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Music and memory in advertising: music as a device of implicit learning and recall.

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This is an electronic version of a paper presented at the 9th International Conference on Music Perception and Cognition, August 22-26 2006. Published by ICMPC-ESCOM, Bologna, Italy, pp. 1190-1198. ISBN 8873951554. The paper is available online at:

<http://www.escom-icmpc-2006.org/pdfs/30.pdf>

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9th International Conference on Music Perception and Cognition

Alma Mater Studiorum University of Bologna, August 22-26 2006

Music and Memory in advertising; Music as a device of implicit learning and recall

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ABSTRACT

Music may play several roles and have many effects in advertising; it may attract attention, carry the product message, act as a mnemonic device, and create excitement or a state of relaxation. There have been numerous studies that have focused on the general perceptual, cognitive and affective processing that occurs in response to exposure to music; there also have been studies on the effects of music on short- and long-term memory. However, few of these have examined the specific importance of music as a mnemonic device within filmed events (Boltz et al. 1991) or TV commercials (Yalch 1991, Stewart et al. 1998).

In this paper, the role of music will be evaluated within advertising and during low-attention conditions. A series of experiments was carried out whereby musicians and non-musicians were exposed to an advert that was embedded into a group of other adverts, presented in the middle of an engaging TV program, thus replicating very naturalistic conditions. There were 4 audio conditions examined in an example advertisement: jingle, instrumental music, instrumental music with voice-over and environmental sounds with voice-over.

Results indicate that music is effective in facilitating im-

PLICIT learning and recall of the advertised product, showing that, under non-attentive conditions, there is a certain mechanism of unconscious elaboration of the musical signal. The role of previous musical training seems to have a little significance under low-attentive conditions, thus we observe an unconscious physiological reaction to the information carried with the music of a commercial which is common to musicians and non-musicians.

Conclusions concerning the function of music on listeners and on memory stimulation could prove effective in an analysis of the communicative role of music in advertising, and might also have wider ramifications for current research into more generalised analysis of music and meaning.

Keywords

Memory, implicit, music, advertising

1. INTRODUCTION

Music functions, not only semantically but also in the viewer's memory, as an index of the advertising spot. 'Ad campaigns aim to facilitate a consumer's storage and recall of the feelings and thoughts associated with the product.' (Zaltman 2003: 166) The role of consumer's cognition is taken seriously into consideration by marketers and creatives within commercial field. 'An advertisement – any advertisement – has a very difficult task if it is to capture the perception of a consumer and an even harder time, once perceived, to make a net addition to what the consumer already knows about the brand.' (Weilbacher 2003:232)

In the case of TV advertising, the viewer's focusing attention is presumed to be a prerequisite for the elaborative encoding necessary to integrate the commercial's message with the viewer's long-term knowledge store such that it might influence subsequent perceptions, feelings, thoughts

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and actions. 'The crucial challenge for advertising, and all sponsored marketing communications about brands, is what consumers can be made to learn about the brand that transcends its transactional qualities.' (Weilbacher 2003:234)

Music and sound in advertising are not used merely because the means of television allows as this extra option added on image. Firstly, the image attracts attention and explicit recognition, elaboration, association, learning and recall of the advertised product – without excluding any implicit function of the recipient by the above assertion. It is not the case, however, that all memory retrieval is explicit in nature; decisions can also be influenced by implicit memories. Marketing research has showed that unconscious reactions to marketing stimuli are more accurate indicators of actual thought – and subsequent behaviour – than the conscious reports consumers often provide (Shapiro et al. 2001, Zaltman 2003). Thus, image does not efficiently aid implicit or unconscious learning, and recall in case they occur, in the same way music does not efficiently aid explicit learning and attention, unless under directed guidance and invigilation.

Research shows that attention during television viewing is very sensitive; both program and commercial viewing often take place among myriad other activities (Krugman et al. 1995). Therefore the viewers' visual attention might secede from watching the television screen. In this case auditory stimuli function as informative cues to either guide visual attention back to the television screen (Anderson 1983) or transmit orally the 'visual' message of the actual commercial (Krugman et al. 1995, Morgan et al. 2002).

The successful relationship between music and image is acknowledged by film studies; to quote from Kallinak 1992 on the effectiveness of music in films: 'Musical accompaniment was thus positioned to effect perception, especially the semiconscious, without disrupting narrative credibility.' (Kallinak 1992: 86) Boltz 1991 identified with the above: 'Music can accentuate various qualities of visual activities and thereby enhance their perceptual salience.' (Boltz et al, 1991: 594) Cohen 2001 reinforces the above by asserting that the simultaneous presentation of music and film automatically elicits bottom-up principles that entail perceptual grouping in both auditory and visual domains.

