Effectiveness of Store Shelf Item Placement

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ABSTRACT

This paper attempts to show that item placement on store shelves has an effect on users when purchasing items. We use eye tracking technology to determine where users focus when scanning a toy shelf to look for certain items. I hypothesize that, regardless of attractiveness of the item, items placed in the center of the shelf will receive the most attention from users. I run a within subjects experiment where users are given a list of items to search for on a Toys“R”Us shelf. The speed in which the user finds the items will be recorded. This data along with the eye tracking data will tell us just how effective item placement in the center of the shelf is.

1 INTRODUCTION

Eye tracking technology is widely used by many companies to determine the effectiveness of their product design, as well as advertisements. For this paper we set out to prove our hypothesis that items at the center of the shelf gain the most attention and therefore are the easiest to find when customers shop for items, compared to items found on the bottom or top corners of item shelves. We also hypothesize that participants will search the entire middle section of each shelf initially for the item before searching other sections. As a result we expect the shelves with the items of interest placed in the center to have significantly less time spent searching compared to items placed on the top and bottom shelves and the corners.

2 RELATED WORK

There have been studies in the past to gain insight on customers emotional experience and behavior intention during online shopping using eye tracking technology [5]. In online shopping it was found that the chosen product, in browsing vs searching, received more eye fixations than non chosen products in both displays [5]. There have also been studies showing outside influence having minimal impact on shopping behavior [3] while proving that participants focused on spectacle design more than any other factors, such as brand, price and promotion banner.

The elaboration likelihood model (ELM) shows that high elaboration has higher purchase intention than low elaboration [6]. Studies also show when shopping online, larger visual displays tend to have a better performance than smaller displays [4]. Gender studies has shown that males’ visual attention were lower than females and their shopping attitudes were influenced by visual attention to product information and consumer reviews [2]. [1]

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3 METHODS

This was a within subjects experiment. Participants were instructed to sit at a terminal figure 3 for the experiment. The participant was then calibrated for the eye tracking machine figure 2. For the experiment participants were tasked with finding items on a Toys"R"Us toy shelf figure 1. Participants were given on screen instructions of what item to look for as well as given a photo reference of what the item looked like. When the participant were ready to begin searching for the item after viewing the descriptions they were informed to press the "spacebar" on the keyboard to begin. This bought the participant to a variation of the toy shelf. When the participant successfully found the requested item they were told to press the space bar. This would prompt the name of another item for the participant to find as well as a visual representation of the item. The would begin a new search on a new version of the toy shelf. All of the items on each version of the toy shelf are the same but each version has their placements rearranged so no two shelves are alike. The key items were placed intentionally on various sections of the shelf to determine where participants would find them the fastest. We focused on item placements in the center of the shelf as well as the top and bottom corners.

A Dell desktop computer and Dell monitor figure 3 were used in this experiment. The desktop used an i7-6700T Intel processor and had 16GB of RAM. The experiment was created with the software Gazepoint Analysis UX Edition v6.6.0 figure 4. Gazepoint Control was used to record the participants eye data. The data points were formatted with Python scripts and then analyzed with R-Studio. Recordings of the participants view patterns while looking for items on each unique shelf were also recorded and analyzed.

Figure 1: Screenshot of the toy shelf users were asked to find the requested items on.

Figure 2: Photo of the Gazepoint eye tracker.

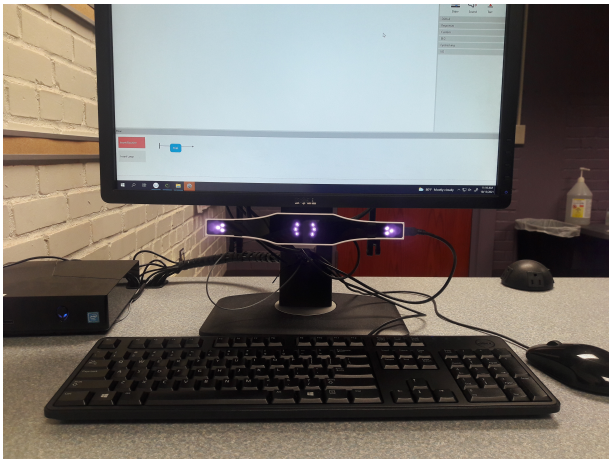

Figure 3: Photo of the machine used to gather the eye tracking data.

