

Banner Blindness: Web Searchers Often Miss "Obvious" Links

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Suppose you are designing a web page where one particular link among many is likely to be the most used by visitors. For example, perhaps you have a web page for sending text messages to pagers. "Send a message" is likely to be a very popular link, and it is important that all users notice it. On a travel reservations page, "make a reservation" would be also very popular. Web guidelines usually recommend that to make one item on a page stand out, the important item should be near the top, and be large or brightly colored. For example, the Ameritech web design guidelines state:

In general, the larger an item is, the greater its perceived visual importance and likelihood of attracting attention. Make sure that items of greatest importance are easy to see, and clearly distinguished from other items. (Detweiler & Omanson, 1996)

But this may not necessarily be good design advice. In a usability test of a corporate intranet, we were interested in finding out whether the novice users we were working with could easily make their way from the main home page to lower-level page on computer training courses. The training page contained a highly salient link to courses on using the Internet, so we asked to participants to find information in Internet courses. The link to Internet courses looked like this:



None of the participants in the usability study had any trouble moving from the home page to the page containing this item, but to our surprise, when they reached this page almost every participant scrolled past this link and selected a small link labeled "courses" from a list of links the bottom of the page. Unfortunately, the information on Internet courses wasn't available there, and the participants were forced to give up on the task. When the facilitator directed them back to the earlier page and showed them banner-style link, most participants showed extreme surprise that they could have missed it.

A similar phenomenon in a usability test was described by Spool, Scanlon, Schroeder, Snyder & DeAngelo (1997). A participant in a study was looking for information that

could be found in an animated banner advertisement on the page she was viewing, but she didn't seem to see it. Evidence from both these usability tests suggested that people searching for specific information on the web tend to ignore large, colorful items that are clearly distinguished from other items on the page. Ironically, they tend to miss the very items the page designers want them to see and that would in fact help them reach their goal. We have dubbed this phenomenon "banner blindness" and have conducted some controlled studies to investigate its occurrence

Pilot Study

The purpose of our pilot study was to verify the occurrence of banner blindness under controlled conditions. We designed a strictly hierarchical web site in the style of a typical personal "home page." The depth of the site was four levels: a top-level home page which gave broad category choices, "category-level" pages which gave narrower category choices, "item-level" pages, which provided links to specific content, and content pages.

Each non-content page had a title, a very short paragraph of "comment" text that was irrelevant to the task, and a menu of between three and six text links. The participants were asked to perform 24 short searches for specific pieces of information (e.g., the email address for a hotel). They were told that in some cases, the information would not be available on the site. After each task the participants were to report whether they had found the item, and if so, how difficult the item was to find (on a five-point scale).

For most of the searches (the control tasks) the requested information could be found using only the text menus that were available on each page. For four of the searches (the banner tasks) the participants were required to click on red banners that contained "short cuts" to the goal. Below is an example of a page with a banner link:

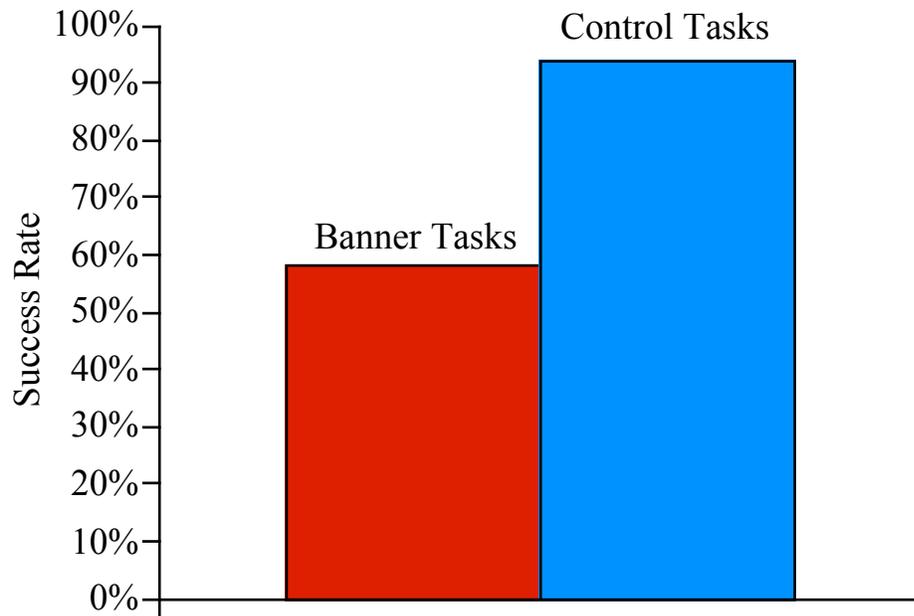


Because the banner tasks required selecting a banner to accomplish the task and control tasks did not, success on control versus banner tasks was used to determine whether the users in this study noticed the banners. Failing to reach the goal required the users to view and make selections on the pages containing banners that used the same terminology as was used in the task descriptions, and yet to declare that they did not believe the information they had been asked to find was available on the site.

Six people, three men and three women, volunteered to participate in the study. All were working professionals with substantial Web experience. The participants ranged in age from the late 20's to the late 30's.

Results

There was substantial banner blindness. The experimental banners were found about 58% of the time compared to 94% of the control items ($t(5) = 2.80, p = 0.03$), as shown in the following figure:



The banners used in this experiment seem like they should be very obvious to users. They are large, brightly colored, and stand out from everything else on the page. However, this study shows that they are frequently missed by the users who are specifically looking for the information they contain. Not only do the banners not jump out at these users and grab attention, they seem to be particularly ignored. Even in cases where the participants in this study located the necessary banners, they rated those tasks as being more difficult than the controls, and it took longer to find them.

This pilot study examined only a limited range of salient items, namely red, rectangular banners. There are several possible explanations for why the banners were ignored beyond the fact that the banners were too salient. For instance, the banners in this pilot study resembled advertisements, and it is possible that the participants in this study have learned to ignore advertisements when searching for information on the Web. A second possibility is that since searchers tend to look for linked text, they focus on small, blue text objects. Perhaps banners that more greatly resembled linked text would be less likely to be ignored. A third consideration is perceptual grouping. Although some design guidelines recommend that important items be set apart from other objects, perhaps a better strategy would be to increase the perceptual grouping between the menu of links, which searching users presumably focus on, and the salient banner.

A second experiment examines these possibilities for methods of attracting attention to important information.

A new Web site was used, again with a strict four-level hierarchy. The top level provided three choices, the second level had 18 subcategories, the third level had five specific items, and the bottom level contained content. All banners appeared on the second level of the hierarchy. We are using the term "banner" broadly defined to mean anything that is intended to stand out from other items on the page and attract attention. It does not just refer to advertising-style banners. In this experiment, one of the screens the participants saw looked like this:

Books

Coaching Youth Basketball in Item C5

	A	B	C
1	Study Guides	Commuters	Religion
2	Philosophy	Automotive	Economics
3	Children	Movies	Cooking
4	Personal Finance	Gardening	Poetry
5	Fats	Music	Sports
6	Humor	Aging	Politics

The "banner" in this case is the large text that states "Coaching Youth Basketball in Item C5." The task the participants were asked to complete was to find a book entitled "Coaching Youth Basketball." Therefore, at this point in the task, if the banner "jumps out" at the users, they should immediately look to area C5 of the grid and select the category "Sports." (The users were given experience at locating items in a grid like this one before the experiment began, and so should be familiar with the concept of "Item C5.") Users who do not notice the banner would have to examine many of the 18 possible categories before locating the correct one. Therefore, we should be able to determine which banners were noticed by comparing the time it takes to find the right category when helpful banners like this are present to the time it takes when a control banners (one which is not relevant to the current task) are used instead.

Notice that in the web page shown above, the menu (the 18 text links surrounded by the table) is perceptually grouped with the large text banner. The banner and the menu share a common gray region which is intended to make them seem related to one another. We called this condition "menu grouping" and we predicted that the participants would be more likely to see the banners under the menu grouping condition than under the title grouping condition which is shown here:

Books		
Coaching Youth Basketball in Item C5		
A	B	C
Study Guides	Computers	Religion
Philosophy	Automotive	Economics
Childcare	Mystery	Cooking

In the page shown above, we have created "title grouping" wherein the title of the page and the banner share a common gray background color, but the menu is white. In this case we expected that since the banner is perceptually more separated from the menu, the banner would be more likely to be ignored. Notice also that on this page, the banner is written in small blue text. It may be that web searchers learn to ignore large things. If this is so, they may be more likely to notice this small text banner than the larger one. A third banner type we examined is a graphic-style one, which looked like this:



In this case, the banner is more perceptually salient than the large text and small text banners (in that it is more different from other items on the page) but it also resembles advertising banners, and therefore may be more likely to be ignored for that reason. For all three types of banners, some participants saw a banner with menu grouping, and some saw a banner with title grouping, and their times to select the correct category were compared to the average of their times on two control tasks. The control tasks used the same types of banners and grouping, but the content of the banners was not relevant to the users' tasks.

