SEEING SEARCH
GO SOCIAL:

An Eye Tracking Analysis on Social Networking Sites

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SEARCH IS NOT NEW,
it just changes shape with every new technological innovation.

BEFORE GOOGLE WAS SYNONYMOUS WITH SEARCH, we would search the Yellow Pages to find information on area businesses and services—the original local search. In fact, in 1992, the Yellow Pages reached 98% of American households.[1] With that kind of reach, ranked as the fourth largest advertising medium in the U.S., successful marketing started with a listing in the Yellow Pages.[2]

Flash forward to 2009: the simple idea behind advertising in a directory service has gone digital. And much more than plain alphabetical listings, we now rely on sophisticated algorithms to help us sift through millions of results online. Google reported a $5.7 billion revenue in the last quarter of 2008—99% generated from an advertising model based on selling keywords to improve a website's ranking on a search engine results page.[3] So while marketers were willing to pay top dollar for advertising space in the Yellow Pages in 1992, more than ten years later Google has figured out how to make this work online.

But, remember, search is constantly changing. And how we search is changing, too. Usability experts and recent scholarly studies report shifts in the way we process information online and more and more people are using social networks.[4] For online marketers in the midst of this sea of change, the stakes are high.

EYETRACKING

Controversy raged over one study's tenuous, albeit catchy, claim of "banner blindness," referred to as a growing trend of users ignoring banner ads.[5] The jury is still out on this one.

Excitement over the advancements in Eye Tracking technology has spawned a new era of research. And the anticipation mounts as marketers await new insights into website usability and how people interact within online environments.

Early on, a study proposed the "Golden Triangle" [6] theory giving credence to the belief that users scan the top five search results in the order they are listed. For marketers, this bolstered the necessity of Search Engine Optimization (SEO). But, as we see people spending more time on social networking sites, we are quickly learning that the old rules no longer apply. Consider these facts:

- *Online communities continue to grow. 72% of American adults go online with the intent of connecting in online communities.[7]*

- *Facebook users averaged over 3 billion minutes a day in February 2009. [8]*

- *Total U.S. time spent on Facebook increased to 700% in 2009.[9]*

- *Search queries are up on Facebook, showing a 5% increase in May 2009; Google search queries are down 2%.[10]*

Purpose

As search options expand on social networking sites, we anticipate a transformation in search habits and information-foraging behaviors.

Marketers face the constant challenge of keeping up with and understanding consumer search behavior. Social networking sites offer an enormous opportunity for businesses to build brands and develop a synergy between company profile pages, display ads and search.

Today we are seeing the fusion of search and social. And in the wake we are finding a lot of confusion over the effectiveness of advertising on social networking sites. We know that over half of internet users favorably view personalized ads.[11] **But do people look at ads when they are on social networking sites?**

Eye Tracking technologies can reveal how attention is allocated across specific Areas Of Interest (AOI). And Oneupweb used these techniques to investigate how users interact with sponsored ads while conducting search tasks on Facebook, Twitter and YouTube.

Figure 1. Heat map visualization of study participants logging into Facebook.

Methodology

With Eye Tracking technology we are able to analyze how a user views webpage content. Using Eye Tracking we gathered eye gaze data on 25 participants conducting product searches on Facebook and YouTube (*Table 1*). And in the case of Twitter we observed overall search behavior since, at this time, Twitter does not allow paid advertisements. But this is likely to change soon.

Table 1. Search tasks (queries) used in study.

Navigational
• Login and interact with Facebook account. • Navigate to YouTube.

Informational
• Search for a Brand Page on Facebook of one of five brands: *Ford, Gibson Guitars, Pepsi, Tom's Shoes and Trek Bicycles.* • Search for the same brand on YouTube. Watch any videos of interest.

A previous Cornell study found that users will click on a result within the first ten seconds of viewing the results page.[12] For the purpose of this study we looked at the scan paths, duration of first fixation, and length of fixation within the first thirty seconds of the search process.