Kellaris's et al. 1993 study on the effect of background music on advert processing, also found that image-music congruency reinforced consumer's memory and attention. Stewart et al. 1998 tested the extent to which different types of retrieval cues elicited different types of responses as a part of a larger advertising tracking project. The study showed that the image interaction with music is more effective in retrieval than image interaction with verbal information.

2. Implicit Memory and Music in Advertising

Early studies of Krishnan et al. 1996 revealed that implicit memory effects are contingent on a minimum level of processing; and also marketers should consider the role of implicit memory when assessing effectiveness of a brand name or an ad campaign. Shapiro et al. later study, confirmed the aforementioned: 'In the same condition in which explicit memory retrieval failed [...], implicit memory retrieval led to an increased likelihood of choosing the target brands.' (Shapiro et al. 2001:10)

Pham and colleagues favoured implicit (indirect) memory tests, as more effective than explicit (direct) ones in the field of marketing, for assessing the unconscious learning and recall during commercials: '*Indirect* memory tests may be more adequate because they assess whether a learning episode (e.g. exposure to brand fragments) facilitates the performance task (e.g. answering questions about brand associations) *without* necessitating recollection of the learning episode.' (Pham et al. 1997: 408)

Although music seems to facilitate implicit learning and recall, little research has been done, considering music as a 'collaborative sign'. Studies on implicit memory and music, focus mainly on unconscious recall of musical features (Halpern 2000, Tillman et al. 2000, 2004) and not on visual and verbal information carried by the 'musical vehicle'. The latter, although recognized in anthropological and ethnomusicological studies in children's song (Blacking 1995, Minks 2002), is only mentioned as a cultural phenomenon of an orally transmitted tradition, and not further investigated as a feature of music with psychological and physiological effects.

Not many studies have investigated the role of music as a means of implicitly storing and recalling information within commercial context. Yalch's 1991 empirical study on music as a mnemonic device in communicating advertising slogans, using both direct and indirect tests – albeit in a laboratory environment – concluded that music enhanced memory for advertising slogans when the slogans were incorporated into an advertisement in the form of a jingle or song; 'slogan information presented with music appears easier to retrieve than similar information presented without music (Yalch 1991:273).

In this paper the role of music in implicit learning and recall will be evaluated within advertising and during low-attention conditions. A series of experiments was carried out whereby musicians and non-musicians were exposed to an advert that was embedded into a group of other adverts, presented in the middle of an engaging TV program, thus replicating very naturalistic conditions. There were 4 audio conditions examined in an example advertisement: jingle, instrumental music, instrumental music with voice-over and environmental sounds with voice-over.

Hypotheses

The first part of the initial hypothesis is that music has a significant effect in reinforcing implicit learning and re-

call of visual and verbal information in a TV commercial. We also presume that there will be no difference in the memory performance between musician and non-musician viewers of the TV commercial since music acts as unconscious reinforcement of the learning and recall of information.

3. METHOD

3.1 Participants

Ninety-five participants, (39 males, 56 females) and aged 18-30 (mean age: 22.2), were recruited from a variety of undergraduate courses of Goldsmiths University of London and University of Westminster to participate in this task. In return they were offered free snacks and drinks. 45 of them were undergraduate students of Music Department at Goldsmiths College, all of whom were classically trained musicians; 50 were non-musicians, undergraduate students of the School of Computer Sciences and the School of Media, Art and Design, at the University of Westminster.

3.2 Materials

Target Material

The target material was an advert presented within a 3 min commercial break of a 20 min episode of the popular US TV sit-com "Friends". The break included 4 adverts, 2 well known to British audience, and 2 unfamiliar to the broad British audience.

The target material was a version of Nescafé advertising spot used in the current experiment was part of the *Open-Up* Nescafé global campaign in 1998 with commercials shot and broadcast over several months, all over the world¹. This version and the specific product were considered suitable for two reasons: firstly for the cultural, age, sex, race boundary-less profile it broadcasts on a broadly used product and secondly for being so shortly broadcast in UK – more specifically Northern Ireland – making it unlikely to be familiar to the participants. Familiarity was an important issue in the current experiment, since we are testing implicit learning. The participants confirmed their unfamiliarity with either the video or the audio part of the version used for the target stimulus. The inclusion of a second unfamiliar advert was to avoid the factor of 'surprise' and so that the participants' attention would not be attracted to the target stimulus. On the other hand, if all the adverts had been unfamiliar, it would not have been replicating natural conditions for the experiment, since it is not likely that a commercial break on TV would involve only new - unfamiliar adverts. Therefore the proportion of two familiar and two unfamiliar adverts seemed reasonable.

The target stimulus - Nescafé advert - was produced in four different audio versions:

1. Jingle: this was the original version in English language. The music was composed by Ilja Gort and the lyrics were written by Publicis. The jingle version in English was broadcast globally – no change in language or music was made depending on the country of broadcast.

