Does Ad Blindness on the Web Vary by Age and Gender?

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Abstract

A previous study [1] had shown that users tend to associate certain elements of a web page with ads, and tend to avoid them. The current study revisited that data to see if this "ad blindness" varies with the age or gender of the users. We found that younger adults (20s and 30s) exhibited significantly more ad blindness than older adults. We also found that men exhibited significantly more ad blindness than women. We believe that both researchers and practitioners need to pay more attention to age and gender in studies of web behavior.

Author Keywords

Ad blindness; banner blindness; age; gender; web

ACM Classification Keywords

H.5.m. Information interfaces and presentation.

Introduction

While a great deal of research has been done on how people interact with the web, there is much less known about how this interaction is affected by factors intrinsic to the user, such as gender and age.

There is some evidence that there are differences in the way males and females interact with the web and their environment. These differences appear early, with

infant girls viewing faces longer than mechanical mobiles, and infant boys displaying the opposite behavior [2]. This trend does not disappear over time: researchers found that women had a higher level of retention than men for advertisements containing emotional content [3]. Further, there is evidence that men are highly influenced by perceptions of usefulness when making technology decisions, while women are more influenced by perceptions of ease of use and the subjective norm [4].

Age may also play a factor in web behavior [5, 6]. Older adults have difficult filtering out extraneous information [7, 8]. In fact, there is evidence that older adults encode task-relevant and task-irrelevant information equally; younger adults, on the other hand, encode only task-relevant information [9]. Supporting this finding, in a study comparing overall viewing patterns for Generation Y and Baby Boomers, the younger generation was found to have much more selective viewing patterns, while the older generation tended to view many more elements on the screen [10, 11].

The Previous Study

In our previous study [1], we tested two different versions of a financial news page, as shown in Figure 1. The only difference between the two pages was whether the photos of the authors (one male and one female) of the "Expert Insights" articles on the right side of the page were included.

We conducted an online study in which participants were asked to find links to various articles on these pages. All tasks required the user to click on a link which then displayed an "answer number". Different links yielded different answer numbers. The accuracy of task completion was determined using these answer numbers. Time to select the answer was automatically recorded. Each participant performed six of these tasks, of which two were the "critical" tasks because they involved finding the two Expert Insights articles. The data analysis was done for these two critical tasks only. The primary variable in this study, Photos or No Photos, was a between-subjects variable: participants were randomly assigned to either the Photos or No Photos condition.

One of the key findings from that study was that the participants were significantly less likely to find the right answer to the critical tasks when the photos were present, and they took marginally longer to answer. This pointed to a degree of "ad blindness" caused by the photos. One of the more surprising findings from the previous study was the result of the subjective
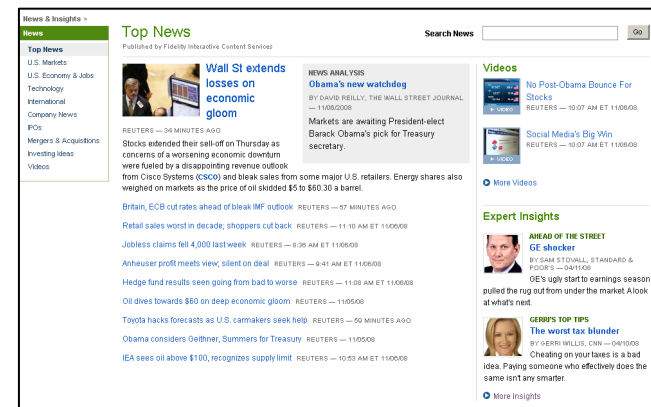

Figure 1. The "Photos" page studied in [1]. The "No Photos" page was exactly the same but without the two photos of the authors on the right.