Previous studies suggest that people will develop habits in how they scan a web page or search results.[13] Focusing on the order of fixations will help illustrate how these behaviors influence a user's exposure to sponsored ads on social sites.

Demographics

Twenty-five participants (60% female) ranging in age from 18 to 55 years old (average=35) were recruited for this study. All of the participants had Facebook accounts and were regular users (*Figure 2, page 5*). This sample is comparable with the average Facebook user (*Table 2*).

Table 2. U.S. Demographics at a glance for Facebook, Twitter and YouTube.

	Facebook		Twitter		YouTube	
Estimated Monthly Traffic (millions)	91.2		21.9		71.3	
% of people ages 18-49	62%		75%		59%	
% by gender	M	F	M	F	M	F
	44%	56%	45%	55%	50%	50%

*Source: QuantCast, rough estimate 5/31/09*

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Procedure

At the beginning of each study, the Eye Tracker was calibrated for the participant. The participant first logged into their account on Facebook and was asked to spend a couple of minutes engaging with their pages as they would normally do before the search task was presented (*Figure 3a, page 6 and Figure 3b, page 7*). The participants followed the same routine on Twitter (*Figure 4a, page 8 and Figure 4b, page 9*). Then they were asked to navigate to YouTube (*Figure 5a, page 10 and Figure 5b, page 11*).[14] This set a baseline for normal behavior before the participant was asked to conduct a search task (*Table 1, page 4*).

The participants were verbally asked to complete a series of search tasks on Facebook, Twitter and YouTube (*Figure 6, page 12*).

Upon completion of the search tasks, the participants responded to a brief survey regarding their experience with the Eye Tracking study.

Figure 2. Post-survey question: How often do you login to Facebook? Eighty-five percent of the study's participants said that they use Facebook on a regular basis.