2. Instrumental Music: this version had no verbal stimulus and it was reinforced only by instrumental music. The music was composed by Loukianos Kelaidonis in 1988 for a Nescafé TV advertisement broadcast in Greece only. It was chosen because it had similar rhythm to the original jingle, so it fitted easily to the pace of image editing of the advert, and it had been used for the same product and brand, thus, it was a musical piece approved by the 'creatives' of the advert for the same brand, to reinforce the video of the commercial. Therefore this music accomplished both semantic and formal congruency (Iwamiya 2002) with the image.

3. Music and Voice Over: this version contained the instrumental music used for the previous version, plus voice over. The words for the voiceover were chosen from the lyrics of the original jingle, accentuating on the slogan (*Open up*). The voice over was chosen to be materialized by female voice, since the original jingle was sung by woman as well. In this way we minimized frequency (Hz) differences in the verbal material between the original and the current version, in order to avoid differences in the degree of attention stimulation as it was indicated by literature in previous chapters.

4. Sound Effects and Voice Over: this version contained no music and functioned as control version. It contained sound effects and the same voice over as Version 3 so all the versions with verbal information had the same verbal context phonetically and semantically. The audio effects were environmental sounds or, according to Chion (1994:75) *ambient sounds* that corresponded to the sceneries showed in the advert; for example, when there was a scene with two people by the beach, the audio was the sound of waves, which matched the scene, both semantically and formally (Iwamiya 2002), as if it were the natural sound during filming.

Each version of the target stimulus was presented within the advert break of the same episode of 'Friends' in the same order and with the same distractor adverts.

Memory Test

A pen and paper test presented in a single package followed the viewing and included 3 sections. Section 1 tested the overall explicit memory for the episode of Friends (direct test). Section 2 tested implicit memory for the advert (indirect test). Section 3 tested explicit memory for the advert (direct test).

Section 1. Overall memory test: included 6 free-recall questions regarding the plot of the episode broadcast. In order to test participants' overall memory and attention the questions were carefully chosen so the answers would be

¹ Source: http://www.nescafe.com/main_nest.asp

retrieved from the beginning, middle and the end of each parts of the episode, before and after the commercial break

Section 2. Indirect Tests: Question 1 of Section 2 tested implicit memory performance in relation to verbal material associated with advert. Participants were given a list of twelve words, three relevant to the visual part of the advert (gold, child, sea) three relevant to the product (cup, drink, spoon) and six neutral both to the group of adverts broadcast and the show. They were asked to listen to a five-second fragment of the target stimulus music or effects - depending on the version of Nescafé they had seen earlier and without any voice over in all cases, - and tick the three words from the list that seemed to them more naturally associated with this music. They were asked their spontaneous reaction and had approximately fifteen seconds to complete this task. By the end of this task, they were asked if they had recognized the five-second audio version they had heard.

Question 2 of Section 2 tested implicit memory regarding the visual association with the advert. The subjects were given a list of 6 images of faces: one from each advert (4), one from the show they had seen (1), and one neutral (1) - taken from an advert that was not included in the show. The subjects had to listen to a five-second excerpt of the audio version of the target stimulus (same as in question 1 of section 2) they had seen and then choose one of the images, as spontaneously as possible. There were given no more than ten seconds to accomplish the task. By the end of the task, they were asked again if they had recognized the five-second audio version they had heard, and they had to tick their preferred answer.

Section 3 tested participants' explicit memory performance on the product, the brand and the slogan of the advertisement. Question 1 of Section 3, was a direct multiple-choice test informing the subjects that they were tested on a drink advert, and asked them to choose the right product in a list of 5 drinks (tea, coffee, soft drink, hot chocolate, wine). Question 2 of Section 3 was a direct, free-recall test asking them to identify the brand of the advertised product. Question 3 of Section 3 was a direct free-recall test asking them to identify the slogan of the commercial.

The questions were distributed on paper in a way that participants had to turn the page in order to complete different tasks for different sections.

4. RESULTS

4.1. The effect of Music Condition on Memory

4.1.1. Overall Memory

The first Section of the test, asked them to reply to 6 questions about the episode of 'Friends' they had watched (free recall test) and was designed to assess overall memory and attention. Figure 1 shows the mean scores of free recall for the Friends episode. It can be seen that irrespective of

the music conditions of the adverts, there was no clear difference between the groups. This was confirmed using a one-way ANOVA [$F(3, 94) = 1.024, p > 0.05$], suggesting that attention and explicit memory worked similarly in all 4 groups.