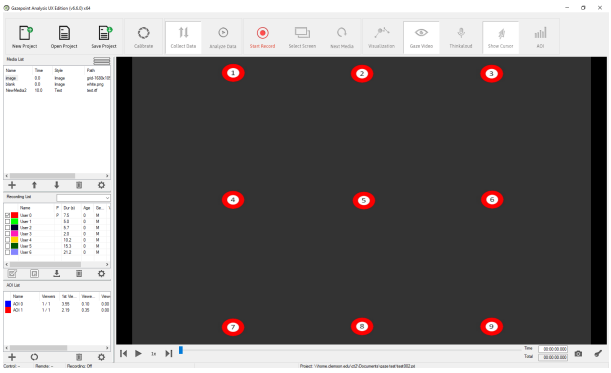

Figure 4: Gazepoint Analysis software used to record participants eye gaze data.

4 RESULTS

Not many participants were ran in this study. From the time to complete graph our hypothesis may be proven with more participants. In the graph figure 7 we see that there were outliers from a few participants taking much longer than anticipated to find the items. In general participants took a slightly longer time to locate items when they were stored on the top shelves in the corners compared

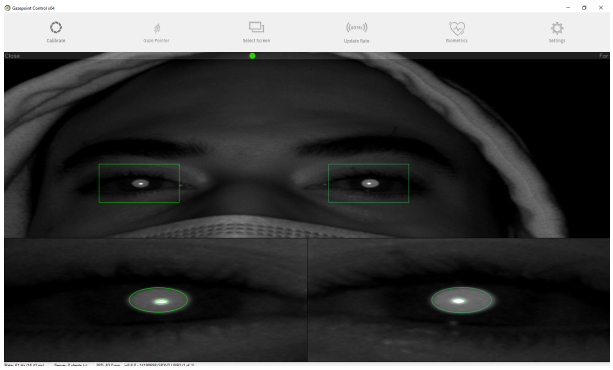

Figure 5: Software used to track participants eye gaze.

Figure 6: Software used to run the experiment scenarios.

to when the item of interest were placed in the center of the shelf. In intitial testing participants took much longer to locate items when they were given the name of the item with no visual representation of the item. participants times greatly improved once they were allowed to view the item before beginning their search.

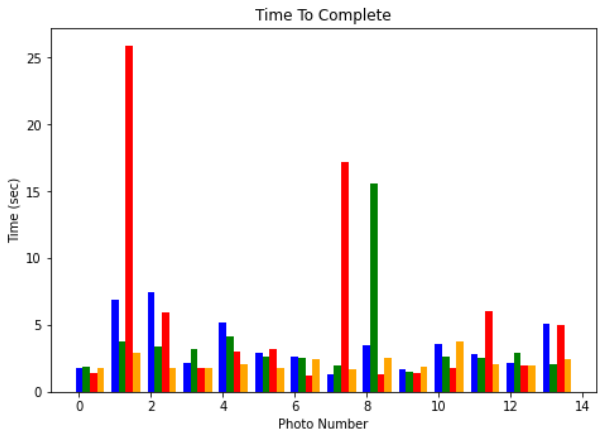

Figure 7: Graph of the 4 participants time to complete each task.

5 CONCLUSION

Further testing with a larger group is needed to accurately determine if placing items in the center is a lot easier to find, although the evidence shown from the small pool of participants seems to lean in that direction. Participants would start the with the gaze

focused on the bottom of the screen, due to that being where the text prompt was located informing them to press the "spacebar" to begin searching. From the eye gaze recordings, in almost every scenario, participants would immediately turn their attention to the center of the screen before they began scanning for items. We believe this may be a subconscious action and one of the main reasons items stored on far corners took so long to discover.

For future studies it would be more informative to test in a virtual reality scenario as a huge limitation of this study is the item shelf is a static photo on a stationary desktop monitor. This somewhat give the feel of scanning a shelf in an actual store only much smaller. Another addition that could be done is having the user had a time limit to find the item to see how often they succeed or fail to find the items, and if the placement has an effect on that at all.

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