In the beginning, views and clicks were the sole means of measuring ad performance in the online world. Over time, the online medium has emulated the measurement systems of its offline forebears – using surveys and panels to track brand attitudes and purchase behaviors. Certainly, the implementation of these systems online has allowed them to be expanded, sped-up and embellished upon. But it is the ability to unobtrusively track behaviors such as visits to specific websites or searches on specific terms that makes the online medium unique as a platform for measuring advertising effectiveness. Any social scientist or pollster can tell you: nothing predicts behavior like behavior.

The emergence of search marketing in recent years has yielded another means of advertising as well as another means of measuring users' engagement with a brand. This case study examines the particular interaction between display advertising and search behaviors (searches & clicks on search results). The results show an impressive amount of interaction between display and search advertising for this brand. They also point to some of the prominent factors that may determine the extent of this interaction for other brands.

INTRODUCTION

It is not a contentious proposition to claim that advertising, marketing and media coverage promote search activity. Had a young female singer never been shown on MTV or covered by the news media, then "Britney Spears" would not be the perennial top search term that it is. Many ads ask users to enter an "AOL Keyword" in the AOL interface – a function not unlike a search. In fact, a current ad for an online poker site asks users to "search for 888 on the web." For its part, Yahoo! has seen noticeable lifts in searches on brands on days when heavy advertising on the Yahoo! front page and across other media has occurred.

The specific question, then, is to what extent does one medium (online display advertising) affect another behavior (searching) and medium (search advertising). The holy grail of cross-media analysis would be to give marketers a means to maximize their results across the large and increasing number of channels they have to reach their customers. This work will examine one piece of that larger puzzle for one particular advertiser.

This paper will show the effect of display advertising on Yahoo! on search behaviors (specifically on Yahoo! Search) for the advertiser Harris Direct. It will compare the search behaviors of users who are exposed to the Harris campaign on Yahoo! to those who had the same behavioral patterns but who were blocked from seeing the Harris Direct Campaign.

All of the work was undertaken with the kind permission and assistance of Harris Direct. Harris Direct is a premier online brokerage and a prominent advertiser on the Yahoo! network. Harris has an ongoing presence on Yahoo! and at the time of the study was running advertising on Yahoo! Finance, Yahoo! Mail and My Yahoo!

Thanks too should go to Dynamic Logic for their invaluable work on the survey portion of the study.

METHODOLOGY

Step 1: Test and Control Group Selection

One of the cookies Yahoo! uses is the browser cookie, or "b-cookie." Each b-cookie is uniquely associated with a web browser until it is cleared. B-cookies are not associated with Yahoo! IDs and are not connected to any personally identifiable information. Each b-cookie also has a random number appended to the end of it. By serving different advertising to users with different b-cookie numbers, test and control groups can be randomly and unobtrusively generated.

In this particular case, users with b-cookies ending in 90-94 were assigned to the *test* group and users with b-cookies ending in 95-99 were assigned to the *control* group.

In later steps, users would self-select into sub-groups.

Step 2: Dark Period

In order to minimize the impact of previous advertising, for one week users in both the *control* and *test* groups were shown versions of Yahoo! that did not contain any advertising by Harris Direct. In other words no users in either group viewed ads from Harris Direct for that week.

Step 3: Display Advertising

For weeks 2-4, users in the test group were allowed to see the Harris Direct campaign as normal, whereas users in the control group continued to see a Yahoo! with no Harris Direct advertising.

The advertising plan was not changed for the purposes of this test. The size and scope of advertising was in line with the efforts of Yahoo!'s larger partners in the finance category.

Figure 1 is a visual representation of what users saw:

Figure 1:

Control Group

Not Shown Client Ad

Test Group

Shown Client Ad

At the end of the three weeks, users in the *test* group who had seen Harris Direct advertising were placed in the *test-exposed* group. Similarly, users in the *control* group who would (based on the pages they visited) have seen Harris Direct advertising were placed in the *control-exposed* group.

Examples of the advertising to which users were exposed are below (Figure 2):

Figure 2


HARRISdirect
Options
and $100
credit


HARRISdirect
Options
and $100 credit


HARRISdirect
OPTIONS
and $100 credit


HARRISdirect
Get $100 credit

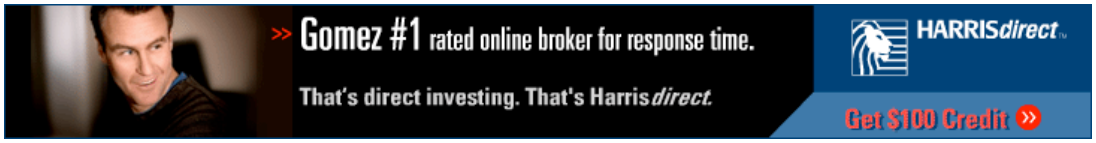

HARRISdirect


HARRISdirect
That's direct investing. That's Harrisdirect.