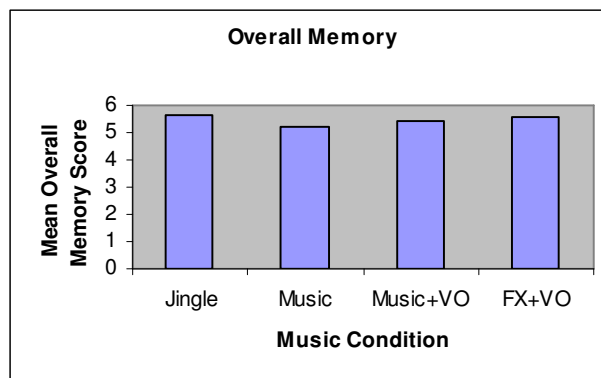


Figure 1. Mean score of answers of Section 1 for each music condition: 'Jingle', 'Music', M.VO='Music with Voice Over' FX.VO= 'Effects with Voiceover' (Control Group).

4.1.2. Implicit Memory – Indirect Tests

Question 1: Word Choice

Question 1 of Section 2 tested implicit memory in relation to words associated with the product or the advert by asking participants to select three words from a list of twelve after listening to a 5-second fragment of the relevant music. In Figure 2 we see that music condition played an important role in participants selecting words associated with the advert or the advertised product, suggesting a degree of unconscious recall. A one-way ANOVA showed that there was a significant main effect [$F(3, 94) = 4.495, p < 0.05$] of condition on number of target words selected. Post Hoc examination of the data, using an LSD test, showed that the 'Effects and Voice Over' version (control group) was significantly different to all other conditions ($p < 0.05$).

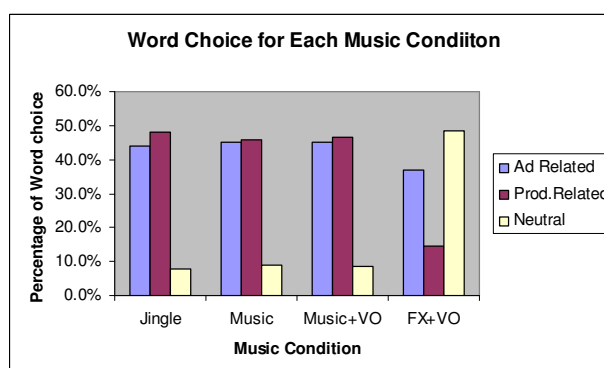


Figure 2. Percentages of word choice (Advert Related, Product Related and Neutral) for each condition.

In Figure 2 see that the control group were slightly less likely to choose words that were related to the advert (37%) compared to neutral words but were very unlikely to choose words related to the advertised product itself (14.6%). Unsurprisingly, a Chi-square test confirms that there is a significant difference in the pattern of responding [$\chi^2 = 68.747$; $p < 0.05$]. Therefore, each of the experimental groups was equally likely to select advert/product related words but the control group was more likely to select neutral words. This indicates that music is effective in reinforcing implicit learning and recall of verbal information during exposure to an unfamiliar advert in low attention conditions.

Following the selection of words, participants were asked whether they recognized the musical cue. We observe in Figure 3 that the highest score of recognition happened in Jingle condition and the lowest in the control group. A Chi-square test showed that the pattern of responding was significantly different across groups [$\chi^2 = 11.761$; $p < 0.05$].

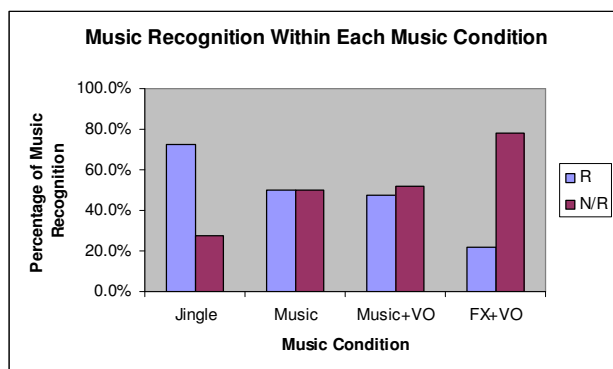


Figure 3. Percentages of music recognition within each of the 4 music conditions after Question 1 of Section 2. R: Recognized, N/R: Not recognized.

Question 2: Image Selection

Question 2 tested implicit memory in relation to image association with the advert by asking participants to select one image from a list of six after listening to the same as before 5-second fragment of the relevant music.

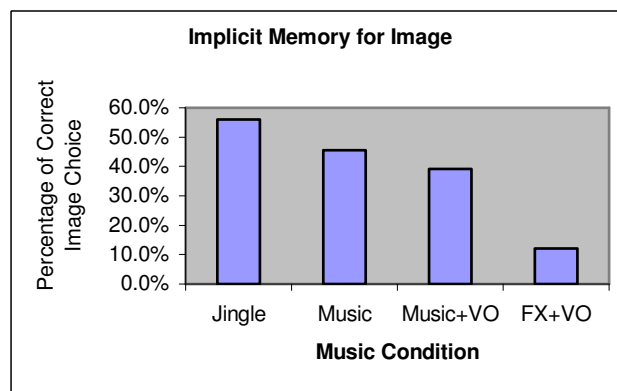


Figure 4. Percentages of the correct choice of image

Figure 4 shows that music condition does appear to affect participants' choice of image. A one-way ANOVA showed that the effect of condition on mean implicit memory score was indeed significant [$F(3, 94) = 4.035$, $p < 0.05$]. Post Hoc examination of the data, using an LSD test, showed that the participants in the FX+VO condition were significantly not likely to select the correct image than participants in all other conditions ($p < 0.05$), suggesting that there is an effect of music in creating successfully strong associations with the visual part of the advertisement, thus supporting the hypothesis