The second part of this experiment examined advertising banners. The participants did the same type of searches, but this time, the banners they were shown looked like this:



or like this:

[advertisement with animation - add to HTML version - won't show in word]

Some of the ads the participants saw were unanimated, and some had a small amount of animation as shown above. As in the non-advertising tasks described earlier, some of the ads were placed with menu grouping and some with title grouping. The participants completed 24 tasks in which banner advertisements were shown. After they were done, they were shown the 24 advertisements that had been previously been exposed to and 24 advertisements that were new. The ads were shown one by one, in random order. For each ad, the participants were asked to indicate, on a four-point scale, whether they thought they had been exposed the ad during the search tasks.

.Seventy-two (39 females and 33 males) undergraduate psychology students participated for partial course credit. All had some previous experience with the Web. 90% of them used the Web every day or several times a week. 7% used the Web several times a month, and 3% used it once a month or less. The mean age was just under 20 years.

Results

The mean time it took to select the correct category in non-ad trials where the banner was not relevant to the current task (the controls) was 6.02 seconds. In cases where the banner could have potentially been helpful, the time was 5.51 seconds. This difference was not significant, Wilks' Lambda $F(2,59) = 0.97, p = .38$. Overall, there did not seem to be any advantage to having these banners. And, a comparison of menu-grouping to title-grouping conditions and among the large text, small text, and graphical type banners showed no advantage of any of these conditions over any others.

Although the non-ad banners did not seem to make the selection more efficient, it is possible that the banner format and grouping variables could influence whether the banners were seen at all. The participants were asked at the end of the study whether they remembered seeing anything that directed them to a particular cell in the menu of choices. Only 17 of the 71 participants (one participant did not answer the question) reported seeing these non-ad banners. Table 1 shows the number of participants who reported seeing any of the non-ad banners in each page format. Although the fact that none of the participants saw the banner in the condition with a graphical banner and title grouping suggests that that condition may lead to particularly bad banner blindness, the general base rate of the recall of these banners makes it difficult to draw any strong conclusions as the effects of the variables.

Table 1: Number of participants who reported seeing either of the non-ad banners.

	Menu Grouped	Title Grouped
Small Text	2 out of 12	4 out of 11
Large Text	4 out of 12	4 out of 12
Graphical	3 out of 12	0 out of 12

The irrelevant ads were also largely ignored by the participants. In the post-experiment questionnaire, only 20% of the participants stated that they recalled seeing *any* advertisements at all during the search trials. And, in fact, neither changing the type of grouping (menu grouping versus title grouping) nor the presence or absence of animation had any effect on whether the banners were recognized in the recognition test. Reanalysis of the data using only participants who recalled noticing the existence of the ads did not change the results.

The main purpose of this experiment was originally to investigate whether changes in how banners were presented could mitigate banner blindness. These formatting variables did not lead to significant differences, but the results are telling for the overall phenomenon. There was no difference in whether a banner was recalled based on whether it was grouped with the menu or with the title, or whether the banner was animated, or even whether the banner looked like a banner advertisement. The non-ad banners that were composed of blue text were not any more helpful than those which looked more like advertisements, although the participants' recall of seeing these banners indicate that there may have been a slight advantage for the text "banners" over the more graphical ones (see Table 1).

Conclusions

The pilot study demonstrated that banner blindness occurs, although some users will eventually find the banners when forced to (i.e., when there was no other way to find the required information.). The second experiment showed that in some cases, banners will be almost entirely missed by nearly all searching users. Use of a small amount of animation and common region grouping did not mitigate the effect. It also showed that "banner" blindness can occur with text items that do not look like advertisements. So, although Web users may learn to ignore advertisements and other graphics which look like advertisements, the phenomenon of ignoring salient items while searching for specific items is wider than just an advertising effect.

