THE EFFECTS OF MUSICAL FIT ON FOOD PREFERENCES

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Abstract

How music can influence our pleasure for food? When we listen to the music, informations that arrives to the brain to be interpreted may recall, or prime, certain thoughts and feelings that have implications for our attitudes and behaviors. Could the thoughts primed by music influence what people actually perceive via another of the senses, in this case taste? Results of present experiment suggest that hearing a certain background music while eating some foodstuffs can increase arousing and pleasure in a manner consistent with intrinsic informational aspects of music. According to this it is possible to sentence that people's response may change toward product in a positive way if we match some music congruently with product perceived qualities. Marketers have long understood the importance of background music in enhancing consumer's experience satisfaction. The results are discussed in terms of their theoretical implications for research on music and consumer behavior, particularly there is a need to determine whether such effects might be determined by a cognitive response, an affective response or both.

Keywords : music; consumer behavior; consumer psychology; musical priming; musical fit; consumer preferences.

1 . Introduction

Music has the ability to *prime* some aspects of our knowledge in a manner consistent with the intrinsic informational content of musical message. These primed knowledges have strong implications for our attitudes and behaviors. Because music primes certain thoughts, it makes us more likely to use these thoughts when asked to subsequently think or act. According to these findings several studies within consumer psychology and behavior have shown that informations primed by music can be used, to raises the salience of certain product over the other, causing consumer's selection for those products by activating behaviors associated with that music (North 2012, North 2008, North and Hargreaves 1999, McKendrick 1999). For example about the effects of 'atmospheric' content of a retail environment on consumer's purchase intention, many studies argue that music could influence wine purchasing.

Areni and Kim (1993) found that playing background classical music rather than pop music in a wine cellar was associated with the purchase of more expensive wines; in a further research North, Heargreaves (1999) found that playing french or german music in a supermarket can lead consumers to buy wine accordingly with music connotations: French music led to French wine outselling German by five bottles to one, whereas German music led to German wine outselling French by two bottles to one. Shoppers were not told that

music was French or German, nonetheless thanks to musical intrinsic differences of style a notions of 'Frenchness' or 'Germanness' was primed. Similarly North (2012) found that music can affect the way in which we perceive the taste of a wine. For example if the background music is powerful and heavy than the wine is perceived as more powerful and heavy than when no background music is played. If the background music is subtle and refined then wine is perceived as more subtle and refined than no background music was played. The characteristics that people hold concerning listened music influenced their response to wine taste.

As seen marketing research focus on the beneficial effects of musical priming concerning its potential to activate and guide consumer's information processing toward certain product attributes. By this approach the affective consequences of priming are regarded as less important. However many studies on consumer behavior point out that music may enhance affective responses to musical stimuli (Mattila, Wirtz 2001; Rickard 2004) since priming the activation of related cognitive constructs is regarding as causing pleasure. There is consequently a need to determine whether the potential benefits of priming are knowledge based, affect based, or both. In the light of arguments such as these, present article addresses one particular influence that music might have on consumer behavior, namely its potential to influence liking and pleasure towards those product which match with its intrinsic characteristics. Exactly the experiment here attempts to test if thoughts primed by music can influence arousing and pleasure experienced testing some food, and in particular way liking for cheese. A second research question is advanced regarding the relationship between affective dimension and cognitive dimension in musical priming response. In this regard participants' scores have been analyzed to look for differences in the behavior of the “gender” variable and the “expertise” variable, in order to put in evidence if affective dimension was preeminent rather than the cognitive one. Tested predictions are the following:

- music that is perceived to match with cheese qualities, prime certain thoughts and feelings that lead to an higher judge of liking and pleasure;
- pleasing and arousal-evoking quality of a musical stimulus are dependent by the extent to which the stimulus is perceived to match with product qualities;
- musical priming may enhance liking and pleasure toward product experience activating in the consumer an affective based response;

While hearing a selection of four piece of music for piano, a group of 29 students was invited to taste two different qualities of cheese. On finishing the cheese, participants were asked to rate their liking for each music-cheese matching and than to compile a brief questionnaire about their musical habit and education and personal preferences for music and cheese. Results suggest that matching background music might lead to an higher evaluation of the satisfaction and pleasure and consequently to more positive behavioral responses.

2. Theoretical background

Musical priming can be considered as the “process by which music primes certain aspect of knowledge of the world and leads customers to behave accordingly” (North, Yeoh 2009, p.223). These knowledges allow to develop expectancies, as a function of the context, influencing decision's processing on further events (Tillman, Bigand, 2002). *Priming* in psychology refers to activating parts of particular representations or associations in memory just before carrying out an action or task. It is considered to be one of the manifestations of implicit memory.