Following the selection of image, participants were asked whether they recognized the musical cue once more. As shown in Figure 5 we observe that there is an increase in the percentage of recognition, which occurs equally in each condition and that the pattern of responding was similar to their previous music recognition (see Figure 3). A Chi-square test showed once more that the pattern of responding was significantly different across groups [$\chi^2 = 12.203$; $p < 0.05$].

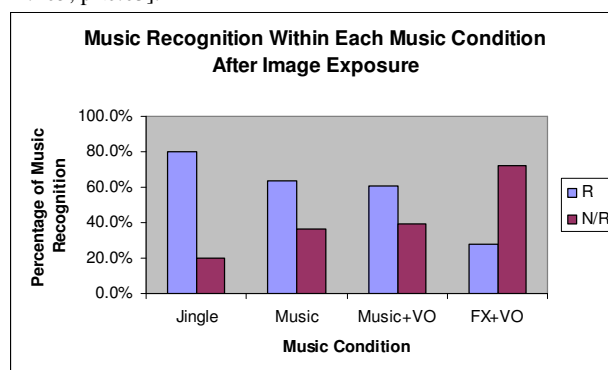


Figure 5. Percentages of music recognition within each of the 4 music conditions after Question 2 of Section 2. R: Recognized, N/R: Not recognized.

4.1.3. Explicit Memory – Direct Test

Question 1 of Section 3 tested explicit memory for product, by asking the participants to recollect the kind of drink that was advertised during the commercial break. As we see in Figure 6 all four groups had high percentages of

correct answers, showing that in explicit recollection, music has little or no effect on explicit recollection of the product. This was confirmed using a one-way ANOVA [$F(3, 94) = 1.185, p > 0.05$].

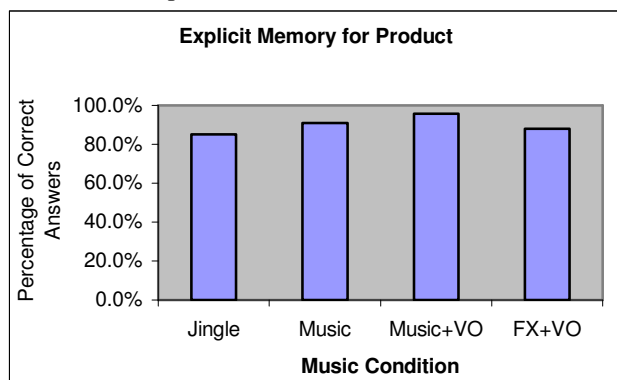


Figure 6. Percentages of the correct answers for Q1 of Section 3 for all 4 music conditions

Question 2 of Section 3 tested explicit memory for the brand name of the advertised product, using a free-recall test. Figure 7 shows that the percentage of right answers are equally high across groups. This indicates once more that during explicit recollection music has little or no effect. The latter was confirmed using a one-way ANOVA [$F(3, 94) = 0.686, p > 0.05$].

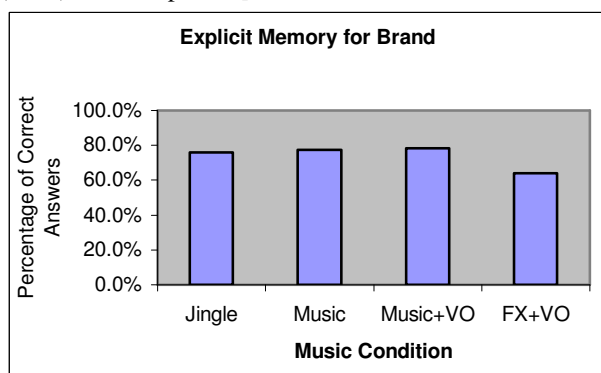


Figure 7. Percentages of the correct answers regarding Q.2 of Section 3 for all 4 music conditions.

Question 3 of Section 3 tested explicit memory for the slogan of the commercial, again using a free-recall test. As we see in Figure 8 the percentages of correct answers are not as high as in the two previous questions. Despite these apparent contrasts there was in fact not significant effect of music in this case as well, as confirmed by a one-way ANOVA [$F(3, 94) = 1.017, p > 0.05$].

