The Role of Sound in Brand Perception: a MixedMethodology Approach

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The Role of Sound in Brand Perception: a Mixed-Methodology Approach

Abstract:

Sonic branding is one of the most promising marketing communication tools. The effectiveness of audio advertising campaigns is determined by the ability of sound elements to form a positive brand image in the consumers' minds. Our study aimed to measure the perception of audio advertising stimuli based on a combination of psychophysiological and sociological methods. The analysis of EEG data and subjective responses showed that a high level of experienced emotions is associated with interest in the advertised brand. We also found evidence on the role of jingles in forming positive brand associations.

Keywords: sonic branding, perception of audio content, neuromarketing tools

1. Introduction

The use of sound elements is considered as one of the most promising directions for the development of branding and marketing communications (Jackson, 2003; Gustafsson, 2019). The process of creating and managing a brand using audio content is called sonic branding or audio branding (Jackson, 2003, Haaksman et al., 2017, Herzog et al. 2020). Sonic branding implies the use of various sound elements (including jingles, sound logos, etc.) in brand promotion.

The interest in sonic branding is justified from a practical point of view. Current data on the European advertising market indicate that radio advertising is the most stable of the traditional channels of marketing communications, while audio advertising in digital services is the fastest-growing segment of the digital advertising market (Knapp, 2019).

2. Literature Review

With an increase in information noise, people become stricter to the consumed content, so improperly designed audio advertising may go unnoticed (Jackson, 2003). Marketers face the daunting task of developing audio content that is both recognizable, memorable, and positively perceived by the target audience (Gustafsson, 2015). One of the tools to solve this problem can be jingles, which are short sound bites that act as brand identifiers (Haaksman F. et al., 2017).

Jingles, sound logos, and other sonic branding elements can be mnemonically effective for linking a tagline with a brand in the absence of other advertising components that may resemble a brand (Yalch, 1991). However, there is a piece of evidence that music can distract from the cognitive processing of advertising information (Park, Young, 1986). In this regard, the use of a sonic branding should be carefully coordinated with the advertising message itself. Distracting and inappropriate sound can reduce the effectiveness of the advertising message (Chiranjeev, Leuthesser, Suri, 2007).

When developing a sonic branding strategy, it is important to understand the attributes of the brand, to clearly express these attributes through the jingle (Sound and Brand ..., 1999), and to work out the design elements of the jingle following the features of the brand (Jackson, 2003). Such elements, for example, are the tonality, structure, and length of the jingle. The emotional tone of the jingle is determined by the tonality (major or minor) (Kellaris, Kent, 1993), as well as its structure: an ascending sequence of sounds increases the emotional intensity of a musical fragment, while a descending sequence of sounds, on the contrary, calms (Bruner, Gordon, 1990). Jingles with a zigzag structure, such as Intel's, are more difficult to perceive and remember. However, they are associated with novelty, and therefore are relevant for high-tech companies (Krishnan, Vijaykumar, Kellaris, 2010).

Neuromarketing studies of the perception of sonic branding elements have not yet been carried out, although some results of the aspects of sound perception in advertising were studied. For example, one of the published studies based on eye-tracking and recorded facial expressions (as well as the galvanic skin response, GSR) revealed that the version of video advertising with musical accompaniment caused more emotions among the respondents. At the same time, the respondents watched both versions of the advertisement with the same involvement level (Cuesta, Martinez-Martinez, Nino, 2018).

3. Research design and data

We conducted a mixed-methodology empirical study to measure the perception of audio advertising stimuli. Respondents listened to advertising audio clips in the neuromarketing laboratory. They also filled out two questionnaires (before-study and after-study questionnaires). In the neuromarketing part of the study, quantitative methods of data

collection were used, like measuring the bioelectrical activity of the brain using electroencephalography (EEG) and evoked potentials. In the sociological part, respondents answered a questionnaire with several questions measuring the subjective memorability of the audio clips, as well as free associations with the audio clips and brands.

The study used promotional audio clips of nine international and Russian technology companies as stimulus materials. Each of the audio clips included the brand's jingle.

