

# Incorporating Textual and Pictorial Information: The Role Gender Plays In Textual Details

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## Abstract

The pictorial/textual relationship in advertisements is a growing topic in eye tracking research today. Although there is not much past research in this area, the majority of the studies focus on the importance of the text. We feel that advertisement analysis is important because of the amount of exposure advertisements have. By observing different genders' fixations and saccades, our experiment's intent is to show if one gender pays more attention to textual details than the other does. For further investigation, we propose investigate this relationship through alterations of text in neutral advertisements. We will conduct an experiment to determine if the eye focuses on textual detail while viewing magazine advertisements.

**Keywords:** advertisements, visual perception, fixations, saccades

## 1 Introduction

During normal daily observation, do you think that most people glance at things or focus on them? Our eyes are constantly looking all around us. People tend to look at things that are not familiar to them more intensely and for a longer duration. On average, how long would you say you look at an advertisement in a magazine, website, or billboard? This question was taken into serious consideration when putting together our project and experiment.

Previous studies have shown that the amount of attention paid to the text is about three times as high as that of pictorial (Duchowski 197). Rayner, Rotello, Stewart, Keir, and Duffy examined this relationship, and concluded that people pay attention to text in advertisements more than the images. They examined this relationship through two different types of advertisements. Their subjects were instructed to analyze the advertisements shown as though they would be purchasing the product. "Half of them (the subjects) were told to pay special attention to car advertisements, and the other half were told to pay special attention to skin-care advertisements. Viewers tended to spend more time looking at the text than the picture part of the advertisement, although they did spend more time looking at the type of advertisement they were instructed to pay attention to" (Rayner, Rotello, Stewart, Keir & Duffy).

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Rayner et al. concluded that their participants focused more on text than the actual product image through their inability to name the product in the advertisements. We plan to investigate their research by examining the extent of detail that people, specifically gender, perceive when viewing text in advertisements. The goal of our project and experiment is to find out if people focus more on text or pictures in advertisements. We hypothesize that our subjects will have longer fixations on the textual sections of the advertisements because image recognition does not focus on detail. We also predict that females will pay closer attention to detail in the advertisements.

As Rayner described, "Experiments using tachistoscopic presentations and eye movement recordings have lead to the conclusion that participants get the gist of a scene very early in the process of looking, sometimes even from a single brief exposure. Thus it has been advocated that the gist of the scene is abstracted on the first few fixations, and the remainder of the fixations on the scene are used to fill in details" (Duchowski 144).



**Figure 1:** This is one advertisement being shown to each subject.

Contrary to research, most advertising agencies target their advertisements based on pictures and spatial relationships rather than text. This caused us to examine the discrepancy between research and actual design of the advertisement. Today, agencies feel that pictorial focal points are the initial attention-getter. To investigate this concept, we will divide our advertisements into perceived focal sections.

Another study conducted by Carroll, Young, Guertin, and Hegarty analyzed the way that individuals look at cartoons consisting of a picture and caption. "Processing of the picture and the caption seemed to be relatively isolated events in that viewers did not move back and forth repeatedly between the picture and the caption. Second, the picture frequently was not given full inspection until the caption had been read" (Rayner, Rotello, Stewart, Keir & Duffy).

In comparison to Carroll et al.'s experiment, reading the text is essential to getting a complete picture and understanding of the product. We will consider this by asking our subjects to name the products displayed and be able to answer questions about small changes made to the text portions of the advertisements.

Hypothetically, determining the relationship between text and image perception should provide an (a) understanding of how genders analyze detail in an ad and (b) creating effective magazine advertisements.

## 2 Methodology

### 2.1 Apparatus

The experiment will be conducted in Clemson University's Virtual Reality Laboratory. The eye movements are recorded on the ISCAN RK-726PSCI, and the images are displayed on a 27-inch NTS Sony television.