Most affecting attitude of music to prime knowledges results from a sort of coherence level between music and product qualities: this element of coherence can be made operative through the variable of the "musical fit".

McInnis and Park (1994) define musical fit within the Elaboration Likelihood Model (ELM) theoretical perspective. The ELM states that there are two route to persuasion: central route in which attitude are formed by careful consideration of information relevant to the attitude object, and peripheral route where attitude are formed without active thinking about the object and its attributes, but rather by associating the object with positive or negative cues, such as liked or disliked music, in other words, by some form of conditioning mechanism. *High* and *low involvement* are terms used to identify consumer motivations, opportunity and ability to process, or elaborate, information products.

The authors argued that musical relevance, or appropriateness to the central message, might positively influence high-involved consumers by conveying and activating relevant information about product qualities. As such music works no more as a peripheral cue but focusing attention on the central message. In fact even if only minimal information of the product are presented (central message), the music might stimulate product relevant-thoughts (Gorn 1992). These thoughts might evoke in mind a series of categories as potential attributes, beliefs or attitudes toward products affecting decision's processing and preferences. Therefore these knowledges are tools by which handling product informations, saving the cognitive effort needed to perform a response (Petty and Cacioppo 2004). An example is that priming effects of music are more common if people are asked to judge something that they know little about or find difficult to judge, in these cases people use given patterns of knowledge to access musical experience that is adapting their own cognitive system regarding the events. Categories might affect consumer's preferences, since people tend to like those products that they can easily judge typic of a certain category.

This cognitive approach about music effect on consumer behavior, is reflected by recent developments in psychology of arts. A number of studies since 1980s have indicated that people prefer artistic objects that are typical exemplar of a given category. According to Martindale and Moore (1988) "aesthetic preference is hypothetically a positive function of the degree to which a mental representation of a stimulus is activated. Because more typical stimuli are coded by mental representations capable of greater activation, preference should be positively related to "*prototypicality*", consequently strongest activation are those due to the stimuli judged typical of a category" (p.661).

People profess this judge to evaluate the potential of an external stimulus regarding his previous knowledges that constitute just a representative pattern (as a landmark) of his cognitive system. In such a way typic aesthetic patterns, activating relevant related knowledge structures, promoting our pleasure for the stimulus experienced and reinforcing its preference. These cognitive processes, that allow such a sophisticated assessment on what we are experiencing, require a great activation. Musical fit seems to stimulates positively this activation, conveying those product related attributes that lead subject's appraisal. Therefore applying "*prototypicality*" model to the concept of musical fit seems to have some promise as a means of explaining the influence of specific musical pieces on people's preferences.

This allows us to explain the potential effects of music on consumer behavior in terms of different researched fields in marketing area. Many recent studies, in fact, found that music in advertising should similarly prime certain aspects of participants' knowledge of the world. This increased level of activation should enhance the ability to recall the advertisement and the message it contains. While several models of consumer decision making have been proposed (Tybout & Artz, 1994), this application of the prototypicality model to the concept of musical fit seems to have some promise as a means of explaining the effects of specific

musical piece on response to advertising. Furtheremore, the notion of fit might explain why Stout and Leckenby (1988) found that advertisements were perceived more positively ("right for me") and as more informative when they contained music associated readily with the advertised brand (Blair & Hatala, 1992); Hall, Miller, and Hanson (1986) found that viewers preferred pop-music videos in which the visual and lyrical content were matched. Other researchers has tended to overlook "the communicative meaning that a musical piece may have" (MacInnis & Park's, 1991, p.225), and "precludes consumers' ability to judge and understand various style and melodies as appropriate and communicative in particular message contexts, exclusive of personal taste"(p.226). Indeed, a great deal of research has indicated that responses to music are directly related to their cultural and contextual meaningfulness. In short, music may be affective in promoting advertisement recall because it communicates meaning and information. Finally results have confirmed that *preference for prototypes* model "as it has been applied in the psychology of the art overlaps with notion of fit applied in marketing related research". Nevertheless, despite the potential of such a theoretical framework, a problem concerning the role of the affective response follows from this approach.

3. Objectives and Methodology

In the present study, four music condition were presented to a group of student invited to taste some typology of cheese. Two measure of response were observed: first the extent to which subject's liking and preference toward cheese was varying when background music was perceived to match congruently with certain product relevant qualities. Second the extent to which subject's judgements was dependent according to personal characteristics as "gender" and "expertise".