The total number of study participants was equal to 18. In the neuromarketing studies, the studied subgroups are determined before the actual start of the study based on several behavioural or demographic criteria relevant to the purpose of the study. Therefore, when conducting a neuromarketing study, there is no need for a sample representative of the entire population. (Hensel, 2017) Also, random noise when measuring brain activity during a neuromarketing study is not as high as when answering questions from a traditional study, which again justifies the sufficiency of small samples (Hensel, 2017). One of the neuromarketing studies on the level of involvement and emotional impact of advertising with musical accompaniment was conducted on a sample of 19 respondents (Ubaldo, Martínez-Martínez, Niño, 2018). In general, approximately 15-20 respondents are needed to ensure the internal validity of the neuromarketing study (Bercea, 2013).

4. Key results and findings

We conducted neuromarketing testing to obtain results indicating differences in the perception of audio clips. Neuromarketing testing included the application of two methods: method of evoked potentials and electroencephalography.

4.1 Method of evoked potentials

The analysis of brain bioelectrical activity of all respondents (example in Figure 1) did not allow us to detect any evoked potentials that potentially can be connected with the brain's reaction to external stimuli.

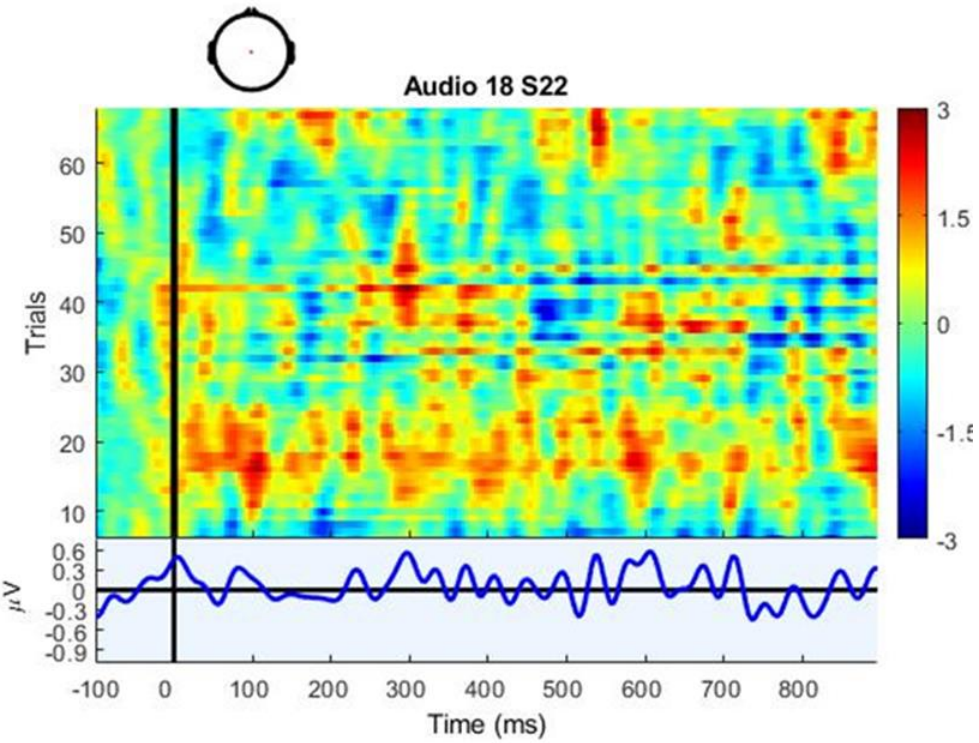

Figure 1. Brain bioelectrical activity of one of the respondents when listening to a Sony brand audio clip

Although the evoked potentials were not detected in any of the measurements, the obtained result does not mean the audio clips are not of interest. A more likely explanation is the impossibility of obtaining accurate estimations of the perception of sound advertising stimulus materials using the method of evoked potentials, which gives good results in assessing the perception of video advertising (Vecchiato et al., 2011, Sheresheva et al. 2015).

4.2 Electroencephalography

We also apply the electroencephalography method (EEG) to analyze recorded psychophysiological data.

Posteriorly dominant alpha rhythm occurs during relaxed and alert stages (Britton, 2016), when the subject is quietly resting (Kirstein, 2007). In this research, the power of alpha rhythm was used as a metric of involvement and the level of interest to the target advertising message: higher alpha rhythm severity is associated with loss of attention and relaxation when lower alpha rhythm severity is associated with involvement and interest in stimuli.

After listening to each of the audio clips, respondents were asked to fill out a short questionnaire on the subjective perception of stimulus material. Respondents were asked to rate each of the advertising audio clips they heard on a ten-point scale according to four parameters. Further, the "low" level corresponds to a rating of 1-2, the "mid" level lies in the range from 3 to 7, the "high" level lies in the range from 8 to 10.