The eye tracking component is a table-mounted device positioned beneath a NTSC television set. The ISCAN RK-726PCI High Resolution Pupil/Corneal Reflection Process offers higher spatial resolution and improved automatic eye feature recognition over previous ISCAN components. The processor operates at a sample rate of 60Hz, and the subjects' eye position may be determined with accuracy typically better than 0.3 degrees over a +1-20 degree horizontal and vertical range using the pupil corneal reflection difference. The maximum spatial resolution of the calculated Point of Regard (POR) provided by the eye tracker is 512 x 512 pixels per eye.



Figure 2.1: The Clemson University Virtual Reality Laboratory

### 2.2 Stimulus

The Sony NTSC television will display five altered magazine advertisements. Each advertisement consists of both picture(s) and textual information. The advertisements will be displayed for 15 seconds followed by a black screen, which will be displayed for five seconds between each advertisement. While each subject is viewing the advertisements, the eye tracker will be recording their fixations and eye movements. The ROIs for each ad have been set to key areas to determine the way subjects view the advertisements. Afterward, participants will answer questions pertaining to altered information as well as the products themselves. The answers will determine how much of a role text plays in the overall observation of the advertisement, as well as which gender pays more attention to detail.

### 2.3 Subjects

The subjects for this experiment will include eight randomly selected college-age subjects: four males and four females. These students will be volunteers, have normal vision, and are familiar with daily magazine advertisements.

### 2.4 Experimental Design

We will use a 2 x 5 x 1 between-subjects experimental design. The subjects will view all five magazine advertisements. The order of the pictures will be sequentially rotated. If all of the images were shown in the same order to every subject, then the first ad would not likely be remembered. The sequential ordering will reduce this bias by giving each advertisement an equal chance of being remembered. The table below shows the order for displaying the advertisements to the first five subjects. This order will be done twice to accommodate all ten subjects.

Visa (A)	Miller (B)	Mercedes (C)	Lizard (D)	Copenhagen (E)
A	B	C	D	E
E	A	B	C	D
D	E	A	B	C
C	D	E	A	B
B	C	D	E	A

Table 2.4: The pictorial rotation order.

In investigating how performance varies between men and women, we will randomly select which gender participates at a certain time. This should not pose a problem because each subject is independent of another and all of their identities remain anonymous. College students, at least four women and four men, will be tested as a part of our project. The subject will be sitting in front of the television and eye tracker then shown the advertisements one at a time. The advertisements had the content of the text altered, but the overall appearance remained the same. Each advertisement's alterations dealt with some key element in the advertisement. We chose this to see if participants can pick up the correlation between the key elements and the alteration.

Subjects will be shown the advertisements for 15 seconds each. The program is timed and a black screen will be displayed for five seconds between each advertisement. This will give the

subject a brief break to analyze what they just saw. The program will be recording the eye movements of each subject, making special note of the fixation lengths at different sections of the advertisement. The fixation lengths and eye movements make up one area of analysis for our project. We will be comparing each advertisement to the subjects' POR data to find statistical similarities or differences in focal points.

Each advertisement has at least one perceived focal point. Subjects will be required to use quick analysis, reading, comprehension, and their short-term memory during the course of testing.

## 2.5 Procedures

Before the official experiment, the group members will complete a test run to finalize displays and ensure proper functioning of the program. The experimenters will run the program on a separate computer located next to the eye tracker. As the pictures are displayed, the experimenters will be sitting at the eye tracker in front of the television screen. The group member who is seated at the computer during the test run will observe the functionality of the program while the other group members will determine if the display time is sufficient and text font is readable. All necessary adjustments will be made accordingly.

On the days of the experiment, the subjects will sit in front of the television screen. Their chin will be positioned on the chin rest to ensure that their head will not move. If movement occurs, we could lose the original calibration and the PORs will no longer be accurate. This would result in having to restart the experiment or disregard the subject's eye movements in our analysis.



**Figure 2.5:** This is another advertisement shown to our subjects.

Each subject will view five advertisements in a sequential order. After all advertisements have been viewed, the subjects will answer questions in the form of a post-experiment questionnaire about what was observed. In addition, we will look for which ad was most appealing and memorable. The information that we gather from the questionnaire will be part of the basis for our results, analysis, and conclusion.

