

# MEASURING AUDIENCE RESPONSES TOWARDS THE MUSICAL BACKGROUND IN A COMMERCIAL

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## **Abstract**

The selection of the audio track; the best timing to overlay the logo; the overall duration... all these issues affect the effectiveness of a commercial. Together with the media studies faculty of a Chinese University, we explored the impact of different decisions when creating on the engagement of potential consumers and on their willingness to buy the product. Since traditional methods, surveys or eye tracking, have severe limitations, we used data gathered from physiological sensor. In particular, we used our own Galvanic Skin Response (GSR) sensors, which have been successfully used before in other scenarios like theatre going and education. Our results show that our GSR technology can play an important role for the advertisement community. In contrast with surveys, using GSR data relevant results can be obtained even for small number of participants and the audience-watching experience is more accurately visualized. This enables advertisers to, for example, be able to decide when the logo should appear.

## **Author Keywords**

Musical effect; GSR sensors; advertising videos; audience engagement;

## **ACM Classification Keywords**

H.5.m. Information interfaces and presentation (e.g., HCI):

## Introduction

Physiological measurement has been widely applied on audience research, but most of studies were done for video gaming [1][2], or to define audience emotions [3][4], and there are no studies applied on a commercial by using physiological sensors. Although eye tracking methods have been used to observe audience interests in advertising videos (e.g., cigarette) [5], but this method does not suitable to monitor audience engagement towards the musical background of a commercial.



**Figure 1:** The whole view of the experiment

For this study, we collaborated with the media and communication faculty, focusing on advertising studies, at one Chinese university (Figure 1). The goal was to use GSR sensors instead of surveys for measuring musical effect on audience when consuming videos. Although GSR sensors have been proved as a valid

approach for measuring audience engagement[6], they have not been applied on commercials.

## Method

The members of the Chinese University did the selection process for the media material. After a carefully executed process, they decided to go for the commercial from Starbucks, called "What Do You Want 5 Minutes Of," which already used its own musical background. Since our objective was to test the musical effect, we replaced the original music by two different types of audio background: the up-tempo music (audio B) versus the ballad music (audio C). Neither one of the audio was the original one.

We presented the same video under three conditions (muted audio, audio B and audio C) to the same group users. There was half an hour break after each video. The purpose of this design was to prevent the content of the commercial and ordering sequence to affect the results. We first presented the test video with muted music (A) to all users, so that we could compare the results with two different scenarios (B&C).

We invited participants from one Chinese University, who are majoring in Advertising and Journalism & Communication. 8 females (Mean age: = 21, SD = 2.08) and 7 males (Mean age = 21.17, SD = 1.47) attended the experiment.



**Figure 2:** The sensors used in the experiment

We built 15 GSR sensor nodes (sample rate: 50Hz) for the experiment (Figure 2). Each sensor node was deployed on a compact wireless board with an Atmel 8 bit RISC microprocessor, where a RF 12 module was used for wireless communication. Each user wore a GSR sensor at their left palm during videos watching. All the sensors have been extensively tested before, and they have been applied in the sceneries of distance learning, and theater performances.

## **Results**

### *Subjective Results*

Surveys' results can help us understand how audience responded to the three videos, although we only found significant differences (e.g., likeness and understanding) between the video A and the other two videos. These are no surprising results as the video A was muted. Furthermore, due to small number of participants, the results from surveys could hardly generate significant outcomes. In order to have a statistical effect, studies by using surveys require to have large number of participants.

### *GSR Responses*

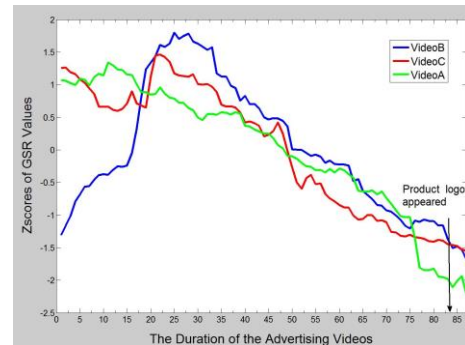
The GSR responses shows the different arousal levels invoked between the video B (normalized value: 24.8) and video C (normalized value: -52.8), even though small number of participants were involved. Furthermore, the analysis of variance (ANOVA) results display a significant difference on arousal levels between these two videos:  $F(1, 86) = 364, p < 0.01, \eta^2 = 0.81$ . The reason is that the GSR sensors contributed to rich readings linked to the duration of the videos, which are robust for the test of ANOVA.

### *Product Logo*

Using the GSR data distribution was quite easy to unfold the audience watching experience of the three videos. The significant correlations show that similar data distribution (or curves) between GSR responses can be found (Figure 3). To our surprise, the correlation between video A and video B is very strong: 0.92\*\*. However, due to the different experimental settings (the video A was muted), we can consider that the users had different watching experiences during these two videos. During video A, users were more neutral while users watching video C enjoyed it and were relaxed listening to the ballad. However, we found that users' attention was warned after the first 25 seconds in the two test videos. In particular, the company logo was displayed at the end of the videos, when audience attention was dropped at the rough lowest level. This gave a clear sign to the designers:

1. The length of the videos should probably be decreased for the target population (students in China).
2. It is not wise to put the product logo at the end of the video (as it is currently), since the target

population might have already changed the channel by that time.



**Figure 3:** The GSR data distributions in the three videos

### Conclusion

In this paper, we conducted a user experiment in which we used GSR sensors to measure audience engagement while users watched commercials, and we found out that GSR readings provide better performance for differentiating the effect of two different audio backgrounds for the videos. Furthermore, GSR sensors data can be better used for understanding the responses of the users during the performance. Unlike surveys, our methodology can be used for determining the best timing for placing the logo of the company or for identifying adequate length depending on the user group. The GSR sensors can be used to accurately determine the audience response, but professionals should take the final decision based on the target audience, target medium, and such. We are still in the

early stage, and we require extra-dedicated experiments to obtain more sensor data of audience.

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