Respondents who rated the positive emotions received from listening to advertising audio clips low (1-2 on a ten-point scale) have an average more pronounced alpha rhythm, which indicates a loss of interest in the audio clip. In contrast, among respondents who highly evaluated the positive emotions from listening to audio clips (8-10 on a ten-point scale), there was no loss of interest due to the weak intensity of the alpha rhythm at a 0.1% significance level (Figure 2).

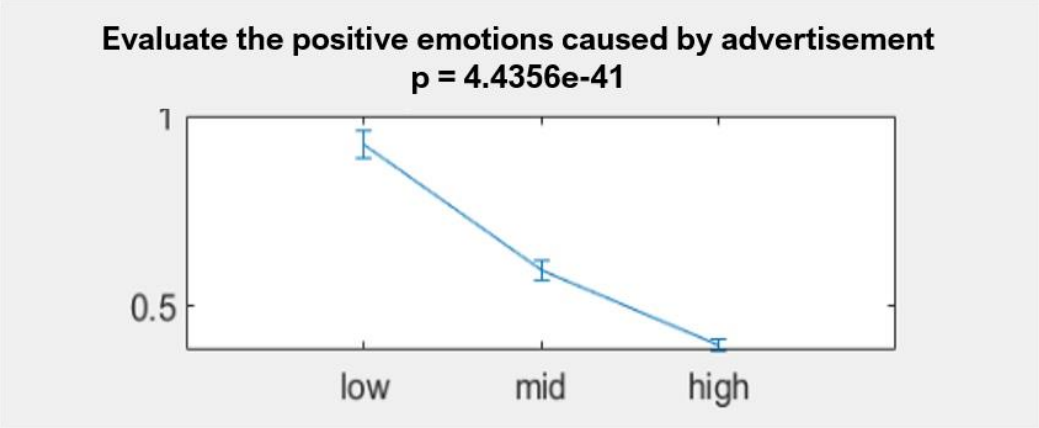

Figure 2. The average severity of alpha rhythm in different categories of respondents when answering the question about positive emotions caused by advertising

One of the questions of the questionnaire had a negative connotation and asked respondents to appreciate evaluate the negative emotions that advertising causes. Respondents who noted experiencing strong negative emotions (8-10 on a ten-point scale) also had a low alpha rhythm. Thus, even experienced strong negative emotions did not lead to a loss of interest in this study at a 0.1% significance level (Figure 3).

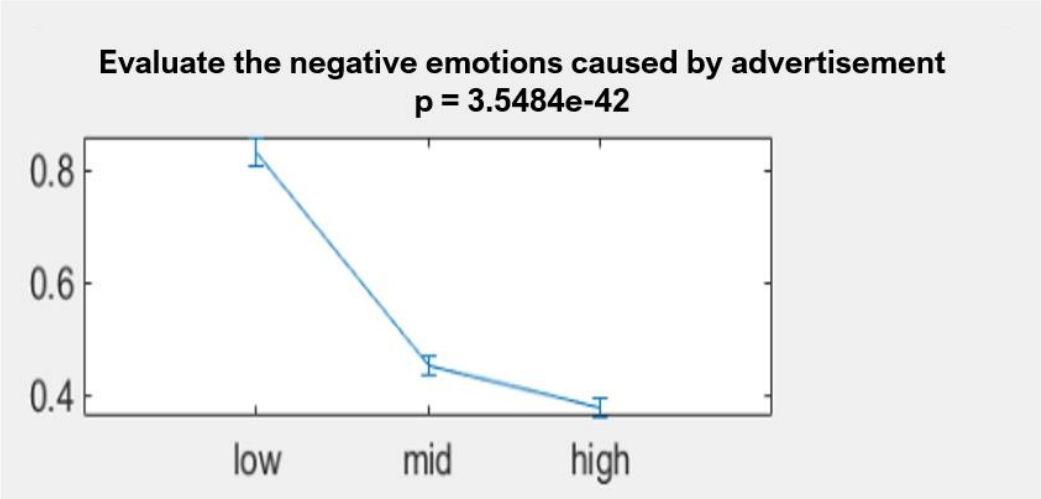

Figure 3. The average severity of alpha rhythm in different categories of respondents when answering the question about negative emotions caused by advertising

Respondents also had a pronounced alpha rhythm with a low interest in the advertised brand, that is, low interest in the brand is associated with a low interest in advertising audio clips at a 0.1% significance level (Figure 4).

