and those frequenting the store without broadcast musical piece. It would appear that the presence of music people feel they spend more time in the shop (F = 4.328, P = 0.040; t = 2.080, P = 0.040; mean = 18.50 minutes). In this same situation, people seem to spend less on unplanned purchases (F = 4.050, P = 0.051; T = -2.012; P = 0.051; mean = 4.0824 dinars). Previous studies have actually shown that there is a link between the musical environment and temporal perception. The time spent is perceived as less time living in the presence of music that situation of no music. Indeed, customers feel that they spend more time in the store in a situation of absence of music that is not going along with the results found.

From our research, we found that in an absence of music, people seem less distracted and therefore, they are more focused on making their purchases which reduces the time spent perceived. This finding could explain the fact that customers in absence of music position spend more on unplanned purchases. Customers feeling less distracted in an environment

without music could remember when they pass on the shelves a few races that were not planned in advance.

As for the emotional reactions, although we found no effect and therefore no significant difference between the group receiving the music and do not receive, we still observed in the presence of music people feel relatively more awake, happier and less angry. The average on the situation of the presence of music show that people are significantly affected in their emotional states by the presence of music. This can bring a state of well-being, entertainment and stimulation. In this respect, Alpert and Alpert (1990) point out that in an absence of music (vs. the gay music), customers are cranky and stressed. Rieuner (2000) also notes that in situation of no music store atmosphere has a less stimulating character.

CONCLUSIONS AND DISCUSSION OF RESULTS

In this research, we tried to study the impact of volume of music on consumer reactions in a store. Indeed, we felt that this musical component, easy to handle and has not been sufficient investigations on the ground, is potentially of great interest in shaping customer reactions in several respects. To do this, we conducted experiments in a virtual shop where we varied the volume of the music to observe and record the reactions generated on the behavior of customers frequenting this place. Nevertheless, the results do not allow us to highlight the strong linkages. Indeed, only a few aspects of the reactions of customers were significantly affected by the volume. For example, the volume of music (high vs low) causes a different assessment of the same music, by customers. They seem better appreciate soft music. Customers perceive that music is less relaxing when it is released at high volume. Also, we used the presence of music is significantly perceived by customers. The volume of the music seems to act on customers by awareness of the existence of a musical stimulation. Customers prefer the existence of background music rather than without music environment. Moreover, the perceived time spent in the store seems longer when music is played there. In the absence of music, people, however, seem to spend more on unplanned purchases. Observation, we mostly retained, in the presence of low music (vs. high) that customers feel good mood, more stimulated and less upset. These findings have allowed us to compare and see the added value of an environment with music compared to a no music environment. Control situation (situation of no music) seems to enhance the interpretation of results.

Furthermore, concerning the absence of direct impacts of the volume of music on some reactions of consumers, note that the results found may actually hide a more indirect form of interdependence with certain mediating variables. Thus, the appreciation of the musical atmosphere, caused by the volume of the music can probably induce behaviors including affective, cognitive and behavioral different. Further investigations of the impact of volume of music on consumer reactions seem so necessary. Moreover, our study, although based on descriptive statistical tests, rather belongs to an exploratory approach.

Recall that the conceptual framework relating to the likely effects of the volume of the music on customer feedback is marked by poverty of concrete results. Indeed, often the researchers noted the difficulty in generalizing the results of research on the impact of music and its determinants of consumer behavior. The main reason for this finding is related to the diversity of methodologies. Indeed, researchers have sometimes used a field approach, sometimes a laboratory approach and sometimes even an experiment on the open market (Gueguen and *al* ., 2002). The authors have studied the impact of music in different contexts. Moreover, each author has used some characteristics of music and not others or even a single characteristic with different measures. As an illustration, a known but different music research to another, etc.

Regarding the present work, it seems that some mainly methodological limitations hinder the scope of our findings. In fact, four reflections deserve more attention and may lead to new avenues of research are:

1. The measurement of perceived time (to be able to compare the actual time spent in the point of sale) seems flawed. Indeed, it may be that the client has looked at his watch when he arrived at the point of sale, before leaving the store, or even a different time of his visit to the point of sale. This is likely to enable an accurate measure of his time at the point of sale. In this case, the perceived time is not significantly different from the actual time.

2. Knowing that the questionnaire was administered face to face in the point of sale, we sought to minimize the number of questions in order to build an easy measurement tool and easy to administer. Unfortunately, we have not planned measure to determine whether the respondents were under time constraints. This will probably not properly appraise allows the actual time spent and compare between different groups. Indeed, the time actually spent in the point of sale can be significantly affected by the time constraints of clients. This variable seems appropriate to consider, especially as a moderating variable.

