

# Grabbing attention while reading website pages: the influence of verbal emotional cues in advertising

P Ferreira<sup>1,2</sup>, P Rita<sup>2</sup>, D Morais<sup>1</sup>, P Rosa<sup>1,2</sup>, J Oliveira<sup>1</sup>, P Gamito<sup>1</sup>, N. Santos<sup>1</sup>, F. Soares<sup>1</sup> & C. Sottomayor<sup>1</sup>.

<sup>1</sup>Universidade Lusófona de Humanidades e Tecnologias,

Campo Grande 376, Lisbon, PORTUGAL

<sup>2</sup> Lisbon University Institute

Av. das Forças Armadas 26, Lisbon, PORTUGAL

<sup>1</sup>paulo.ferreira@ulusofona.pt

## ABSTRACT

The increasing use of the World Wide Web has promised a huge advertising platform for marketers. Investment in online advertising is growing and is expected to overcome traditional media. However, recent studies have reported that users avoid looking at advertising displayed on the World Wide Web. This study aimed at examining the impact of verbal emotional cues (negative/neutral/positive) to capture attention on website's advertising areas through an eye tracker system. The results revealed significant statistical differences between fixations to negative, positive words and neutral words. Significant differences between the number of fixations and recognition of the target words were found only for the negative valence words. We conclude that negative emotional words could play a major role on user attention to advertising.

## 1 - INTRODUCTION

Internet users are nearly 2 billion and this number has increased 400% between 2000-2010 (Internet World Stats, 2010). Having the attention of consumers on the World Wide Web is becoming particularly important taking in account the number of users and the potential reach of messages. Regarding online advertisement, a Comscore report released in May 2010 (Lipsman, 2010) states that until that time online advertising had increased by 15% in the American market, when compared to 2009. The corresponding investment during the first four months of 2010 was of US\$2.7 million. In 2013, the ZenithOptimedia adspend forecast predicts that internet will overtake newspapers to become the world's second-largest advertising medium with a advertising expenditure of US\$ 517,48 million (ZenithOptimedia, 2011)

The increasing use of the World Wide Web has promised a huge advertising platform for dissemination of advertising stimuli. However, recent studies have reported that users avoid looking at areas they consider to display advertising (Drèze, & François-Xavier, 2003; Hervet, Guérard, Tremblay, & Chtourou, 2010). However, most of these studies are based on measures of memory aimed at assessing the user's ability to remember any of the brands that were displayed during an experiment, but no direct measures are used.

The investment made in online advertisement is a sign of the importance of the World Wide Web as a media capable to reach more and more consumers. There are several measurement patterns that can be use to evaluate online consumer behaviour. One of the most commonly used is click through rate (CTR), a ratio between the number of consumers who click the advertisement divided by the number of prints (Kaushik, 2010). A report from DoubleClick (DoubleClick, 2010) shows CTR values for the US Market of 0.10% and 0,09% to the Europe, Middle East and Africa Region (EMEA). These figures are low and they tend to decrease (Drèze & Hussherr, 2003). However, the investment in online advertising keeps growing. Apparently, this is inconsistent.

[Escrever texto]

This inconsistency is reinforced by recent studies showing that the users are becoming more and more skilfull at avoiding looking at online advertisement inserts (Hervet, 2010; Nielsen, 2007).

## 2 - LITERATURE REVIEW

The present study aimed to examine the impact of verbal emotional cues (negative / neutral / positive) in websites' advertising areas on visual attention through an eye-tracking system in order to provide objective measures of attention. In contexts where consumers are exposed to complex digital environments, where a wide range of stimuli demands users' attention, understanding how attention can be grabbed is extremely important for marketing. Recent marketing research on the attention construct had found evidence that any kind of awareness about a product or brand is necessarily preceded by a switch of attention to it (Hervet et al, 2010; Milosavljevic, 2008; Teixeira et al, 2008). As Milosavljevic puts it, attention preceds awareness and all the marketing efforts should be aimed at it. One way to measure the process of attention that could provide the researcher with objective data is the eyetracking method.

The use of eyetracking allows the researcher to identify the frequencies of attention by measuting the foveal focus of both the participants eyes. All the eyetracking data is based on the mind-eye hypotheses that states that we pay more attention, and remember better things we look at, and what we look at is the result of some kind of cognitive selection (Shapiro, 2009). For marketing and advertising industries is crucial to understand this process to better communicate and improve awareness to their messages

Attention to a brand or product is a powerful construct for marketing research and several ways for capturing it have been analysed in the literature. The use of specific words to capture users attention in the context of web advertising is one of them. Several studies reported that words with different emotional valences play an important role in capture users eyes by the activation of basic cognitive process of memory and attention (Garcia-Marques, 2003, Shapiro, 1999, 2009). In this research, Shapiro have found evidence showing that the use of high emotional words are well processed at a pre-attencional level, which means that the inicial avoidance to advertising on the internet could be reduce with the use of emotional stimuli.