ratings at the end of the study in response to the following statement: "I trust the accuracy of the information on this page." Participants rated their agreement with that statement on a seven-point scale. We found that the participants in the Photos condition gave significantly lower ratings (i.e., they trusted the accuracy less).
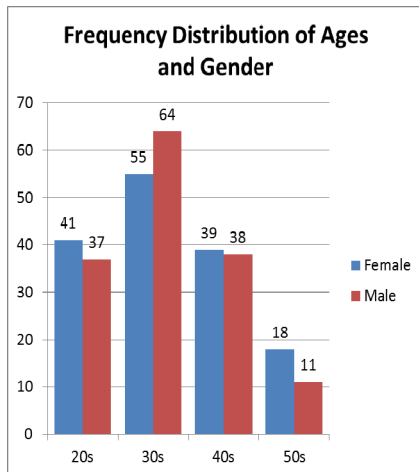
In looking back at that data recently, we realized that we had captured some demographic data from the participants (age group and gender) but had never analyzed whether the degree of ad blindness or ratings of trust varied with different demographic groups. That was the purpose of the current analysis.

Participant Demographics
The previous study was conducted online on our intranet at Fidelity Investments, so all of the participants were Fidelity employees. Of the 333 participants, 305 provided answers to the demographic questions: age group (20s, 30s, etc) and gender. Figure 2 shows the distribution of the ages and gender of the participants. Although there were a few participants in their 60s or higher, there were not enough to include them in the analysis. There was an almost even split of men and women: 153 female and 150 male.

Analysis by Demographics
We conducted a three-factor analysis of variance (ANOVA) for the accuracy data (whether the participants found the right articles for the two critical tasks), the task time data, and the ratings of "trusting the accuracy of the information on this page". The three factors were Age, Gender, and Photos. All three factors were between-subjects.
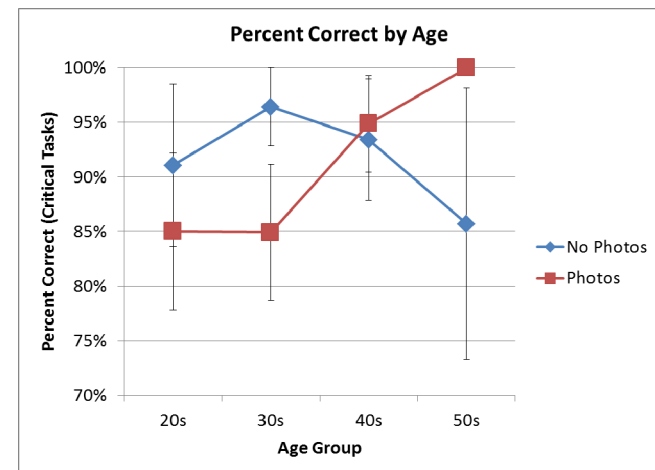
Age Group
The accuracy data by age group for the two critical tasks is shown in Figure 3. All error bars in this paper represent the 90% confidence interval for the mean. The ANOVA showed that this Age x Photos interaction approached significance (p=.13). In essence, the younger participants (20s and 30s) exhibited ad blindness (since they were more likely to find the right articles when the photos were *not* present), while the older participants either exhibited no ad blindness, or a tendency to be drawn to the photos.
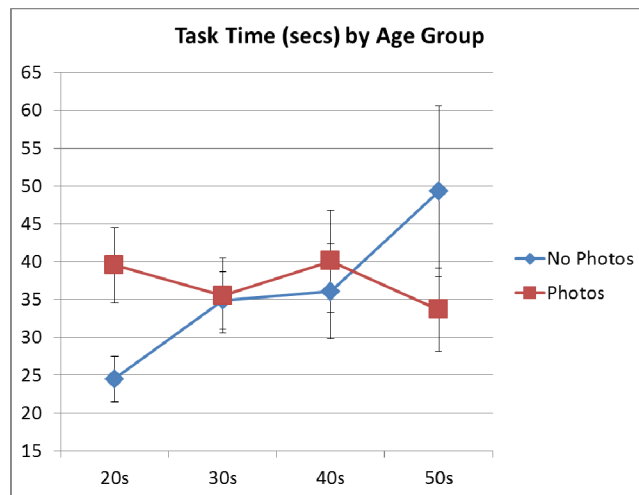
The task time data, illustrated in Figure 4, showed a similar pattern. The ANOVA showed that this Age x Photos interaction for the time data was significant (p=.02). In essence, the youngest participants exhibited the traditional ad blindness while the oldest participants exhibited the opposite.

