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Eye tracking in learning context: an approach to Consumer Behaviour's subject

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Abstract

The objective of this study is to disclose how eye-tracking can be used as a teaching tool in the subject of Consumer Behavior. Aiming the increment in accuracy and the reduction of the *Dicto Simpliciter* effect and false axioms assigned to the recognisabe differences in the University of Aveiro brand, in particular in the colour of its 40 year anniversary logo, we conducted an exploratory study. The sample was composed of 40 students of the discipline of Consumer Behavior from the University of Aveiro (26 men and 14 women), aged between 18 and 24 years (M = 21.1 SD = 1.24). The results revealed significant differences between stimuli presented (grey and colour logo) and the measures of total gaze time allocation. However, there were significant differences between the groups. In addition, individual differences in the pattern of the gaze of the subjects showed significant modulation in the gaze between the two experimental conditions. The results showed that the participants looked more often and over a longer period of time for the numeral 40 (Anniversary) in the logo "Grey Background & Colour Anniversary" than for the same area in the logo "Grey Background & Grey Anniversary" and that these differences were statistically significant. We also noticed that the participants looked more times and longer for the numbers of the anniversary in the logo "Black Background & Grey Anniversary" than for the same area of the logo "Grey Background & Colour Anniversary". The students were able to test and apply the experiment and to analyse the conclusions, adding an experimental practice which enriches the acquisition of the subjects being studied.

Method

Participants

The sample included 40 subjects (26 male and 14 female) aged 18 – 24 years (M = 21.1 SD = 1.24) recruited in the Superior Institute of Accountability and Management (ISCA) of the University of Aveiro.

Eyetracking

To eye movement recording we used the EyeTribe tracker connected with the OGAMA software (where the experiment was set). The sampling frequency was set up to 60 Hz and a 16-point calibration was used.

Stimuli and Experiment

The experiment contained three experimental blocks, each one containing one logo and one cat face picture. Each logo was presented during 10000 miliseconds and each cat face was presented during 5000 miliseconds. No inter-stimuli and inter-block interval were set since the cat face works as an inter-stimuli interference. The logos and pictures in each block and its order of presentation were counterbalanced, as shown in figure 1.
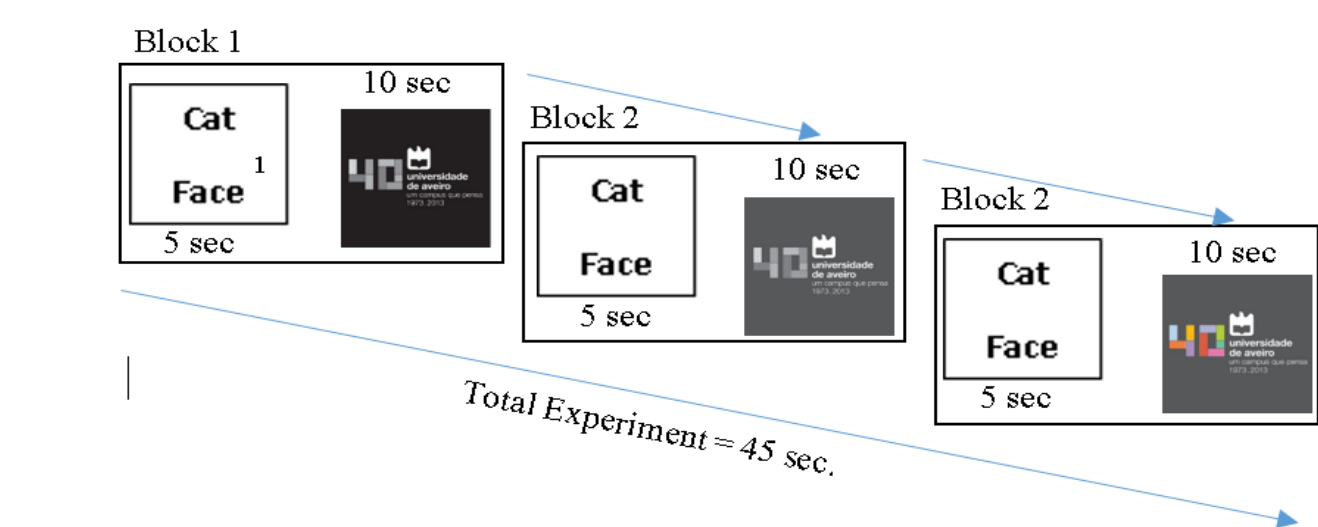
[1] Cat faces are not presented due to Copyright issues.