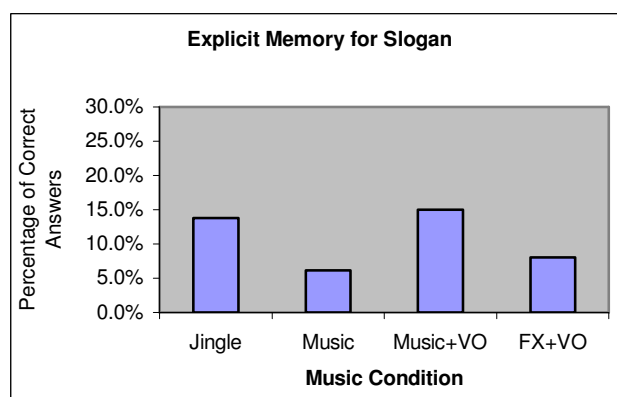


Figure 8. Percentages of the correct answers regarding Q.3 of Section 3 for all 4 music conditions.

4.2. The Effect of Previous Musical Training

The second part of the hypothesis suggested there would be no significant difference in implicit memory performance between musicians and non-musicians. In order to show whether the latter performance varies depending on the musical skills of the listener/ viewer, only the cases where music had an effect on general memory and implicit memory performance were analysed; the explicit memory performance tests are not included, since all the participants performed equally well.

There was no comparison between the two groups of musicians and non-musicians regarding explicit memory performance, since there was no indication in the results that music affected conscious elaboration of the information of the commercial; the latter was indicated by the closely high percentages of right answers for the direct tests between all 4 groups that watched the 4 different audio conditions of the same commercial. The overall memory results, although also explicit, were displayed at the beginning as a reference point of overall attention and memory for both groups.

4.2.1. Overall Memory

As we see in Figure 9 regarding Section 1, both groups of trained musicians and non-musicians have similar mean score of answers, indicating that their overall memory and attention was in the same level, before and after the commercial break across all music conditions. A two-way ANOVA indicated that there was a main effect of musical training, such that non-musicians performed better than musicians in this task [$F(1, 94) = 5.677, p < 0.05$]. There was no main effect of music condition on overall memory [$F(3, 94) = 1.024, p > 0.05$]. There was also no significant interaction between previous music expertise and music conditions on overall memory confirmed by a two-way ANOVA [$F(3, 94) = 0.499, p > 0.05$].

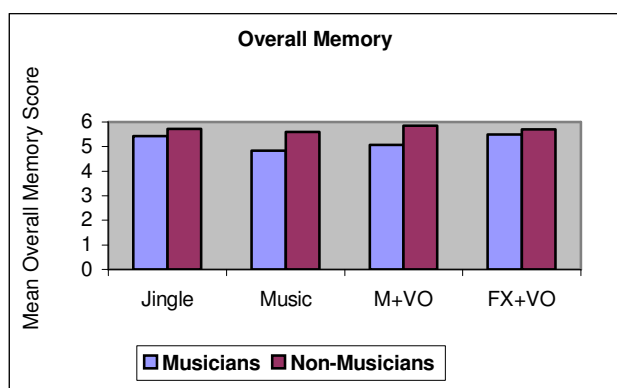


Figure 9. Mean score of answers of Section 1 for Musicians and Non-Musicians.

4.2.2. Implicit Memory – Indirect Tests

Question 1: Word Choice

Figure 10 shows the percentages of advert and product related word choice of both musicians and non-musicians across all four music conditions. We observe an analogous performance in each music condition between musicians and non-musicians. This was confirmed using a two-way ANOVA. In detail, the two-way ANOVA showed a highly significant main effect of music condition on implicit memory [$F(3, 94) = 4.495, p < 0.05$] and a non significant main effect of musical training on implicit memory [$F(1, 94) = 0.607, p > 0.05$]; also there was no significant effect in the interaction of music condition and previous musical training on the implicit memory performance [$F(3, 94) = 1.698, p > 0.05$].

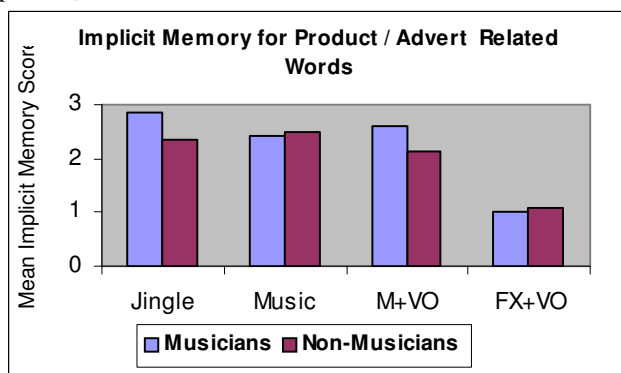


Figure 10. Mean score of answers of Q. 1 of Section 2 for advert and product related words for Musicians and Non-Musicians, for each music condition.