Figure 2. Frequency distribution of the ages and gender of the participants in the study.

Figure 3. Percent correct for the two critical tasks as a function of page design (Photos or No Photos) and age group.

Taken together, the accuracy and time data paint a relatively consistent picture: the youngest participants were more likely to avoid the photos (ad blindness) while the oldest participants were more likely to be drawn to the photos.

Figure 5 shows the ratings, by age group, of "trust in the accuracy of the information on the page" that were done at the end of the study. Higher numbers indicate greater trust. The ANOVA showed that the main effects of age (p<.01) and photos (p=.04) were significant, although their interaction was not. The results indicate that the younger participants tended to give higher ratings of trust while the older participants gave lower ratings. The effect of Photos/No Photos was greatest for those in their 40's.
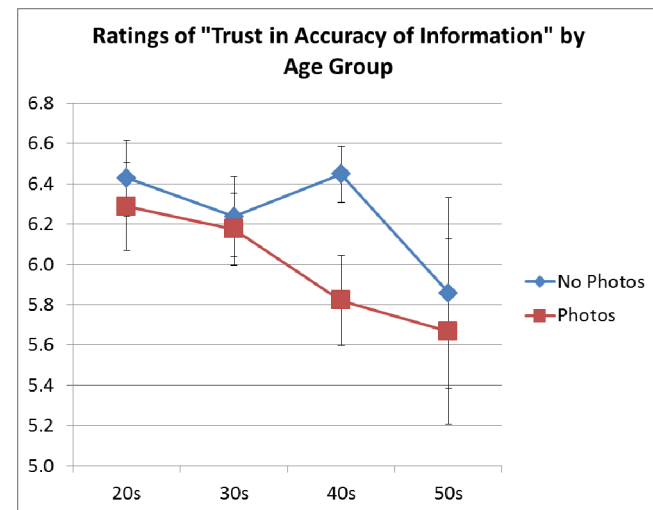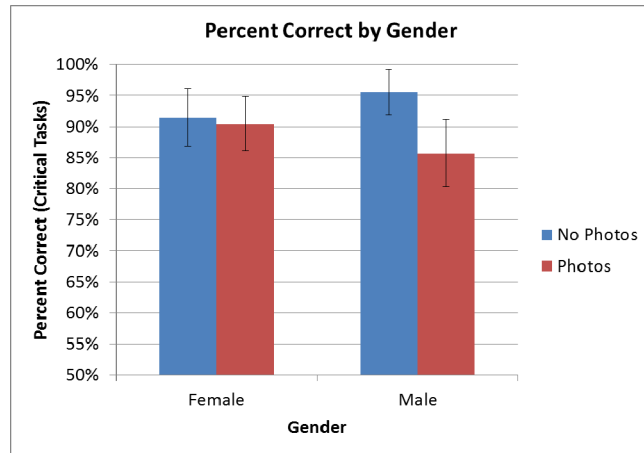
Gender
The accuracy data by gender for the two critical tasks is shown in Figure 6. The ANOVA showed that this Gender x Design interaction was significant (p=.08). In essence, the men were significantly more likely to find the right article when the photos were *not* present, exhibiting ad blindness. The women performed the same whether the photos were present or not.

The task time data by gender is illustrated in Figure 7. Although it appears that the men tended to take longer overall, and that both groups seemed to take longer when the photos were present, the variability of the time data caused neither of those main effects to reach significance. And there is no indication of any interaction.

Figure 4. Mean task time (secs) for the two critical tasks as a function of page design (Photos or No Photos) and age group.

Figure 5. Mean ratings by age group of "Trust in the accuracy of the information on this page", with higher ratings indicating greater trust.