Fig.1 Experiment sequence

Data Analysis

We compared the fixation time and number of fixations on "Anniversary" (Our region of Interest - see figure 2) between three logos using t-paired samples t-test. To assess the Background Colour Effect in fixation on "Anniversary" and "Grey Background & Grey Anniversary" (see figure 2). For Anniversary Colour Effect assesment we compared the logos: "Grey Background & Grey Anniversary" and "Grey Background & Colour Anniversary" (see figure 2). The Double Effect Colour Effect was assessed with the logos: "Black Background & Grey Anniversary" and "Grey Background & Colour Anniversary" (see figure 2).
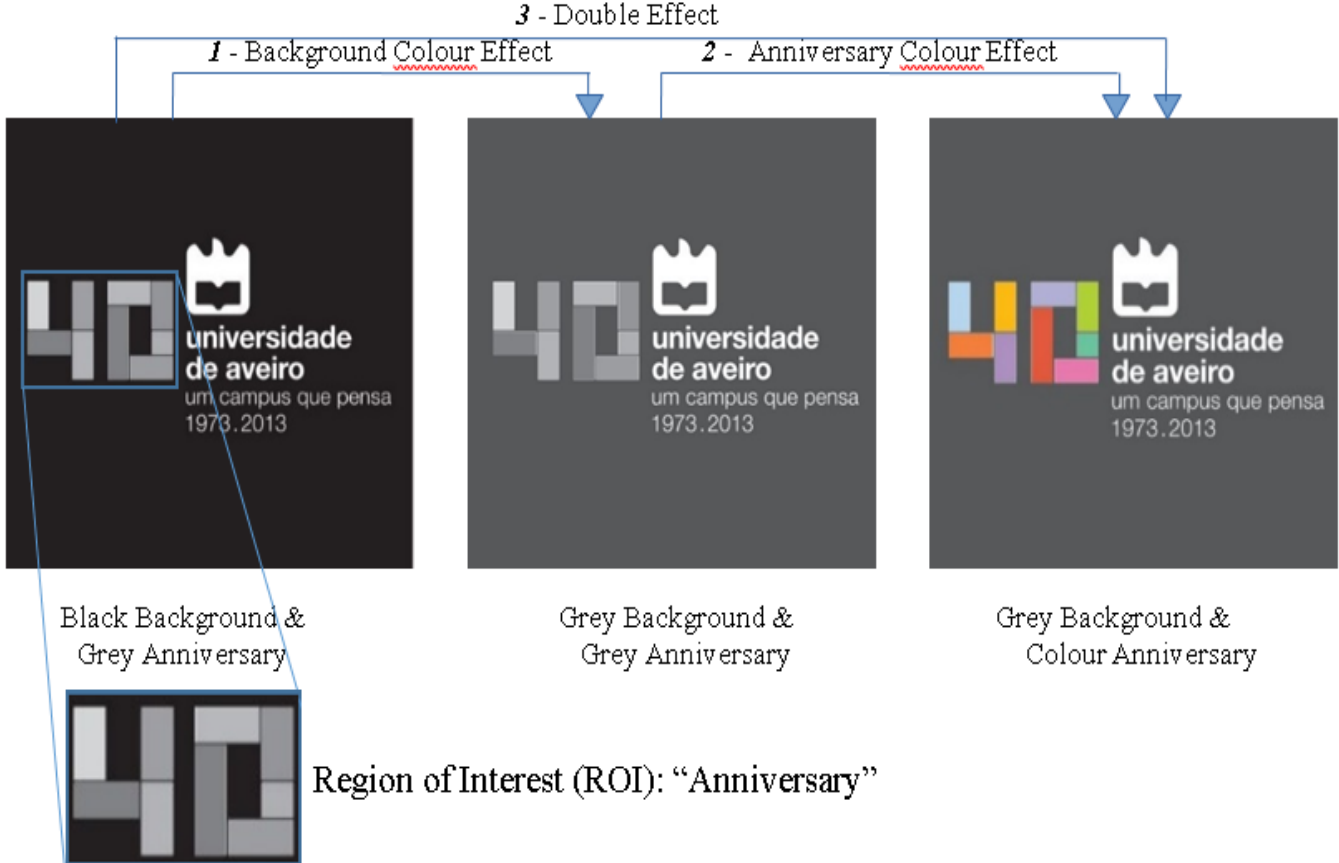

Fig.2 Diagram of our study's Effects, logos and ROI

Results

Condition 1 - Background Colour Effect

The results of these tests showed that the participants looked more often (t $_{Fixation\ number\ on\ "anniversary"}$ (39)= -2.840, P<.01) and longer (t $_{Fixation\ time\ on\ "anniversary"}$ (39)= -2.55, P<.05) for the numbers of the Anniversary in the logo "Grey Background & Grey Anniversary" than to the same ROI in the logo "Black Background & Grey Anniversary" and that these differences were statistically significant.