In contrast to the previous task, musical training seems to be important in recognition. A Chi-square test confirms that there is a significant difference in the overall pattern of responding [$\chi^2 = 4.786; p < 0.05$]. In detail, performing Chi-square test for the 'Jingle' condition it was confirmed that there is no significant difference in the pattern of responding between musicians and non musicians [$\chi^2 = 2.968; p > 0.05$]; the same was confirmed for the 'Music' condition [$\chi^2 = 0.733; p > 0.05$] and the control group [$\chi^2 = 0.6; p > 0.05$]. There was a significant difference in the pattern of

responding between musicians and non-musicians in the 'Music with Voice Over' condition [$\chi^2 = 7.740; p < 0.05$], which obviously influenced the overall pattern of responding between musicians and non musicians.

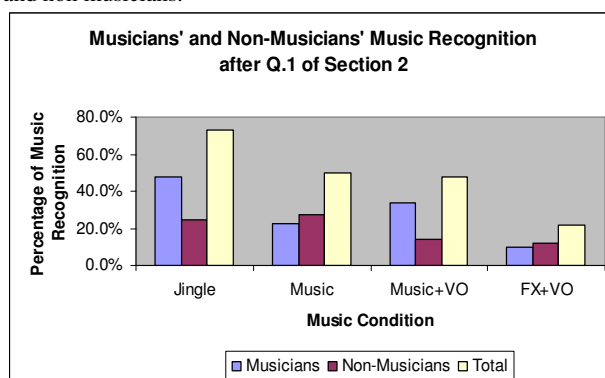


Figure 11. Percentages of musicians' and non-musicians' music recognition within each of the 4 music conditions after Question 1 of Section 2; the Total column is referring to the recognition column displayed in Figure 3.

Question 2: Image Selection

Figure 12 shows the percentage of the correct choice of image between musicians and non-musicians in all music conditions. There was no significant difference between musicians and non-musicians, as confirmed using a two-way ANOVA, which showed no main effect of musical training [$F(1, 94) = 2.879, p > 0.05$]. The two-way ANOVA also confirmed the significant effect of music condition in memory performance [$F(3, 94) = 4.035, p < 0.05$] as displayed earlier (see **Errore. L'origine riferimento non è stata trovata.**); in addition there was no significant interaction between music condition and previous musical training on implicit memory for image [$F(3, 94) = 0.792, p > 0.05$]. The above results indicate once more that music conditions affect implicit memory performance in association with visual elements of the commercial irrespectively of the listener's musical training.

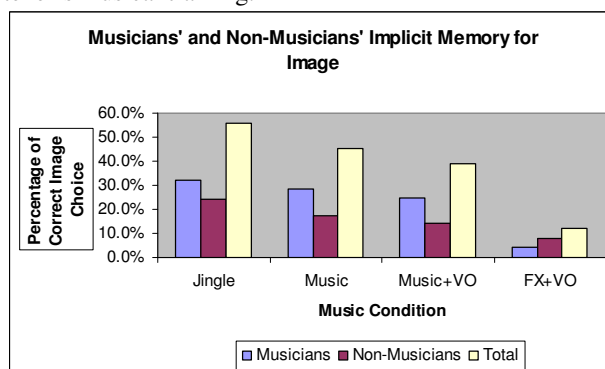


Figure 12. Percentages of musicians' and non-musicians' correct answers for Q.2 of Section 2; the Total column is referring to the percentages of recognition displayed in Figure 4.

This time there is no significant difference in the pattern of responding between musicians and non-musicians. This was confirmed using a Chi-square test [$\chi^2 = 2.845$; $p > 0.05$].

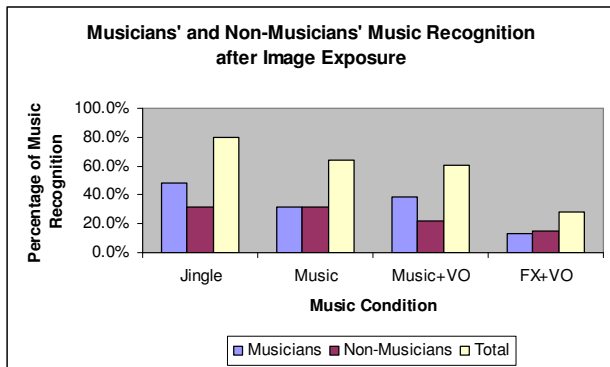


Figure 13. Percentages of musicians' and non-musicians' music recognition within each of the 4 music conditions after Question 2 of Section 2; the Total column is referring to the Recognition column of Figure 5.

5. DISCUSSION

According to the findings, music is effective in creating strong associations with the features of the advert, and facilitates implicit learning and recall, supporting the first part of the hypothesis. Regarding the effect of previous music training on memory, there was no significant difference in the memory performance of both musicians and non-musicians, supporting the second part of the hypothesis. The results indicate that when there is no conscious elaboration but just implicit perception, learning and recall non-musically trained subjects would perform equally well.