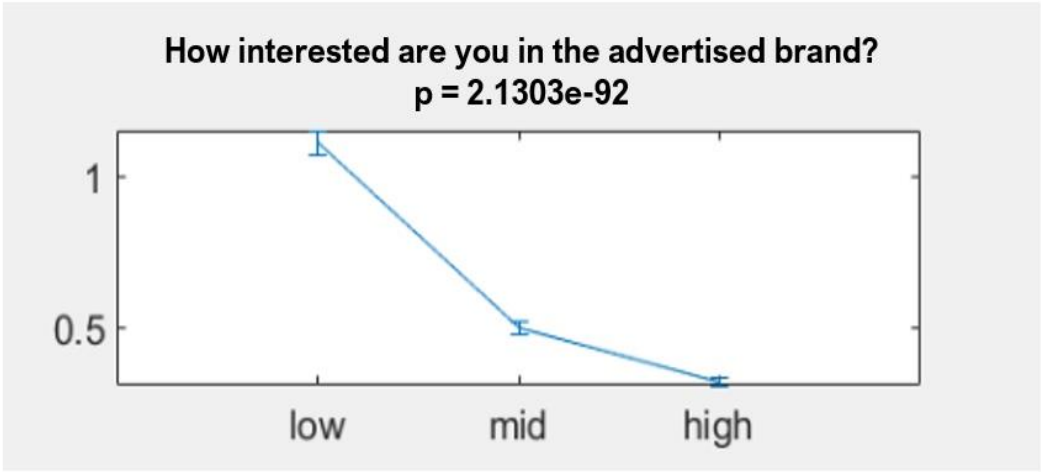

Figure 4. The average severity of alpha rhythm in different categories of respondents when answering the question about interest in the advertised brand

Figure 5 reflects the relationship between the average level of alpha rhythm and respondents' assessment of the length of advertising audio clips. The graph of this connection practically mirrors the graph in Figure 5: the length of the video is associated with a high alpha rhythm and a decrease in interest (at a 0.1% significance level).

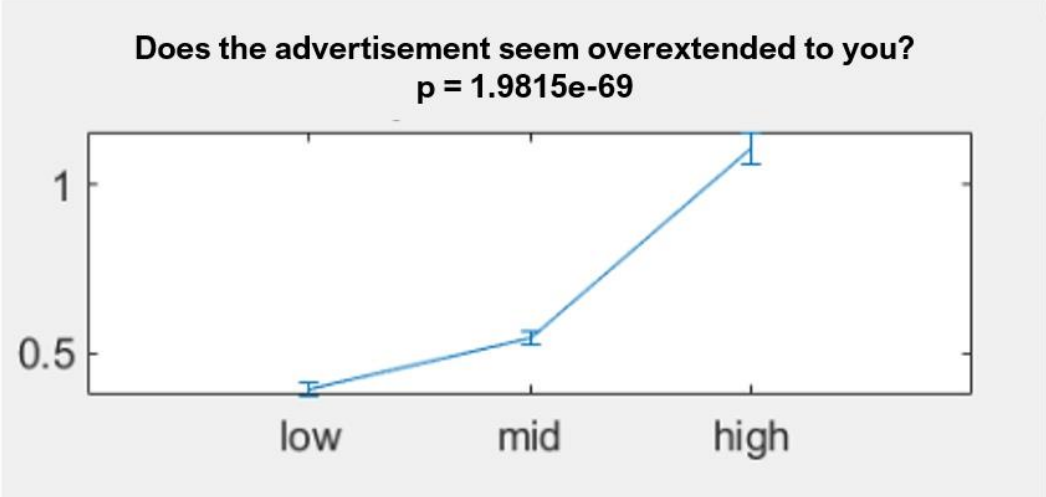

Figure 5. The average severity of alpha rhythm in different categories of respondents when answering the question about overextended length of advertising

Thus, it can be noted that a high level of experienced emotions (positive and negative) when listening to audio clips is associated with increased interest, while too long from the respondents' point of view audio clips are associated with loss of interest.

4.3 Survey data

The questionnaire results are presented in Table 1. In our study, we focus on two respondents' attitudes towards audio clips: subjective memorability and free associations.