Fig.3 Heat map of "Black Background & Grey Anniversary" and "Grey Background & Grey Anniversary" logos with highlight in the "Anniversary" ROI

Condition 3 – Double Effect

The results of these tests showed that the participants looked more times (t $_{Fixation\ number\ on\ "anniversary"}$ (39)= -4.33, P<.001) and longer (t $_{Fixation\ time\ on\ "anniversary"}$ (39)= -4.595, P<.001) for the numbers of the anniversary in the logo "Black Background & Grey Anniversary" than for the same area of the logo "Grey Background & Colour Anniversary" and that these differences were statistically significant

Condition 2 - Anniversary Colour Effect

The results of these tests showed that the participants looked more times (t$_{Fixation\ number\ on\ "anniversary"}$ (39)= -2.19, P<.05) and for a longer period (t$_{Fixation\ time\ on\ "anniversary"}$ (39)= -2.43, P<.05) for the numbers of the "Anniversary" in the logo "Grey Background & Color Anniversary" than for the same ROI in the logo "Grey Background & Grey Anniversary" and that these differences were statistically significant.
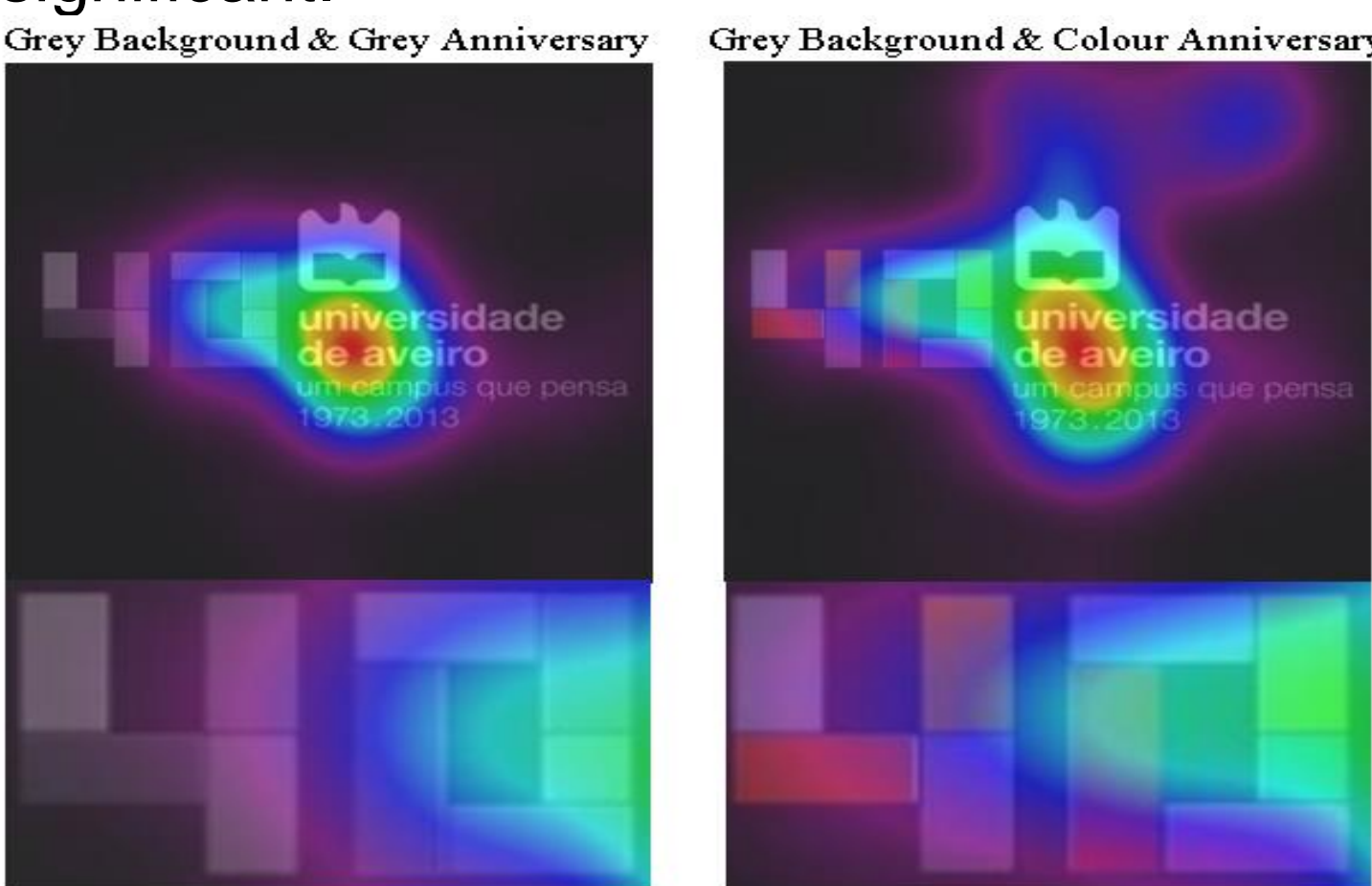