3. The literature supports the idea that the various components of the music act holistically on customer feedback in a store. In our empirical investigation we tested only the impact of the volume of the music on customer feedback while attempting to neutralize the other components (style, *tempo*, etc.). We think that for a better validation of the results, it would be interesting in future research to integrate in the same experiment other dimensions of music.

4. It should also be emphasized that the results found for affective states and relating to the absence of music situation are to be taken with caution because they just come from observation and it is interesting to carry out further research to the subject to be able to characterize the influence of the absence of music negative or positive manner.

REFERENCES

Alpert. J and Alpert. M (1990) Music influences on mood and purchase intention. *Psychology and Marketing* , 7, 2, P.109-133.

Ben Zoubir Ines et Chandon Jean-Louis (2006) The impact of the musical atmosphere on customer feedback in store: The mediating role of congruence with self-image, *Proceedings of the 22nd International Congress of the Association French Marketing* , Nantes, 11 and 12 May

Caldwell Clare Hibbert and Sally A (1999) Play that one again: the effect of music tempo on consumer behavior in a restaurant, *Advances in Consumer Research,* vol: 4. P.58-62.

Charles Areni and Kim David S (1993) The effect of background music on shopping behavior: classical versus top-forty music in a wine store, *Advances in Consumer Research,* vol: 20 P.336-340.

Galan Jean-Philippe (2003), Music and advertising responses: effects of characteristics of the preference and the musical congruence, PhD in Management Science from Institute of Business Administration, University of Social Sciences of Toulouse.

Kellaris James J and J Robert Kent (1991) Exploring tempo and modality effects, one consumer responses to music, *Advances in Consumer Research,* vol: 18 P.243-248.

Kellaris James J, Mantel Susan Powell and B Altesch Moses (1996), Decibels, layout, and duration: the impact of musical loudness and internal states on time perception, *Advances in Consumer Research,* 23. P.498-503.

Michael Morrison (2002) The influence of music and its impact on brand management and point of sale: an Anglo-Saxon approach, *French Journal of Marketing* , No. 188/3. P.69-78.

Nicolas Gueguen and Celine Jacob (2002), Variations in the volume of background music and effects on consumer behavior: a field evaluation, *Research and Applications in Marketing* , vol: 17, 4. P.35-43.

Nicolas Gueguen, Jacob Celine and Legoherel Patrick (2002) The effect of background music on consumer behavior: outdoor illustration, *Marketing Decisions* , January-March, No. 25. P.53-56.

Rieunier Sophie (2000) The influence of the sound environment on the behavior of customers in store: the role of tempo, the reputation and the lack of music, *Proceedings of the 16th International Congress of the French Association of Marketing* , Montreal. P.757-772

Rieunier Sophie (2004) *Sensory marketing point of sale, create and manage the environment of commercial places* , Dunod. Paris.

Rohrmann Bernd (2003), Soundscapes in restaurants, *Proceedings of the International Symposium of Acoustic Ecolog* , Melbourne, March.

Ronald Milliman (1982), Using background music to affect the behavior of supermarket shoppers, *Journal of Marketing* , Vol 46, No. 3. P.86-91.

Sibéril P. (2000), piped music effect on the behavior of supermarket buyers, *Proceedings of the 16th Congress of the French Marketing Association* , Montreal, May 18-20, p.773-789.

Sibéril Patricia (1994) The influence of background music on the behavior of shoppers in supermarkets, PhD Thesis in Management Sciences, Rennes Institute of Management, University of Rennes 1.

Yalch RF and E Spangenberg (1993), Using music store for retail zoning: a field experiment, *Advances in Consumer Research,* 20 edition. L. McAlister and ML Rothschild, Provo, UT, Association for Consumer Research. P. 632-636.

Yalch RF and Spangenberg E (1990) Effects of store music on shopping behavior, *Journal of Consumer Research* , vol 7. P.55-63.

Yves Evrard, Pras Bernard Elyette and Roux (2003), *Market research and marketing research* , 3rd edition, Nathan.