Not looking does not necessarily mean that the stimuli were not processed. Following Janiszewski's (1994) proposal - and other studies conducted by Shapiro (1999), Yoo (2005), Milosavljevic (2007), and Nielsen (2010) which have reinforced it - processing occurs - even if unconsciously - to which an avoided look may not correspond.

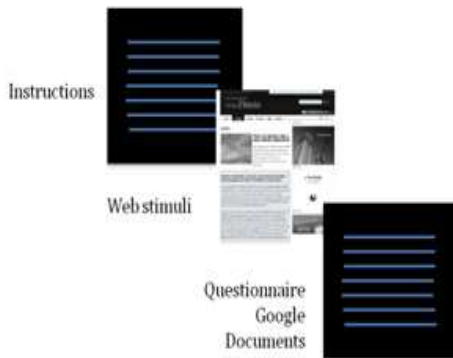
Several studies have been undertaken in order to identify elements able to catch - or more efficiently guide - Web users' attention to advertising messages (Dréze & Hussherr, 2003; Guérard, Tremblay & Chtourou, 2010; Nielsen, Shapiro & Manson, 2010; Pieters & Wendel, 2004). Specific features of advertisement stimuli (bottom-up), such as colour, size and text, have been analized in order to understand the role that such variables play when it comes to catching attention. The use of several verbal stimuli, such as words of different emotional valencies, were tested by Nielsen and colleagues (2010). The results were significant when it came to preattentive processing and implicit memory. Janiszewski (1994) obtained similar results when referring to the effects of non-voluntary exposition to advertising stimuli on printed media. In this study, on the other hand, we look at evaluating the use of different emotional valencies' words on user's attention catch, according to the scale proposed by Garcia-Marques (2003). Contradicting the study conducted by Nielsen and colleagues (2010) - concerning the use of words of high and low personal involmnet and their ability to catch the attention of students in a student newspaper - we only tested words of different emotional valencies and we expect to have different degrees (fixations) of attention depending on the valence of the word. We choose words of extreme average values – both positive and negative – and a neutral valence word on a web site.

In this study, the following hypotheses were tested

- H1 – The number of fixations on negative valence words are greater than in neutral valence words
- H2 – The number of fixations on negative valence words are greater than in positive valence words
- H3 – The recall of the negative valence word is higher than for the neutral word
- H4 – The recall of the negative valence word is higher than for the positive word

### 3. METHODOLOGY

The sample consisted of 62 participants, taken from the university context, with a mean age of 21 years ( $SD=2,572$ ), 55 % being of the female gender. All the participants have normal or correct to normal vision. Participants were instructed to read a specific text area in the webpage, while their eye movements were recorded using a Tobii T60 series eye tracker. A 17" TFT monitor at 60 Hz was used with a resolution of 1280x1024. Participants were seated 60 cm from the monitor. The pupil centred corneal reflection technique was applied. After the webpage presentation, participants were asked to fill out an online questionnaire built on Google Docs where memory tasks were performed (recognition and recall). All the participants had been internet users (100%) for more than 5 years (99%) and 87% of them used the internet on a daily basis. The data from the eye tracker was analyzed using the Tobii Studio 2.1.13 Software. A web stimuli project was built with three different moments – instructions, stimuli and questionnaire (Figure 1).



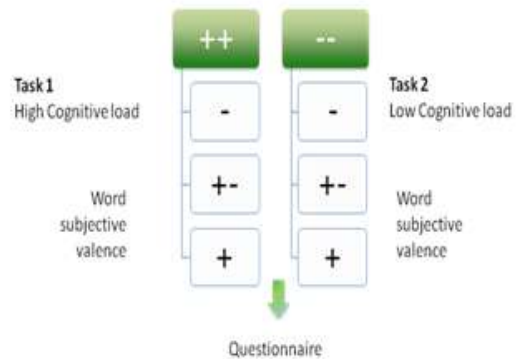
**Figure 1**

The research team for this study created a webpage, which was presented to the participants on the study as a news portal to be launched in the near future. The participants were told that the study aimed to evaluate the structure of the page and the placement of several content items. The technical details of the webpage were as follows: 990 pixels width, centred layout, and an advertisement area on the right hand side. The three target stimuli were included on the same page, in the same place, staggered with two distracting stimuli. One of the distracting stimuli was placed precisely above the target stimulus, and the other precisely below it. The distracting stimulus, placed precisely above, was an animated gif of 2 frames, and the one placed below was a static image. For both versions, the target stimulus was always presented out of the foveal focus of the participant's main task.