HARRISdirect
Get $100 credit


Gomez #1
rated online broker for
response time.
That's direct investing.

Independence
And $100 credit
HARRISdirect
Invest with Harrisdirect


Gomez #1 rated online broker for response time.
That's direct investing. That's Harrisdirect.
HARRISdirect
Get $100 Credit

Step 4: Dynamic Logic Survey

During weeks 2-4, users in the test-exposed and control-exposed groups were served a brand survey from Dynamic Logic.

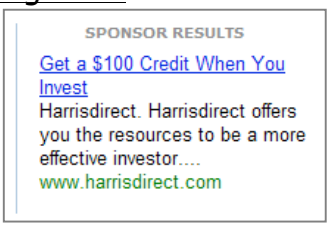
Step 5: Search Behavior Analysis

At the end of week 4, the Yahoo! search logs for all users in the *test-exposed* and *control-exposed* groups were collected for the period of weeks 2-4. From these logs, those searches wherein a Harris Direct search ad was viewed were selected.

During this period, Harris Direct bid on 455 terms with Overture (now Yahoo! Search Marketing). The company's bidding strategy was not influenced in any way during this test. Harris Direct ads appeared on searches where the company had bid sufficiently high on the term at the time of the search. Searches where a Harris Direct sponsored search link was served were deemed "*relevant*."

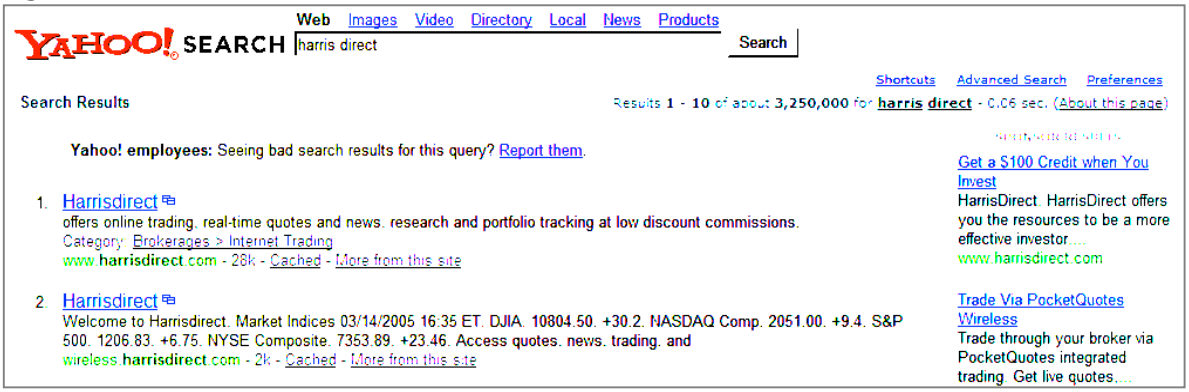
A Harris Direct sponsored search link is shown below:

Figure 3:



The link would generally appear on the right as shown below, but with a position determined by the rank of the Harris Direct bid versus other bids on the term at the time.

Figure 4:



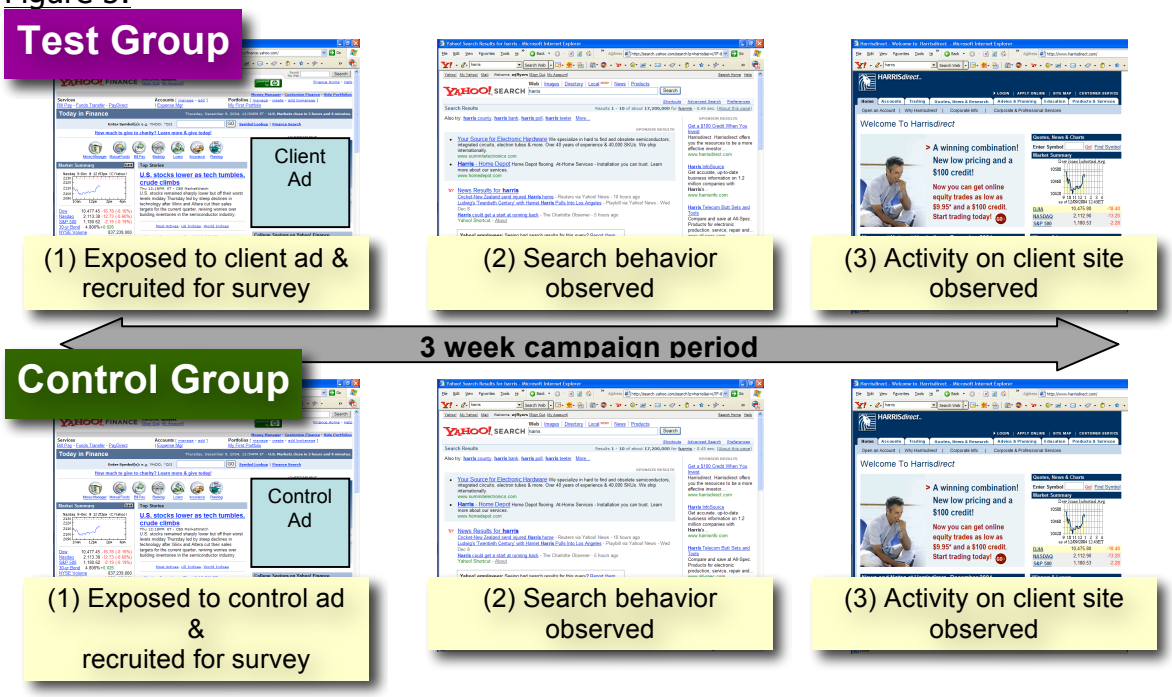
Users click behavior was also tracked on relevant searches. Clicks on sponsored search links and algorithmic results that led to a domain owned by Harris Direct were also tracked and recorded.

Step 6: Behavior on the Harris Direct Site

Finally, a beacon (a short line of Javascript code that can collect Yahoo! cookies from sites outside the Yahoo! network) was placed on a page on the Harris Direct site to track the users who actually engaged with the site.

Below is a graphical representation of the events after the one week initial dark period:

Figure 5:

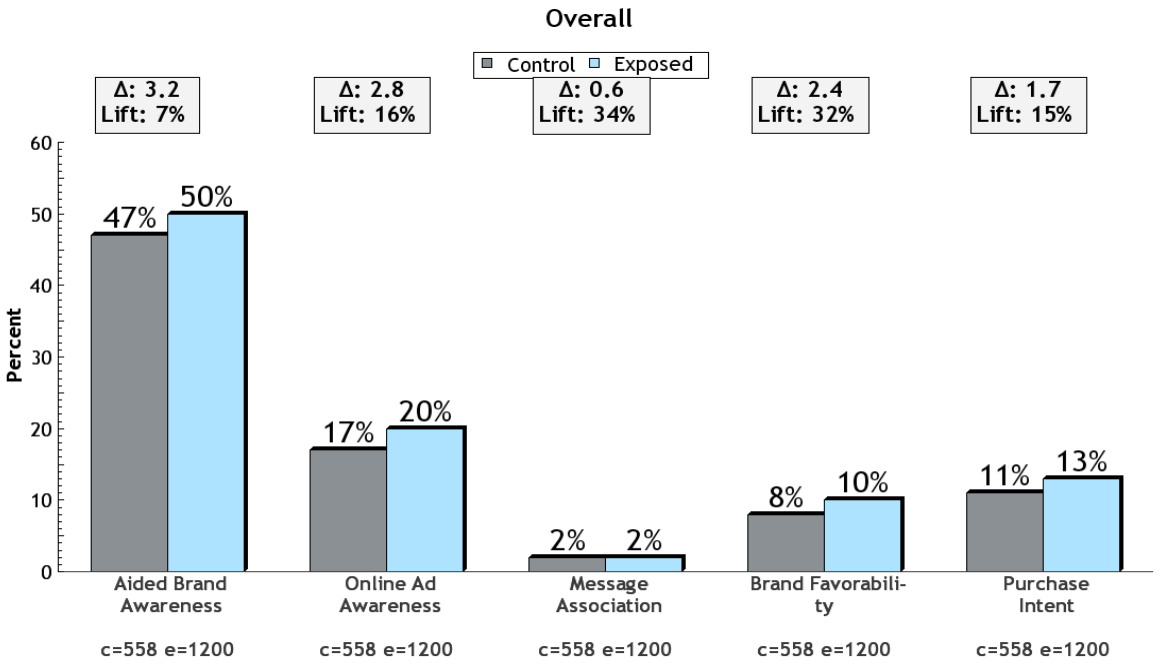


RESULTS

The Dynamic Logic survey results were positive, but in all areas save one they were not statistically significant. The exception is Brand Favorability which rose 32% (significant at 90%) from 7.5 o 9.9 per cent.