Three days after the study respondents were asked to list all memorized brands of audio advertisement clips (as an open question without any prompts). Then they were also asked to choose memorized brands from the list of brands, which included also some brands not used in the research (as a multiple-choice question where brands were used as prompts).

We also separately analyzed positive and negative associations with a jingle and with a brand. Positive associations included such features as "modern", "attractive", "clear" etc. Examples of negative associations were "old", "low quality", "elusive" etc.

Brand advertised in an audio clip	**Subjective memorability (N=18)**		**Free associations (N=18)**			
	Without a prompt	**With a prompt**	**With a jingle**		**With a brand**	
			Positive	**Negative**	**Positive**	**Negative**
AUDI	5	7	6	6	17	0
BMW	6	11	9	5	15	2
Intel	4	10	14	0	15	1
LG	6	9	13	2	11	3
Mazda	8	14	8	6	11	5
Megafon	2	7	9	5	10	5
Samsung	4	10	10	3	15	0
Sony	1	8	7	2	16	1
Svyaznoy	1	12	7	3	7	7

Table 1. Results of the after-study questionnaire analysis (total number of respondents N=18)

The Mazda audio clip, rated as the most boring and overextended, nevertheless has the greatest subjective memorability (after the study, 8 respondents mentioned it without a prompt it, 14 respondents with a prompt). Mazda jingle is the leader in the number of negative associations (6 out of 18), but this is not an obstacle to remembering the jingle: a test for spontaneous knowledge showed that more than half of respondents recognized Mazda jingle (10 out of 18).

The free association test showed that for the Intel brand there is the greatest match between the number of positive free associations with jingle and brand (14 and 16, respectively). Besides, the Intel jingle, which has a zigzag structure (Figure 6), was more often described as technical, technological (6 respondents), electronic (2 respondents), and digital (1 respondent). Jingle with the second greatest number of positive associations (13), the LG jingle, also has a zigzag structure.

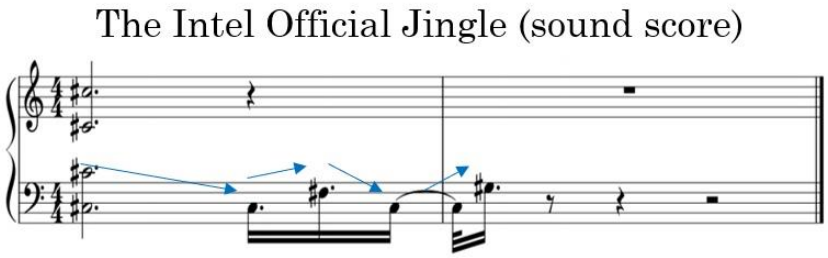

Figure 6. Zigzag structure of the Intel jingle

5. Implications and further researches

Our study revealed some important implications for both researchers and brand managers.

From the methodological point of view, our results provide useful insights on the applicability of some well-spread neuromarketing and sociological methods in audio branding studies. For instance, we found that method of evoked potentials has some restrictions as a measure of sound stimuli perception, while alpha rhythm analysis based on EEG-recorded data could be very useful for this purpose.

Our recommendations for brand managers include two major ideas. On the one hand, we found some evidence that sonic branding elements can potentially provoke positive associations with a brand. On the other hand, the mechanisms of the impact of sound stimuli on consumer perception remain largely unexplored, which determines the importance of investments in the development of this area of research.

One of the most promising directions of further researches is a more detailed psychophysiological analysis of emotions linked to sonic branding elements. This future analysis can focus on the activity in the ventromedial prefrontal cortex (leads F3, F4) induced by emotional audio stimuli (Bercea, 2012). Emotional valence can be estimated by analyzing the frontal interhemispheric asymmetry. The presence of alpha rhythm (8-13 Hz) in the left frontal lobe (F3) will indicate positive emotions experienced by the respondent in response to the presentation of the stimulus (Morin, 2011). If activity is observed in the right frontal lobe, then this will indicate a surge in negative emotions.

In general, neuromarketing studies of audio stimuli perception are still less developed than studies of visual stimuli. Thus, many stakeholders (for example, sonic branding agencies, radio stations, streaming services) cannot get an assessment of objective psychophysiological reactions to their content. The development and testing of neuromarketing methods for evaluating audio content can solve this problem, and at the same time, promote the development of a new promising research area.

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