Many web sites use salient links to attract searching users to particular parts of the site. Web indexes like Yahoo! (<http://www.yahoo.com/>) provide direct links to hot topics like sports league finals or election results. News sites similarly provide special direct links to top stories, and advertisers place banner advertisements on search pages based on the keywords entered by the user. If searchers don't see these salient links, they may still find the information needed using category links on the same page. But this can cause a higher load on the server and it costs the user in time and effort. And it is possible the user could get lost on the way.

There is evidence that most Web users search for specific information. One researcher has found that two thirds of Web users are looking for something specific (Koman, 1998). In the second experiment of the current study, when asked to rate the percent of Web time they spend searching for specific information as opposed to browsing, the mean response was 77% (SD = 22%). So it makes sense to design for searchers, and help them find what they need as fast as possible.

Some recent studies have shown that banner advertisements are effective. One study showed that people who were exposed to an advertising banner and volunteered to

participate in a survey were influenced by the content of the ad (Briggs & Hollis, 1997). A report in the New York Times indicated similar results. Sites that advertise more have more traffic, spikes in site traffic coincide with banner advertising campaigns, and users who are exposed to banner ads increase their brand awareness as demonstrated in subsequent surveys (Tedeschi, 1998). Our findings don't necessarily contradict these reports.

First, our studies focused exclusively on users who are doing specific searches. The findings described by Briggs and Hollis and by Tedeschi either combine searching users together with browsing users (usage spikes during ad campaigns) or focus on browsing users only (people willing to fill out surveys). Secondly, our studies don't show that users never see or use banners, just that they are less likely to see and use banners than they are to use simple text links. Finally, our findings go beyond advertising and examine attempts to attract attention to important or popular items through salient links created through non-graphical means such as large text and placing important links at the top of the page.

Guideline that recommend placing important items at the top of the page may be misguided. Spool, Scanlon, Schroeder, Snyder, and DeAngelo (1997) found in usability tests that users use navigation bars after they determine that the page didn't contain what they need. At this point users tend to have scrolled to the top or the bottom of the page, it is convenient to locate navigation bars there. Users may start viewing the page in the center, and examine the very top and bottom only after they determine what they want is not located in the center. Therefore, it is better to not place the "important" items at the top because the user looks there last.

A key problem with banners like those used in our study may be the physical separation of the banners from the menu. Despite our efforts to increase the relationship between the banner and the menu by increasing perceptual grouping with common background colors or by making the banner items more similar to menu, a physical separation remained. The solution may be to clearly indicate that the "important" item is part of menu, and then to add distinguishing characteristics to make that item seem more important and draw attention. For example, this page keeps all links within a single text "menu":

[Book Reviews: PeopleWare](#)
A book by DeMarco and Lister.

[Peachtree PeopleWare, Inc.](#)
Now hiring Jr. Software Engineers.

[Peopleware Technical Resources, Inc.](#)
Payroll services staff.

[Seminar on productivity](#)
People are your greatest resource - how to get the most from them.

[Author's night](#)
Central Elementry has several featured children's authors.

[Book Reviews: PeopleWare](#)
A book by DeMarco and Lister.

[SD '98: Peopleware - Coping with clients](#)
Asian Equities Report.

[Helping people with computers](#)
We want to help you maximize output.



The above page was used in a task asking users to find information on the book *PeopleWare*. The users essentially had to choose between the first item, highlighted in yellow, and the identical 6th item, which is not highlighted. Early results on this line of research indicates that the yellow highlighting does not cause banner blindness, and in fact users are likely to choose the highlighted item over the unhighlighted one. We are continuing to study whether this effect would carry over to choices between non-identical items, and what other methods of highlighting are effective.

Design Recommendations

One item separated visually from everything else on a web page may be completely ignored by web searchers, even by searchers who are deliberately searching for the information provided in that item. Be very careful about apply the guideline of increasing the visual distinction between "important" items and other items because it may actually make important items seem unimportant.

Any item that is visually distinguished on a page should be duplicated within a collection of links or other navigation area of the page. That way, if searchers ignore the large, salient item, they can still find what they need through basic navigation.

Any method that is created to make something stand out should be carefully tested with users who are specifically looking for that content to ensure that it does not cause banner blindness.

References

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Note

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Benway, J. P. (1998). Banner blindness: The irony of attention grabbing on the World Wide Web. *Proceedings of the Human Factors and Ergonomics Society 42nd Annual Meeting*, 1, 463-467.