As seen through cognitive-oriented models on consumer behavior several variables are responsible to moderate the relationship between music and subjects; this evident complexity of the phenomenon has been here modeled, and thus reduced, observing two main relevant dimension:

- one affective related dimension modeled on the trend of the variable "gender";
- one cognitive related dimension modeled on the variable "expertise".

Thus three specific hypotheses were tested:

- the principal hypothesis is that music that is perceived to match with product qualities, prime certain thoughts and feelings that lead to an higher judge of liking and pleasure;
- second, relevant differences over liking response between 'gender' subgroups, may depend by the activation of heuristically oriented structures of thought. In this case we may assume that fit operate at a sub-cognitive level increasing subject's affective response that reinforce the general arousing level of the stimulus, thus causing a positive response. Therefore musical message would be appraised as an aesthetic pattern associated with an emotional contents;
- third, differences in performance depending on the 'expertise' variable variations are appreciated on the basis of the *preference for prototype* model. Different activations are due to a different way to evaluate stimulus typicality and this is consistent with the hypothesis that musical fit might lead to a different response between experienced subjects and unexperienced.

3.1. Procedure

A sample of 29 students of the university of Macerata were asked to taste different qualities of cheese while listening to a selection of musical excerpt. They were asked to verbalize their perception of music, using a series of labels proposed by the experimenter, and to rate their own liking for each music-cheese match.

The experiment here has taken place during a university workshop entitled: "Consumer's perception: Projecting and realizing a sensory experiment on music/product matching" organized at the faculty of Economics of the University of Macerata. Among participants a group of 29 students were selected and trained according to the experiment design. As a first step students were asked to fill out a brief questionary to provide general information about:

- Personal background: gender, age, and scholarship;
- Musical background: musical habits, knowledges, attitudes, training;

Secondly, four musical pieces were played and participants were asked to evaluate own music liking (or disliking) on a four steps scale. Students were then provided four labels, elaborated in a preliminary phase of the research, regarding perceptive profile investigated by the research, namely "bold" and strong", "contrasted and disharmonious", "soft and refined", "harmonious and refreshing". They were asked to match each label with music in a manner consistent with their own perception of the pieces. Consequently were offered two kind of italian cheese ("*Pecorino*" and "*Stracchino*") in return for answering a few questions about its taste while music selection was played in background. Finally participants were asked to match each music with both cheese and to rate their preferences for each association by a scale from 1 (disliked) to 5 (liked). A rating of 1 represented a disliking perception of music and food association, while a rating of 5 represented a pleasant and right close perception of both stimuli. For the use in the study following four piano piece have been adopted:

P1 – B.J.Duskin: *dollar bill boogie;*
P2 – K.Stockhausen: *study for piano n.II*
P3 – F.Chopin: *nocturne op.9*
P4 – W.A.Mozart: *piano sonata Kv 545;*

Each label has been thought on the basis of musical pieces characteristics. They have been adopted to verbalized cross perception between music and food and to observe how in which way fit was perceived. Labels also permitted to correlate fit perception to ratings of liking and to relevant variable investigated.

Responses from students have been almost coherent and correspondent with what hypothesized in the preliminary working phase. Indeed the four pieces of music were matched as follows:

Table 1 – Music labels

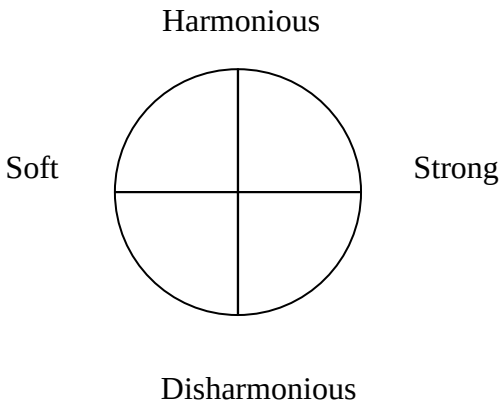
P1 – B.J.Duskin: *Dollar Bill Boogie*	Bold and strong
P2 – K.Stockhausen: *study for piano n.II*	Disharmonious and contrasted
P3 – F.Chopin: *nocturne op.9*	Soft and Refined
P4 – W.A.Mozart: *piano sonata Kv 545*	Harmonious and refreshing

Table 2 - Results for music/labels matching task:

	P1	P2	P3	P4
Bold/Strong	51.7%	6.9%	0.00%	17.2%
Soft/Refined	0.00%	10.3%	89.7%	6.9%
Harm./Refreshing	34.5%	0.00%	10.3%	72.4%
Dishar./Contrasted	13.8%	82.8%	0.00%	3.4%

Must to think to these categories as variables of a factorial space thanks to which obtaining a graphical display of music with its characteristics and a mapping of the students based on their preferences in such a way that their behavior can be related to musical characteristics. Each label is placed at one extreme of a bi-dimensional factorial space and organized for opposite meanings: *"Harmonious/Disharmonious"* and *"Soft/Strong"*. "*Harmonious/ Disharmonious*" axis is been related to a "Harmony" factor while the "*Soft/Strong"* axis to a "Tempo" factor.

Table 3 – musical characteristics graphical display



B.J.Duskin and Chopin have been opposed by their tempo, fast tempo vs. slow tempo (these structural indications have been semantically transposed in "soft" vs. "strong" to suggest meanings not technically oriented and thus more suitable for a consumer's analysis context). Harmony has been the main variability factor considered between the music of Mozart and Stockhausen: harmonic vs. dis-harmonic harmony (Stockhausen adopt in fact a dodecaphonic system for his piano piece). The second adjective that complete the labels is consistent with a more affective content of music (bold, refined, refreshing, contrasted).

Current study is not interested to manipulate structural music elements like 'tempo' and 'harmony' in an analytical way. Music selection was, in fact, consistent with the idea to create four different evoking profiles simply to survey the perception of fit and correlate it to ratings of likings. The choice to use instrumental piano pieces was consistent with the will to make homogenous certain perceptual parameters (as 'texture' and 'timbre') with the aim to reduce structural contrast between the excerpts and let emerge the general profiles.

3.2. Data Analysis

First step of the analysis has been to extract the set of variables needed to describe musical fit dimension to verify initial hypothesis about the influence of music on subjects' liking and

pleasure response. A second step was required to design gender dimension and expertise dimension starting from background questionnaire responses.

Variable settings adopted for the analysis has been modeled in the following way:

- music dependent variable: it was selected the variable "musical fit" as musical priming related factor;
- subject dependent variable: it was selected the variable "musical expertise" as musical background related factor, and the variable "gender" as personal background related factor.

The two blocks of variables have been put in correlation under the hypothesis that gender and musical expertise can affect differently musical priming, and consequently consumer's responses. Gender is a human nature dimension that moderate the relationship between music and behavior. Many studies in the field of psychology of music set out consistent differences between males and females behaviors and especially on hedonic judgements and tastes; there is a clear dissimilarity on stimuli response depending on physiological differences at nervous systems level.

On the contrary "musical expertise" factor here, results from the overlapping of two musical related variables: musical knowledges and listening habits. These two elements have been taken to profile the variable of "expertise" used in the research. In brief, measure of the concept of expertise has been based on the observation of variables describing subject's musical behavior, as the sum of his cultural practices in the field of music. This variable was create to split students with a stronger musical training and listening practices (students to which is attributable a certain degree of musical culture) from the others, to explore any differences on behavior. Indeed experienced listeners, in a given musical culture, show implicit knowledge of structural pattern and organizational principles in a number of way: trained subjects show better skills in classifying and categorizing musical stimuli also in terms of mental representation. This means that experienced listener can get a deeper insight of musical phenomena (that turns in deeper degree of knowledges) by a better awareness of musical patterns they listen to, in addition ability to judge and understand various styles and melodies as appropriate of a particular context is significantly higher.

However present research means to handle a concept of "expertise" concerning a marketing related context, for this reason variables design point out a weaker concept suitable properly for consumers analysis. "Expertise profile" designed refers to average musical consumer's skills and not to advanced competence that are beyond the aims of the present research. Within the collective analyzed variables of "gender" and "expertise" were distributed as follows:

Table 4 – percentage conjoint frequencies between Gender and Musical Expertise

Gender/Expertise	Experienced	Unexperienced	total
- male	10.3%	32.1%	42.4%
- female	39.3%	17.9%	57.6%
total	50%	50%	

Responses on music/label matching task, between male and female, have been compared with ratings of assigned likings:

– Chopin's music was congruently perceived as "soft and refined" (89.7% of the collective) and positively associated with the "stracchino" cheese by both groups. Ratings of the stracchino as soft and refined were 22.2% higher (mean ratings = 4.52) respect the

pecorino (3.41). Males scores were 8% higher than females;