Below is the Dynamic Logic report for the study:

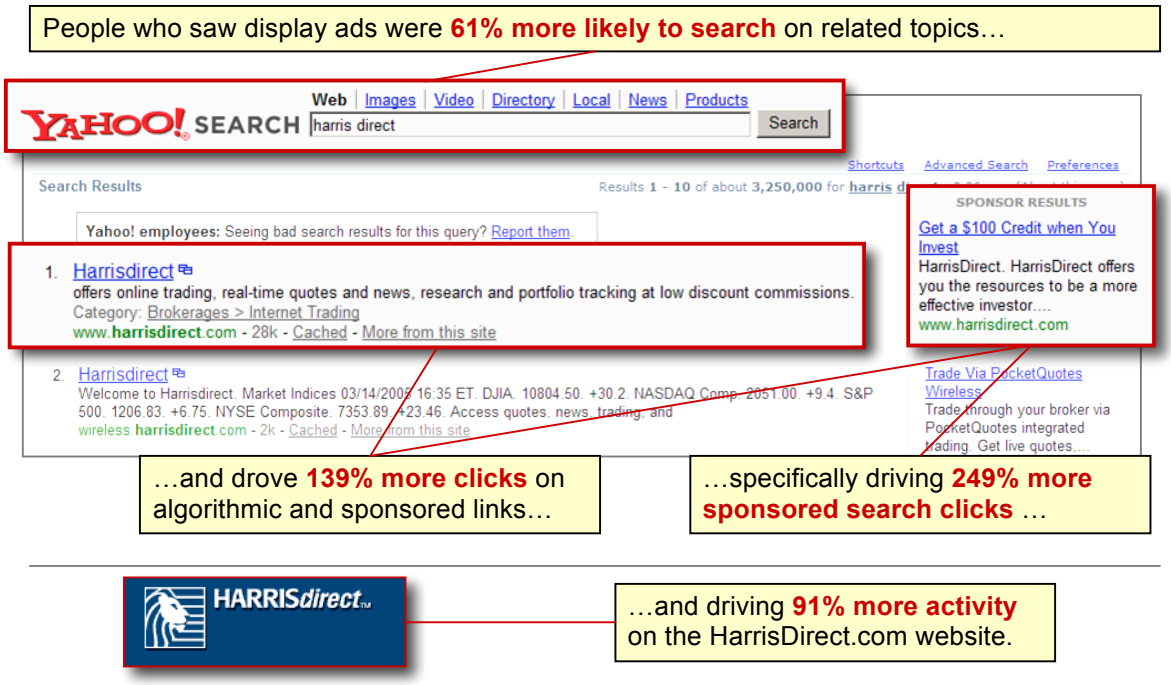
Figure 6:



Behavioral changes were significantly more impressive. Specifically, users in the *test-exposed* group executed 61% more relevant searches than those in the *control-exposed* group. They also executed 139% more clicks on all links leading to the Harris direct website. This included a 249% lift in clicks on sponsored links and a 131% lift in clicks on algorithmic search results. This led to 91% more users reaching the beginning of the sign-up funnel for Harris Direct. All lifts were significant at 95% confidence.

Below is a graphical representation of those results:

Figure 7:



Raw data is below:

Figure 8:

B-Cookies	Control	Test	Lift per B-Cookie
Display Ad Viewers	1,519,552	652,903	
Viewed Search Ad	1,680	1,161	61%
Clicked on Search or Algo Result	117	120	139%
Was Active on HarrisDirect.com (through relevant search)	73	60	91%

Because *control-exposed* users had merely to exhibit the behavior of visiting specific pages, whereas *test-exposed* users had to exhibit that behavior and have the ad server system show them a Harris Ad (as opposed to another ad that might be in rotation in that placement) at that time, it was possible to gather a larger *control* than *test* group.

CONCLUSIONS

The impact of display advertising on search behavior was extraordinary in this instance. This is by no means the effect that one would expect in all cases. However, it is a solid basis for further study and it does lead to some hypotheses about the factors that cause display advertising to affect a user's search behavior. Specifically, the following are likely to be factors:

- The magnitude of the campaign (more exposure may lead to more influence on behavior)
- The consideration cycle for the product in question (longer cycles may allow more opportunities for searching)
- Initial brand awareness (people who are already familiar with the brand may be unlikely to search on it. At the same time, people who see a brand for the first time may also be unlikely to search on it.)
- Type of call to action in the advertising (ads with an immediate call to action like, "buy now for $99," may be less likely to drive users to search than ads that just introduce the brand).
- Nature of the audience (users who visit certain web sites may be more or less likely to be influenced to search).

Yahoo! and its partners are continuing to explore all these factors across a variety of industries and products.