## 2.6 Results

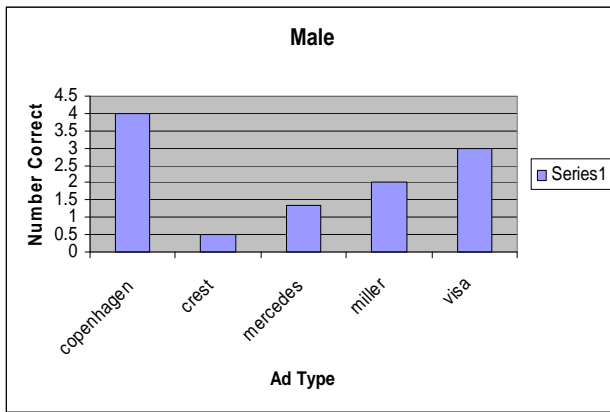
Each subject was given a post-experiment questionnaire following as a part of the experiment. The questionnaire consisted of five questions, which tested each subjects' attention to detail and short-term memory. In the first question, subjects were asked to name as many of five company names and product names as they could. The company names and products were Miller Brewery, Copenhagen Smokeless Tobacco, Crest White Strips, Mercedes-Benz E-Class automobile, and Visa Credit Card.

The group found that males were able to identify more company names. This could be due to the type of advertisements that were being shown. By chance, three of the five advertisements targeted males. Initially this was unknown, but later the group came to realize that even neutral advertisements could be targeted to specific genders. Twice as many males were able to identify all of the advertisements than the females, and two females were unable to identify a single company name.

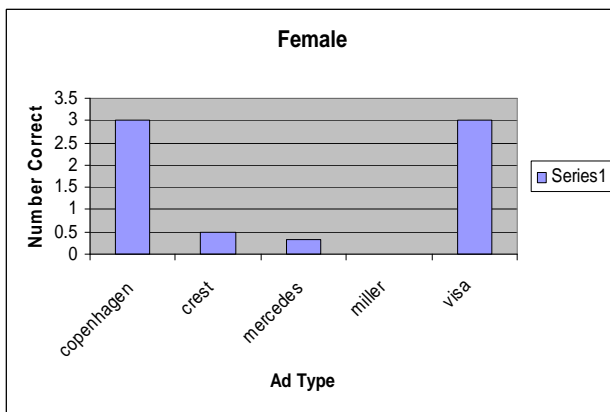
Every participant but one noticed the alterations in the advertisements. This leads us to believe that each participant showed some level of focus during the experiment, which strengthens the validity of our results. However, there were differences in the subject's degree of focus. These differences can be attributed to type of advertisements, design, and participant's gender.

The group's questionnaire was intended to depict differences in the perception between males and females. Each advertisement had a question associated with it to see how much detail was paid to it. For example, in the Copenhagen advertisement the group asked the subjects how long the bull rider stayed on the bull. In the Crest advertisement, text was changed to say that, "the lizard was going to a party with his friends." Also, the group placed three pictures of his friends to see whether the subjects could identify them. The Mercedes-Benz advertisement has a three-part question. Subjects were asked to name the woman and dog in the picture and name what they were looking for. The final two advertisements were Visa and Miller. They asked what movie were the couple was watching and why the people were excited, respectively.

The charts below represent each question asked in the questionnaire and the number of correct responses for each gender.



**Figure 2.6.1:** Number of correct answers for each advertisement among males.



**Figure 2.6.2:** Number of correct answers for each advertisement among females.

In the end, the group asked subjects which advertisement was most memorable as well as which one was most appealing. The Copenhagen advertisement was most memorable, while the Crest advertisement was most appealing with three out every of four subjects (75%) choosing it because of its color.

On average, the group found that males look at the text in advertisements 60% of the time, while the average female looks at text 50% of the time. While this does not show a significant difference, it shows that overall males focus slightly more attention to text than females.