Each participant only performed one of two tasks and was exposed to one stimulus only (1 webpage). Six versions of the webpage were made. Each version included two kinds of texts: one with a high comprehension level ( $M=4.15$ ,  $SD=1.61$ ) extracted from a scientific magazine on DNA composing and the other was a low comprehension level ( $M=5.69$ ,  $SD=1.56$ ) taken from a Portuguese daily newspaper. Both texts were manipulated by the research team so that the amount of words could be the same, hence excluding the chance of potential differences in reading due to uneven amount of words. The difficulty level was measured according to a pre-test to which a Likert 7-point scale (difficult/easy) ( $U= 217.500$ ;  $p=.000$ ) was applied. Three kinds of target stimuli - including 3 different words (with 4 and 7 letters each) with different emotional valences (high, low, and neutral) - were included in each version of the text on the webpage (Garcia-Marques, 2003).

All the different target words were written in Verdana, 30 points black. The words used were taken from the scale built by Garcia-Marques (2003) based on high-frequency words in the Portuguese lexicon. Two concrete words and one abstract word were displayed in the present study. The words were chosen based on the valence mean value (on a 7-point Likert scale). The words 'Nazi' (negative) [Nazi] ( $M=1.125$ ,  $SD= 0.55$ ), 'Anilha' (neutral) [Washer] ( $M=3.500$ ,  $SD= 1.24$ ) and 'Verdade' (positive) [Truth] ( $M=6.667$ ,  $SD= 0.70$ ) were used in the fictional banner add. The research design followed is represented in Figure 2.

Before the experiment started, the team showed each participant a small text with instructions on the experience they were about to participate in. After reading the text and understanding how the study was going to be conducted, the participants needed to press the SPACE key of a Tobii T60 Eyetracker keyboard in order to access the webpage. After checking the webpage - which was all about reading a text, which was centred on the page - the participants needed to press the ESC key of the keyboard. Following this, each participant was asked to fill out an online questionnaire. After questionnaire completion, the participants were thanked and dismissed



**Figure 2**

#### 4. RESULTS

Differences between fixations to negative (Nazi), positive (Truth) and neutral (Washer) words were tested using an ANOVA analysis with one between subjects factor (word emotional valence). The ANOVA showed statistically significant differences between fixations on negative, positive and neutral words ( $F = 3.823$ ;  $p < .05$ ), indicating more fixations on negative words ( $M = 4.89$ ;  $SD = 5.12$ ) (H1 and H2 supported) than on neutral ( $M = 2.64$ ;  $SD = 2.13$ ) and positive ( $M = 2.00$ ;  $SD = 1.91$ ) words. These data may suggest that participants pay attention to negative rather than positive or neutral verbal content more often.

The results also revealed significant differences between the number of fixations and recognition/no recognition of the target stimuli ( $U=294,000$ ;  $p =.023$ ) but only for the stimuli of negative valence ( $U=38,500$  ;  $p =.011$ ) . The same was not found for the stimuli of positive valence ( $U=54.000$ ;  $p=.973$ ) or neutral valence ( $U=,000$ ;  $p=.143$ ) (H3 and H4 supported). A possible explanation for this, as suggested by Nielsen et al (2010), is the fact that negative emotional stimuli are better processed at a pre-attentive level and could have a better performance on shifts to focal attention. Results from the questionnaire have showed that participants remembered negative emotional words better than positive or neutral words. The reason for this, according to past research literature, is that negative emotional stimuli are more efficient in capturing attention because they are better processed at a pre-attentive level.



Figure 3

From the total sample, 85% of the participants had at least 1 fixation on the target ad ( $M=7,05$ ) against 81% the participants who have fixate the distracter ads ( $M=9.90$ ) (figure 3). A marginal significance, pointing at differences between cognitive load conditions and the number of fixations on the AOI  $F(3,570)$ ;  $p= 0,064$  was found. This, as already pointed by Janiszewski (1993) and Shapiro (1999), could mean that as more cognitive resources are activated, more pre-attentive processing occurs.

#### 5. CONCLUSIONS

Our study reaches similar results as studies already presented in previous research on the importance of emotional stimuli for paying attention to advertising (Nielsen, Shapiro & Manson, 2010; Janiszewski, 1993) with one major difference. We used different verbal stimuli based on different emotional valences (positive, negative and neutral) and the results suggested that words of negative valence could play a major role in the attention consumers pay to advertising. In this context, our study is the first to use words of emotional valence from the Portuguese lexicon to test attentional shifts to advertising in the context of a webpage and to find evidence that shows that words of negative valence have a higher number of fixations. This is a valuable information for marketers, since their job is to capture consumers' attention to their messages. The results of this exploratory study could help industry professionals to better understand the way in which specific kind of words could capture users attention. Nevertheless, several limitations can be found in our study. One that can be pointed is that we did not measure associations between target words and brands or products. In the sameway, we did not analyse the way participants recall specific advertisings placed near the target words. It could be very interesting to test if some words could drive attention, or change the way people look at web sites. In future research it would also be important to test the behavior of participants attention on stimuli placed near the target words in brand recall, brand awareness and brand attitude.

