The term arousal and its synonyms alertness, activation, and excitation describe a process that energizes behavior and affects non-exclusively cognitive performance (Ragazzoni 1998). Arousal indicates the level of activation associated with an emotional response, and could be measured on a continuum with very excited at one extreme to calm at the other end (Bolls, Lang and Potter 2001). From the consumer behavior perspective, few studies had addressed the effect of arousal on different online aspects, including Internet shopping experience, consumer’s attitudes, and consumer’s site evaluation and purchase intention.

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The Effect of Arousal on Brand Memory in Online Advergames: A Multi-Method Approach
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EXTENDED ABSTRACT

The term arousal and its synonyms alertness, activation, and excitement describe a process that energizes behavior and affects non-exclusively cognitive performance (Ragazzoni 1998). Arousal indicates the level of activation associated with an emotional response, and could be measured on a continuum with very exited at one extreme to calm at the other end (Bolls, Lang and Potter 2001). From the consumer behavior perspective, few studies had addressed the effect of arousal on different online aspects, including Internet shopping experience, consumer’s attitudes, and consumer’s site evaluation and purchase intention.

Advergaming is the delivery of advertising messages through electronic games. Extensive exposure to the brands is a distinctive feature offered by this technique. No previous study has addressed the effect of arousal in the context of advergaming, which is usually characterized by emotional intensity. Moreover, no previous study has applied a multi-method approach to address this issue. Our study aimed to fill this gap by applying a multi-method approach to measure the effect of arousal on short-term brand memory in the context of online advergaming. The study procedures used three measures to overcome the possible drawbacks inherent to each approach. Specifically, self-reported, behavioral and physiological (heart rate) measures were used.

Consistent with Tavassoli’s (1995) findings, two studies found a negative effect of arousal on short-term ad recall in the Super Bowl context. Among the Pavelchak, Antil, and Munch (1988) findings, both pleasure and arousal were necessary dimensions to characterize the effects of emotion on ad recall. However, arousal demonstrated a higher impact on recall. Newell, Henderson, and Wu (2001) concluded that programs evoking strong emotional reactions inhibit ad and brand recall. Emotional intensity emphasizes arousal, which narrows attention to the stimuli responsible for the emotional experience and subsequently inhibits recall of other peripheral stimuli. One additional study found that a negative relationship between arousal and recognition of sports sponsorship stimuli. Pham (1992) study concluded that arousal and involvement account for a large proportion of recognition of sports sponsorship variance. Thus, the following hypotheses were posited:

H1a: Lower arousal levels correspond to greater brand recall scores.
H1b: Lower arousal levels correspond to greater brand recognition scores.

The data collection procedure was conducted in an adapted lab with a computer and an electrocardiogram (hereafter, EKG) machine. The experimental stimuli consisted of designated exposure to selected sports advergames from nabiscoworld.com. Thirty individuals voluntarily participated in the experiment. All participants were highly educated, from different cultural backgrounds (Chilean, Chinese, Korean, Lebanese, Malaysian, Mexican, Turkish and American).

Physiological data were recorded during exposure to brand placements using an EKG machine, observed behaviors were recorded, and self-reported data were measured via a post-exposure paper-and-pencil questionnaire. Two electrodes were attached to the right and left wrists, two electrodes to the right and left ankles, and six electrodes across the chest of the participant. The participants were provided with instructions for the advergames in their native language. The participants were instructed to play each game for 5 minutes. During a total of 15 minutes of playing, the participants were exposed to the brands several times. Simultaneously, a complete 12-lead EKG was recorded on EKG paper at specific intervals for each game. Specifically, EKGs were recorded at 15 seconds after starting each game and at 2 minutes 30 seconds of gameplay. In addition, the researcher recorded the facial, verbal and/or corporal expression of the participant. Following the gameplay, participants completed the questionnaires including both recall and recognition tests.

Regression analyses were conducted to test the hypotheses. The results supported the claim that arousal has a negative effect on recall memory in the advergaming context. While there was effect of arousal on recall test (Adjusted R²= .217), there was no effect for the recognition test (Adjusted R²=.040). This indicated that the arousal measures only explained recall tests and not recognition tests results.

The most robust finding was the effect of physiological measures on recall tests. The impact of the heart rate scores was the most salient. Results of the experiment demonstrated the importance of including physiological measures when assessing arousal in online advergames. Results also indicated that the physiological measures contributed more to the memory results followed by the self-reported measures, and the behavioral measures contributed very little.

Our multi-method approach revealed a conflict between the positive relationship between self-reported with memory and negative relationships of both physiological and behavioral measures with memory. Although the behavioral measures contributed less to the explanation of brand memory, they occurred in the same direction of the physiological measures. This finding was consistent with the position regarding the suggested direct link between facial expressions and physiology. The conflict between the relationships might suggest that since heart rate measures assess phasic arousal, self-reported measures of arousal might measure a different aspect of arousal (i.e. tonic arousal). Alternatively, it is important to consider the time-lag of the self-reported measures versus the simultaneous physiological and behavioral recording to the interaction of the stimuli.

As a laboratory experiment, the study was susceptible to some limitations. The games selected for the study promote global brands of an international corporation with considerable time in the market. Therefore, some respondents might have retrieved brand information based on past experience rather than based on the exposure in the advergame. Despite the limitations, this study reinforces the need to triangulate measures when dealing with the effect of arousal on memory in the online context, in order to provide guidelines into an effective use of emotional measures and their effect in brand memory among the diverse Internet audience.

REFERENCES