## 2.7 Analysis

Based on the results of the questionnaire, males answered the questions more accurately than their female counterparts did. Our data cannot provide a definitive conclusion for this result, but can lead to future experiments about the cognitive thought processes among genders.

This outcome directly contradicts the group's original hypothesis that females pay more attention to detail than males. The group found that it takes longer to read text that is imposed on images. Also, that text on images is read 35% more than text used to supplement the product. In addition to gender

differences, the group discovered that color contrast retains attention longer. This may be the cause of the subjects focusing less on text. Based on the experiment, two out of every three males look more on the text rather than picture.

The group came to a consensus that when people look at advertisements, they do not critically read the text. This is evidenced by only one subject being able to correctly identify the advertisement that contained a grammatical error and the error itself.

However, we acknowledge that these results may not necessarily hold true when applied to a larger, more diverse group of subjects, but the overall design of the experiment can be applied regardless of the size of the subject group.

Sample images of the subjects' eye movements running through the experiment are provided in Figure 3

## 3 Conclusion

This experiment not only contradicts the group's hypothesis, but also the findings from previous studies. We feel that the group's overall design provides a better understanding of the pictorial-textual relationship in marketing advertisements. We found that males focused more on text, textual placement can play a role in whether it will be read, and color contrast was found to take attention away from text. In addition, the amount of time devoted to reading blocks of text was not much different from the time devoted to pictures. Future studies need to be conducted to further explain the pictorial-textual relationship differences between genders.

## Key Words

saccades: high-aptitude eye movements

fixations: eye movements which stabilize the retina over a stationary object of interest.

visual perception: perception by means of the eyes.

## References

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"Crest." Cosmopolitan Magazine. March 2003. (Picture)

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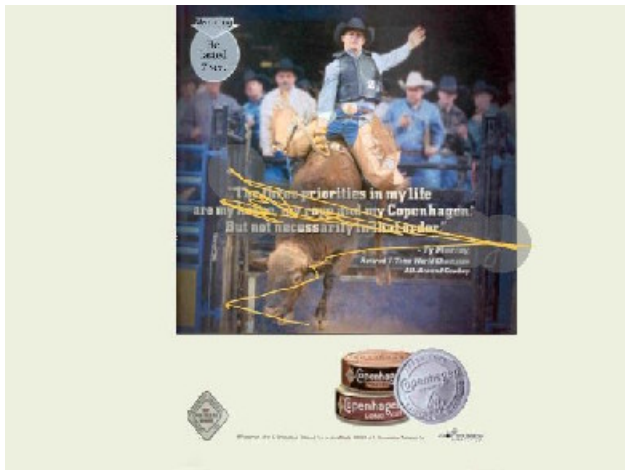
"Mercedes." Ebony Magazine. August 2003. (Picture)

"Miller." Ebony Magazine. September 2003. (Picture)

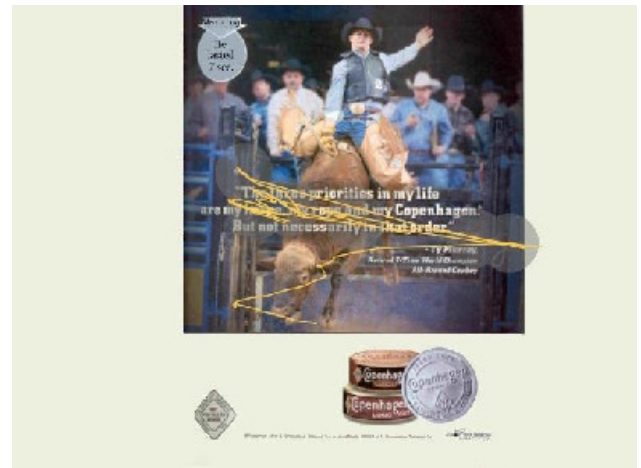
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"Visa." Maxim Magazine. October 2003. (Picture)

Figure 3.



Example of a male fixation points while viewing this advertisement



Example of a male fixation groups while viewing this advertisement



Example of a female's fixation points while viewing this advertisement



Example of a female's fixation groups while viewing this advertisement