#### 6. REFERENCES

DoubleClick (2010). 2009 Year-in-Review Benchmarks, DoubleClick EMEA Report available at <http://www.google.com/doubleclick/research/index.html>.

Drèze, X., & François-Xavier, H. (2003). Internet Advertising: Is Anybody Watching? *Journal of Interactive Marketing* , 8-23.

- EIAA Marketer's Internet Ad Barometer. (2009). Bi-Annual EIAA Marketers' Internet Ad Barometer. European Interactive Advertising Association.
- Garcia-Marques, T. (2003). Avaliação da familiaridade e valência de palavras concretas e abstractas em Língua Portuguesa [Assessment of familiarity and valence of concrete and abstract words in Portuguese]. *Laboratório de Psicologia 1* , 21-44.
- Grill-Spector, K., & Kanwisher, N. (2005). Visual recognition: As soon as you know it is there, you know what is it. *Psychological Science* , 16, 152-160.
- Hervet, G., Guérard, K., Tremblay, S., & Chtourou, M. S. (2011). Is banner blindness genuine? Eye tracking internet text advertising. *Applied Cognitive Psychology*, 25: n/a. doi: 10.1002/acp.1742.
- Janiszewski, C. (1993). Preattentive Mere Exposure Effects. *Journal of Consumer Research* , 20, 376-392.
- Janiszewski, C. (1998). The Influence of display Characteristics on Visual Exploratory Search Behavior. *Journal of Consumer Research* , 25(3), 290-301.
- Kaushik, A. (2010). *Web Analytics 2.0*. Indianapolis: Wiley Publishing.
- Lee, A. Y. (2002). Effects of implicit Memory on Memory-Based Versus Stimulus-based Brand Choice. *Journal of Marketing Research*, 39(4), 440-454.
- Lipsman, A. (2010). Comscore. Retrieved in 2010-7-7 from Americans Received 1 Trillion Display Ads in Q1 2010 as Online Advertising Market Rebounds from 2009 Recession:[http://comscore.com/por/Press\\_Events/Press\\_Releases/2010/5/Americans\\_Received\\_1\\_Trillion\\_Display\\_Ads\\_in\\_Q1\\_2010\\_as\\_Online\\_Advertising\\_Market\\_Rebounds\\_from\\_2009\\_Recession](http://comscore.com/por/Press_Events/Press_Releases/2010/5/Americans_Received_1_Trillion_Display_Ads_in_Q1_2010_as_Online_Advertising_Market_Rebounds_from_2009_Recession)
- Milosavljevic, M. (2007). *The effects of preattention in an online advertising context: A neuroscience perspective*. Florida Atlantic University.
- Milosavljevic, M. (2008). First Attention then intention. Insights from computational neuroscience of vision. *International Journal of Advertising* , 27 (3), 381-398.
- Nielsen, J., & Pernice, K. (2010). *Eyetracking Web Usability*. Berkeley: New Riders.
- Nielsen, J. H., Shapiro, S. A., & Mason, C. H. (2009). Emotionality and Semantic Onsets: Exploring Orienting Attention Responses in Advertising. *Journal of Marketing Research* , 47 (6), 1138-1150.
- Pieters, R., & Wedel, M. (2004). Attention Capture and Transfer in Advertising: Brand, Pictorial and Text-Size Effects. *Journal of Marketing* , 68, 36-50.
- Pieters, R., & Wedel, M. (2006). *Eye Tracking for Visual Marketing* (Vol. 1). Now Publishers.
- Pieters, R., & Wedel, M. (2007). The Goal control of attention to advertising: the Yarbus implication. *Journal of Consumer Research* , 34 (2), 224-233.
- Pieters, R., & Wedel, M. (2008). Informativeness of Eye Movements for Visual Marketing. In R. Pieters, & M. Wedel, *Visual Marketing. From Attention to Action* (pp. 43-71). New Jersey: Lawrence Erlbaum Associates.
- Shapiro, S., Heckler, S. E., & MacInnis, D. J. (1997). Measuring and Assessing the Impact of Preattentive Processing on Ad and Brand Attitudes. In W. D. Wells, *Measuring Advertising Effectiveness* (pp. 27-44). Psychology Press.
- ZenithOptimedia, (2011). Advertising Expenditure Forecast, available at <http://www.zenithoptimedia.com/about-us/press-releases/zenithoptimedia-adspend-forecast-update-apr-2011/>