An isolated phenomenon of musicians' better implicit memory performance observed for music recognition after word choice in the 'Music and Voice Over' condition, should not be considered indicative of the memory and music recognition between musicians and non-musicians. In all other music conditions, there was no significant difference in the pattern of responding between those two groups.

In general, the memory performance of both musicians and non-musicians was similar for verbal and visual stimuli of the commercial in association with music. Memory performance was mostly influenced on the musical reinforcement of the advert and not on the particular musical expertise of the participants, supporting the initial hypothesis. The above phenomenon was further confirmed by the excellent explicit memory performance of all participants for the product, the brand and the slogan of the commercial.

The overall conclusion of this current experiment is that music is essential in reinforcing the perception of the information of the commercial, without viewer's conscious effort; there is also no requirement for particular musical

skills for the viewer / consumer in order for the success of the music function to be guaranteed.

6. REFERENCES

- Anderson D.R. & Lorch E.P. (1983). Looking at television: action or reaction? In J. Bryant and D.R. Anderson (Eds.), *Children's understanding of television: research on attention and comprehension* (1-34). London: Academic Press.
- Blacking J. (1995). *Venda Children's Songs: Study in Ethnomusicological Analysis*. Chicago: University of Chicago Press.
- Boltz M.G., Schulkind M., & Kantra S., (1991). Effects of background music on the remembering of filmed events. *Memory and Cognition*, Vol. 19 (6), 593-606.
- Chion M. (1994). *Audio-Vision: Sound on Screen*. Edited and translated in English by C. Gorbman, New York: Columbia University Press.
- Halpern A.R. & O'Connor M.G. (2000). Implicit memory for music in Alzheimer's Disease. *Neuropsychology*, Vol. 14 (3), 391-397.
- Iwamiya S. (2002). Multimodal communication by music and motion picture. In C. Stevens, D. Burnham, G. McPherson, E. Schubert, J. Renwick (Eds) *Proceedings of the 7th International Conference on Music Perception and Cognition*, Adelaide: Causal Productions, 3-8.
- Kalinak K. (1992). *Settling the Score*. Madison, WI: University of Wisconsin Press.
- Kellaris J.J., Cox A. & Cox D. (1993). The Effect of Background Music on Ad Processing: A Contingency Explanation. *Journal of Marketing*, Vol. 57 (4), 114-125.
- Krugman D.M., Cameron G.T. & McKearney White C. (1995). Visual attention to programming and commercials: the use of in-home observations. *Journal of Advertising*, Vol. 24 (1) 1-12.
- Minks A. (2002). From children's song to expressive practices: old and new directions in the ethnomusicological study of children. *Ethnomusicology*, Vol. 46 (3), 379-408.
- Morgan F.W. & Stoltman J.J. (2002). Television advertising disclosures: an empirical assessment. *Journal of Business and Psychology*, Vol. 16 (4) 515-535.
- Pham T.N. & Vanhuele M. (1997). Analyzing the memory impact of advertising fragments. *Marketing Letters*, Vol. 8 (4), 407-417.
- Santacreu O. & Alaminos A. (2004). Let the music play the feelings: The performative effect of music in advertising. In R. Parncutt, A. Kessler and F. Zimmer (Editors) *Proceedings of the Conference on Interdisciplinary Musicology*

(CIM04) Graz / Austria, 15-18 April 2004. Obtained electronically via <http://gewi.uni-graz.at/~cim04/> on 24/10/04.

Shapiro S. & Shanker K. (2001). Memory – based measures for assessing advertising effects: a comparison of explicit and implicit memory effects. *Journal of Advertising*, Vol. 30 (3), 1-14.

Stewart D.W. (1998). Effects of using a nonverbal (musical) cue on recall and playback of television advertising: implications for advertising tracking. *Journal of Business Research*, Vol. 42, 39-51.

Tillmann B., Bharucha J. & Bigand E. (2000). Implicit learning of tonality: a self-organized approach. *Psychological Review*, Vol. 107, 885-913.

Tillmann B. & McAdams S. (2004). Implicit learning of musical timbre sequences: statistical regularities confronted with acoustical (dis)similarities. *Journal of Experimental Psychology*, Vol. 30 (5), 1131-1142.

Weilbacher W.M. (2003). How advertising affects consumers. *Journal of Advertising Research*, Vol. 43 (2), 230-234.

Yalch R.F. (1991): Memory in a Jingle Jungle: Music as a mnemonic device in communicating advertising slogan. *Journal of Applied Psychology*, Vol. 76 (2), 268-275.

Zaltman G. (2003). *How Customers Think*. Boston, Massachusetts: Harvard Business School Press.