– Stockhausen's music was congruently perceived as “disharmonious and contrasted”(82.8% of the collective) and negatively associated with both cheeses by each group. Music was disliked and judged not congruent with product qualities perceived (mean ratings = 1.97 with the “pecorino” and 2.07 with the “stracchino”). No relevant difference of opinions were found between the two groups;

– Mozart's music was congruently perceived as “harmonious and refreshing from the 94% of the female group and only from the 66% of the male group (72.2% of the whole collective). The piece was positively liked associated with both cheese (mean ratings = 3.4 for both);

– Duskin's music was perceived as “bold and strong” by the 58% of females and as “harmonious and refreshing by the 65% of males. The pieces was positively perceived by the male group with the pecorino cheese (mean ratings = 4.17), liking was 21% higher than in the stracchino situation (3.08). On the other side female group liking was not positive for either cheese (mean rating = 2.88 for both);

Differences found between the two groups have been statistically significant (sig. < 0.005) solely in the case of Big Joe Duskin's music and the pecorino cheese. A one-way Anova was then calculated to shows differences of liking assigned to each match between the two groups.

Table 5 – ANOVA Gender/Score pecorino cheese

Gender/Scores	B1	B2	B3	B4
sig.	0.005	0.393	0.503	0.595
F	9.371	0.755	0.461	0.290

Means of these ratings, have showed that males's judgements has been more extreme on the scale of liking than those of females, either positively or negatively, about 7% on average. At the same time, where the effects of music congruency appear, we found that the level of liking enhance considerably. In the case of Big Joe Duskin's music, males rated their cheese liking 21% higher respect the scores given to the Stracchino cheese (a T-test for paired sample has been conducted: sig. < 0.05) and 25% higher than the females' ratings (sig. < 0.02). Males' liking resulted also to be 19,1% higher respect the average of all ratings assigned (3.14). Furthermore both groups rated Chopin's excerpt with “stracchino” cheese being 22,2% more pleasant than with the “pecorino” cheese, and 27,6% more liked respect the average of the ratings (3.14).

Liking (or disliking) judgments seems reinforced there where fit is more strongly perceived and it is been observed that ratings became more extreme. Especially results regarding Big Joe Duskin and the “pecorino” cheese show differences on response between the gender groups in a clearer way than in the other cases. The two excerpts selected (respectively Mozart for females and B.J.Duskin for males) primed different thinking that led to different attitudes toward product. It is though to depend on a diverse appreciation of the musical stimulus probably due to the differences on arousing and pleasure perceived. A one way anova show a significant correlation between gender and ratings of liking for music. In the case of B.J.Duskin's music a significant value was found regarding males group (sig. < 0.02), while a significant association was found between females and Chopin's music (sig. < 0.05). Indeed highest rating expressed between music and food has been that of males for

B.J.Duskin's music (4.17), and that of females for Chopin's music (4.75). Although these results are not entirely surprising if we consider that *Dollar Bill Boogie* arousal potential is characterized by a less complex musical structure and to a faster tempo both enhancing positively stimulus's arousing, thus males tends to prefer hedonic stimuli with a stronger arousing potential.

On the other side "expertise" variable was found not significantly related to the ratings. Although experienced subjects have performed better in matching music and labels, their preferences were shifted toward musics of Mozart and Chopin, namely the most familiar music selected.

4. Conclusions

This study provides evidence that background music influenced subjects' response enhancing perceived liking and pleasure toward tested cheese (first hypothesis advanced). However on the basis of the second hypothesis results have showed that expertise dimension did not influenced significantly subjects' judgements. On the contrary two main results must be discussed (third hypothesis advanced). First evidence is that response of males and females was significantly different upon B.J.Duskin's music and pecorino cheese. In this case, music might have recall different thoughts since the two group have differently classified the excerpt. Indeed great difference on ratings show that musical fit have significantly increased only males' ratings.

Definitively, in the case of "pecorino" male group has shown to prefer B.J.Duskin's music, while the females' preferences resulted oriented toward the music of Mozart and Chopin but without any significative difference. Therefore females do not have found a particular congruency between music and cheese (they indifferently matched the "harmoniums and refreshing" music and the "bold and strong" music) consequently they expressed lower level of liking. A factor analysis indicated that gender variable arrived to explain 81% of the score variance between pecorino and music.