Annex 1: Summary of some consumer reactions to certain music components

Dimensions Reactions	*Tempo*	Style	Congruence with the taste of the customer	Congruence with the self-image	Notoriety	Volume
Cognitive						
Store image		Classic (vs. vari summer) + Yalch impact and Spangenberg (1993) Rieunier (2004)		+ Ben congruent impact Zoubir et Chandon (2006)		
Prestige		Classic + impact Areni and Kim (1993)				
Product image		Classic + impact Areni and Kim (1993)				
Image of prices practiced (high)		Classic (vs. vari summer) + Yalch impact and Spangenberg (1993)				
Customer focus					Known impact - Rieunier (2000)	
Perception of time spent in the store	Slow (fast vs) impact - Caldwell and Hibbert (1999) (the past perceived time is short)					Sweet (vs. strong) impact - and Kellaris *al.* (1996) and Gueguen and *al.* (2002) (time spent perceived is short)
Affective						
Pleasure		Top 50 + Bb impact ERIL (2000)	Congruent impact + Yalch and Spangenberg (1990)			Sweet (strong vs) + impact Cain-Smith and Curnow (1966) quoted by Gueguen and *al.* (2002)

						Sweet (strong vs) + impact Rohrmann (2003): a high volume is a barrier to communication.
Excitation (stimulation)		Top 50 + Bb impact ERIL (2000)	Congruent impact + Yalch and Spangenberg (1990)			
Mood			Congruent impact + Yalch and Spangenberg (1990)			
Cheerfulness	Quick Impact + Bb ERIL (2000)	Top 50 + Bb impact ERIL (2000)				
Relaxation (trigger)	Slow impact + Bb ERIL (2000)	Top 50 + Bb impact ERIL (2000)				
Aggression						Fort (soft vs) + Gu impactéguen and al. (2002) (high volume attacks the client)
Behavioral						
Expenses	Slow (fast vs) + impact Caldwell and Hibbert (1999)	Classic (vs. vari summer) impact + expensive products Areni and Kim (1993) Top 50 impact Sibéril + (2000)	Congruent impact + Yalch and Spangenberg (1993)		People + impact Gu éguen and alii (2002) Known impact - Rieunier (2000)	
Number of items purchased					Known impact - Rieunier (2000)	Fort (soft or weak vs) + Jacob and impact Guéguen (2002)
Impulse Purchase	Fast (slow vs) (in supermarket é,	Vari was (conventional vs) (supermarket, peak) + Sibéril Impact (2000)	Congruent impact + Yalch and Spangenberg (1993)			

	peak) + Sibéril Impact (2000)					
Time spent in the store	Slow (fast vs) + impact Caldwell and Hibbert (1999)		Congruent impact + Yalch and Spangenberg (1993)		People + impact Guéguen and *al.* (2002)	Sweet (strong vs) + impact Cain-Smith and Curnow (1966) cited by Gueguen and *al.* (2002) Fort (soft vs) + impact (for young people vs. young) Yalch and Spangenberg (1990)
Speed of buying	Fast (slow vs) + impact Milliman (1982)					
The number of vendors with whom the customer has discussed	Slow (fast vs) impact Rieunier + (2000)					

Appendix 2

The scale of emotional states consumers
about the musical atmosphere of the store

Items
1 : I'm happy
2 : I'm glad
3 : I am satisfied
4 : I'm gay
5 : I am optimistic
6 : I am entertained
7 : I'm excited
8 : I'm pissed
9 : I am full of energy
10 : I'm anxious
11 : I'm awake
12 : I am stimulated

The scale of the assessment of the musical atmosphere

Items
1 : The music is broadcast soporific
2 : The music played is relaxing
3 : The music broadcast is stressful
4 : The music broadcast is pleasant
5 : The music broadcast is noisy
6 : The music broadcast is sweet
7 : The music broadcast is stimulating

Appendix 3: Sample Characteristics

Frequency relative									
WOMEN					MEN				
70					30				
AGE									
- 15		15-24		25-34		35-49	50-64		65
2.0		32.7		18.0		24.0	20.0		3.3
STUDIES									
Superior			Secondary			Primary			Other
72.7			24.0			2.7			0.7
CSP									
Employees of Superior framework	Employees of Average framework	Employee	Operators	Artisan	Worker	Retire	Student	Inactive	Another
30.0	13.3	0. 7	2.0	0.7	10.0	20.0	14.0	8.7	0. 7
INCOME									
0		-200	201/400		4 01/600	601/800	801/1000		1000
44.0		1.3	2.0		5.3	14.0	9.3		23.3

[1] Appendix 1 provides a summary of some consumer reactions to certain components of the music.

[2] From the literature, we took items measured by semantic differential scales on which we have made some changes and we measured by Likert scales.

[3] Clarification that in the final experiment, we used the same sound material for the entire sample.

[4] To determine this variable, we asked each subject to take back and examine its receipt to identify planned purchases and those who were not. We consider anticipated purchases decided before the arrival in the store.