Figure 6. Accuracy for the critical tasks as a function of page design (Photos/No Photos) and the gender of the participants.
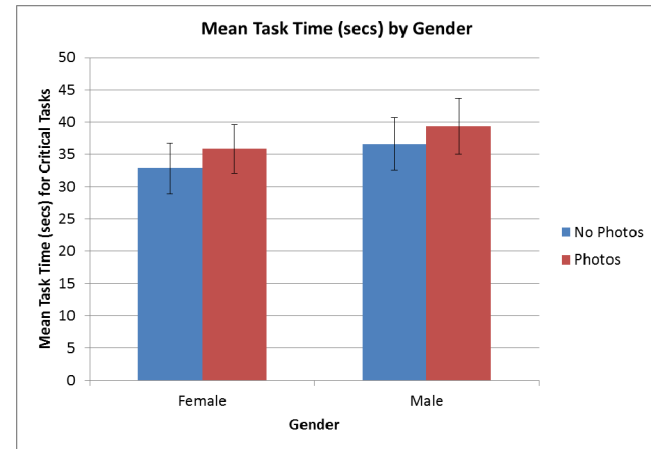

Figure 7. Mean task time (secs) for the critical tasks as a function of page design (Photos /No Photos) and gender.

Figure 8 shows the ratings of trust by gender. The ANOVA showed that the main effect of gender was significant (p=.05), with women tending to give higher ratings of trust than men. As mentioned before, the main effect of photos was also significant (p=.04). The interaction between gender and photos was not significant.

Discussion and Conclusions

Frankly, we were surprised by the results of these analyses. Although not totally conclusive, they are very interesting. The accuracy and time data showed a consistent trend in which ad blindness, or photo avoidance in this case, was exhibited primarily by the younger participants. Older participants exhibited less of the effect, and were perhaps drawn to the photos. Because the participants in this study were active employees of a large company and, therefore,
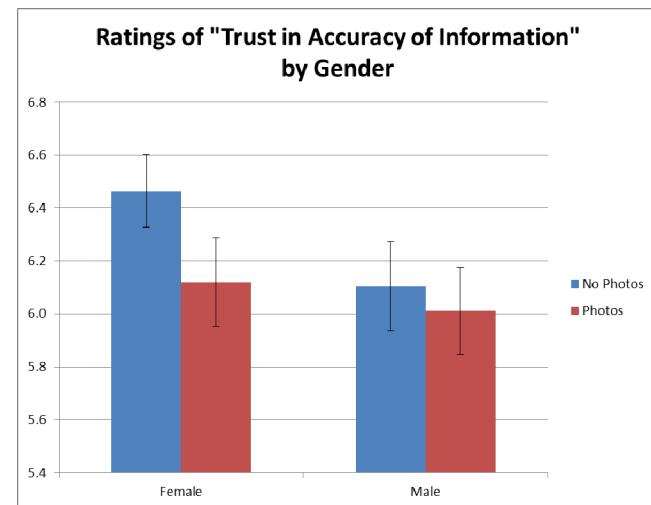
Figure 8. Mean ratings of "Trust in the Accuracy of the Information on this Page" as a function of page design (Photos/No Photos) and gender.

potentially more highly functioning than average older adults, it is possible that these effects could be modified – or, perhaps, increased – with a more diverse population.

In terms of gender, we found that men were the ones primarily exhibiting ad blindness, with women exhibiting almost none (as indicated by the accuracy data). In the ratings of trust, we found significant differences both by age and gender, with women giving higher ratings, along with the younger participants.

We believe the major lesson from this analysis is that researchers and practitioners alike should pay more attention to age and gender in their studies than perhaps they have in the past. Some of the effects they are seeing might be quite different for men and women or for different age groups. We also believe that significantly more research into age and gender differences in web behavior is needed. In this study, we had virtually no participants in their 60's or older. Some of the effects of age are likely to be even more dramatic with web users in their 60's, 70's, or 80's, which is a growing population.

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