Even if with strong limitations due to the narrowness of the sample tested, these findings have both theoretical and practical implications. From a theoretical perspective, the finding is consistent with the notion that music can prime related knowledge and arise the potential of liking and pleasure towards certain products if they fit with that knowledge. Martindale cognitive theory on pro-typicality has been taken as theoretical starting point to introduce this concept.

This conceptualization gets the goal to point out a cognitive oriented approach to musical priming based effects. Indeed according to Martindale, "expertise" dimension of subjects has been investigated but not positive correlation has been proved between liking response and the level of expertise of the subjects interviewed. As said, still remain a theoretical lack of comprehension through research about if potential benefits of priming are knowledge based, affect based, or both. Present results suggest that the emotions primed by musical excerpts are interdependent with their pleasing and arousing qualities, and musical fit resulted decisive to lead the preference among stimuli that present similar levels of arousing and pleasantness. Musical fit, as an attribute of the atmosphere of the environment, enhance liking (or disliking) in terms of arousing potential, subjects rate significantly more positive their experience. Although we are not trying to explicate musical fit effects on the basis of differences between male and female, but these considerations are absolutely useful for shifting priming effects approach from a cognitive dimension to a more affective one. For these reasons any strong cognitive approaching to the problem lead to elaborate partial models and obtain not satisfactory results.

What is considered to be a relevant issue of musical fit is the capacity of activating primed knowledges about product. This activation is due to the arousal-influencing properties of musical fit. In light of this, present work putted in evidence how fit, toward low-involvement subjects, activate a positive response in terms of pleasure and so in terms of arousing. Many researches have discussed the psychophysiological similarities between pleasure and emotion, and it seems reasonable to assume that expressing preferences (as many other aspect of human aesthetic behavior in everyday life) for an aesthetic stimulus is probably guided by the specific emotional content of the music. It seems probable that the specific piece of B.J.Duskin displays characteristics that reflect different emotional connotations of the listening situation given between males and females. Emotional and preferential responses are, thus, different and even the arousing perceived as it is outlined by the correlations between ratings and the variable of gender.

Music affecting attitude to priming results, in this case, as the capability to connote the perception of the product in an affective manner consistent with its intrinsic properties. Then here a musical priming affect based, rather than knowledge based, is hypothesized as possible. Precedent works consider musical fit effects to be more beneficial for high than for low-involvement subjects (Yeoh and North 2010, Martindale, 1996; MacInnis & Parks 1994), since appropriate music focuses attention on central attributes of the product. May be this is not completely truth, since evidences found attest an increase of liking even in low-involving subjects. This prospective does not totally match with the idea that music, with low-involved subjects, might to work simply as some form of conditioning mechanism how showed in the *Elaboration Likelihood model* (McInnis & Park 1994). It is so possible to speculate that musical fit may have beneficial effects, irrespective of listeners level of involvement with the contextual situation.

Present data does not allow us to test this alternative explanation. However, two further points should be made. Central idea, regarding musical priming, is that music may guide us through the salience attributes of a product. We need to consider that musical information processing is a complex and unpredictable system to which we react activating different dimension that control our behavior, in particular way the affective dimension appears still away to be fully understood. Future research examining the relationship between background music, intermediating cognitive and affective processes, and consequent behaviors are clearly warranted. Results also indicates the need to examine the effects of context, and to explore the types and nature of underlying factors that are influencing or confounding variables of interest. More specifically, what is the relationship of background music with other elements of the ambient environment, and how might this influence behaviors?

Musical fit is undoubtedly a multi-faceted concept. For instance, the extent to which a given piece of music fits (or does not fit) with a particular product might be determined by its tempo, intensity, instrumentation, mode, and articulation, among several other possible candidate variables. Indeed, the extent to which we should even attempt to define musical fit in terms of objectively-measurable aspects of musical structure reflects a broader debate that has taken place within the field of aesthetics over the past few decades. In that field, several authors have addressed the very well-known absolutist versus referentialist approach to emotional responses to music. At the risk of over-generalising, proponents of the former approach argue that musical meaning resides within musical structure itself, whereas proponents of the latter argue that musical meaning resides in the associations that a given listener has with the piece in question. Similarly, several studies of musical preference have addressed the extent to which this might be determined by the complexity of the music in question. Whereas some have argued that this concept can be measured by objective, mathematical means, others have argued that it is the complexity of a piece of music, *as*

experienced by the listener, that is crucial in determining preference, rather than any objective, mathematical measure. As said musical perception is a complex phenomenon that requires a deep insight along several dimension to be fully understood. Present study supports the idea to develop a cross-modal approach for achieving a stronger insight.

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