Fig.4 Heat map of the logos "Grey Background & Grey Anniversary" and "Grey Background & Colour Anniversary" with highlight in the "Anniversary" ROI
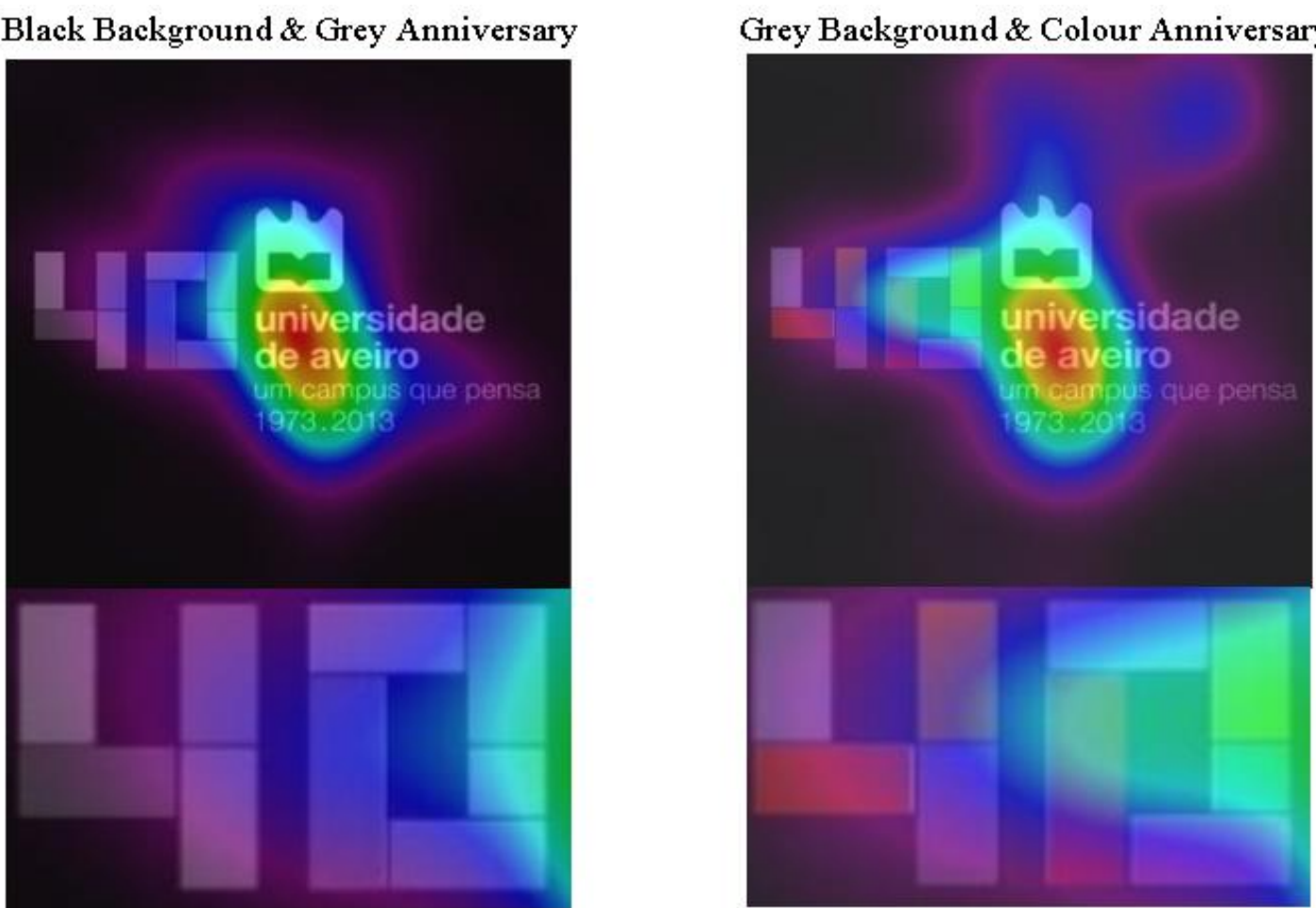

Fig.5 Heat map of the logos "Black Background & Grey Anniversary" and "Grey Background & Colour Anniversary" with highlight in the "Anniversary" ROI

Conclusions

Following the outcomes of our study, we conclude that the eye-tracking technology is a valuable asset in teaching, namely in the discipline of Consumer Behaviour. Analysing our results, we found that the heterogeneity noticed in the different cases show a path that can be tested and further studied in diverse scopes and disciplines.
Namely, for Consumer Behaviour, the perceptions that the subjects have about the logo colours and backgrounds may lead to a different choice of logotypes and other brand elements in the future that match the consumers' needs and expectations.

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