- less than 3 times a month, 17%
- weekly, 17%
- everyday, 39%
- several times daily, 29%
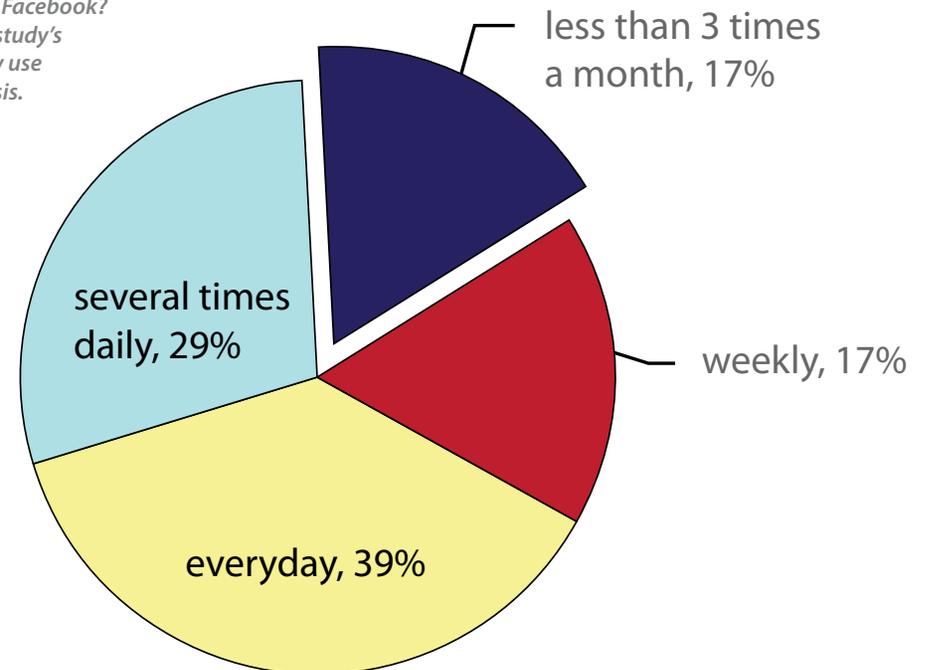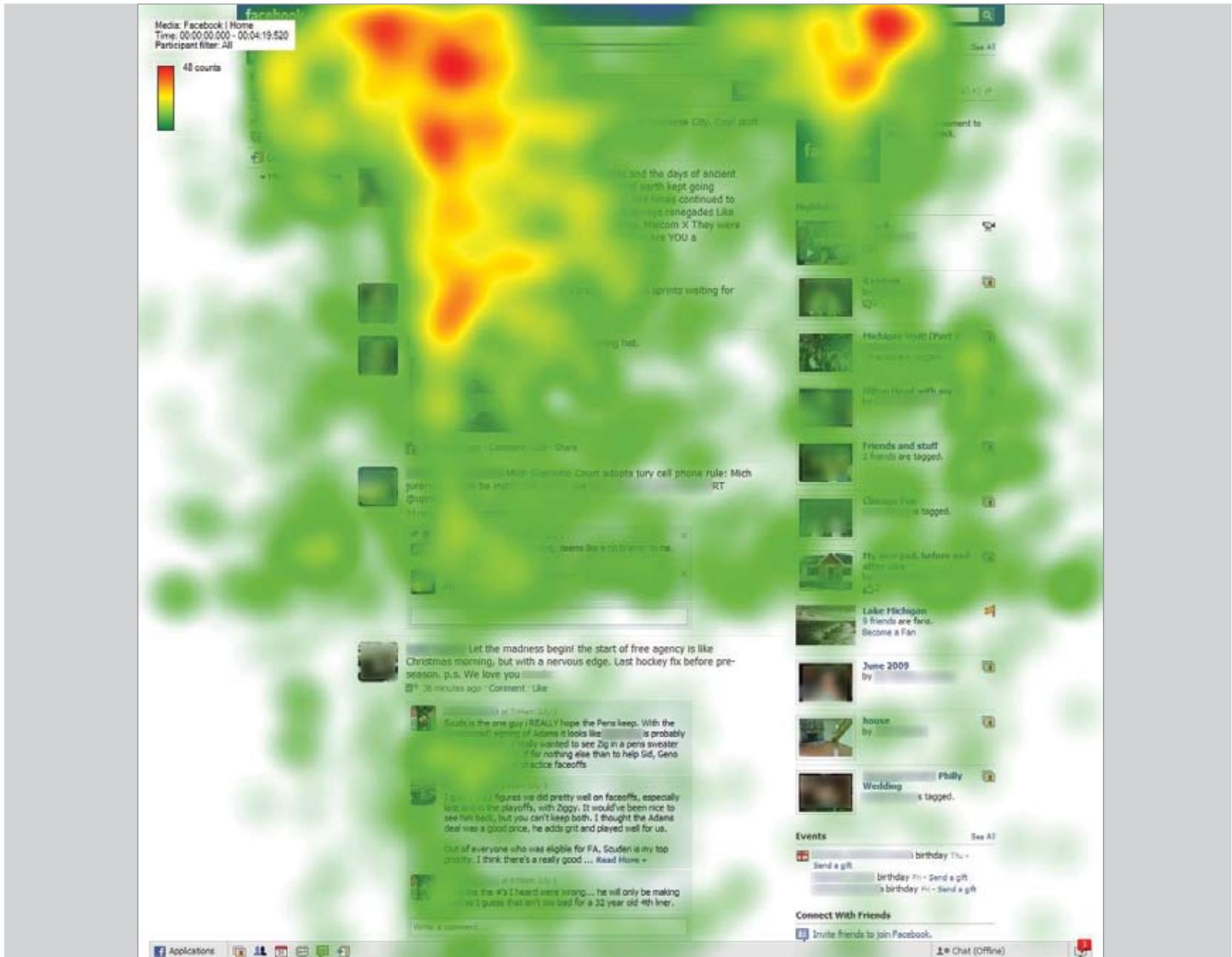
Figure 3a. Normal viewing behavior recorded on Facebook shown using areas of high gaze intensity in red on the heat map above.
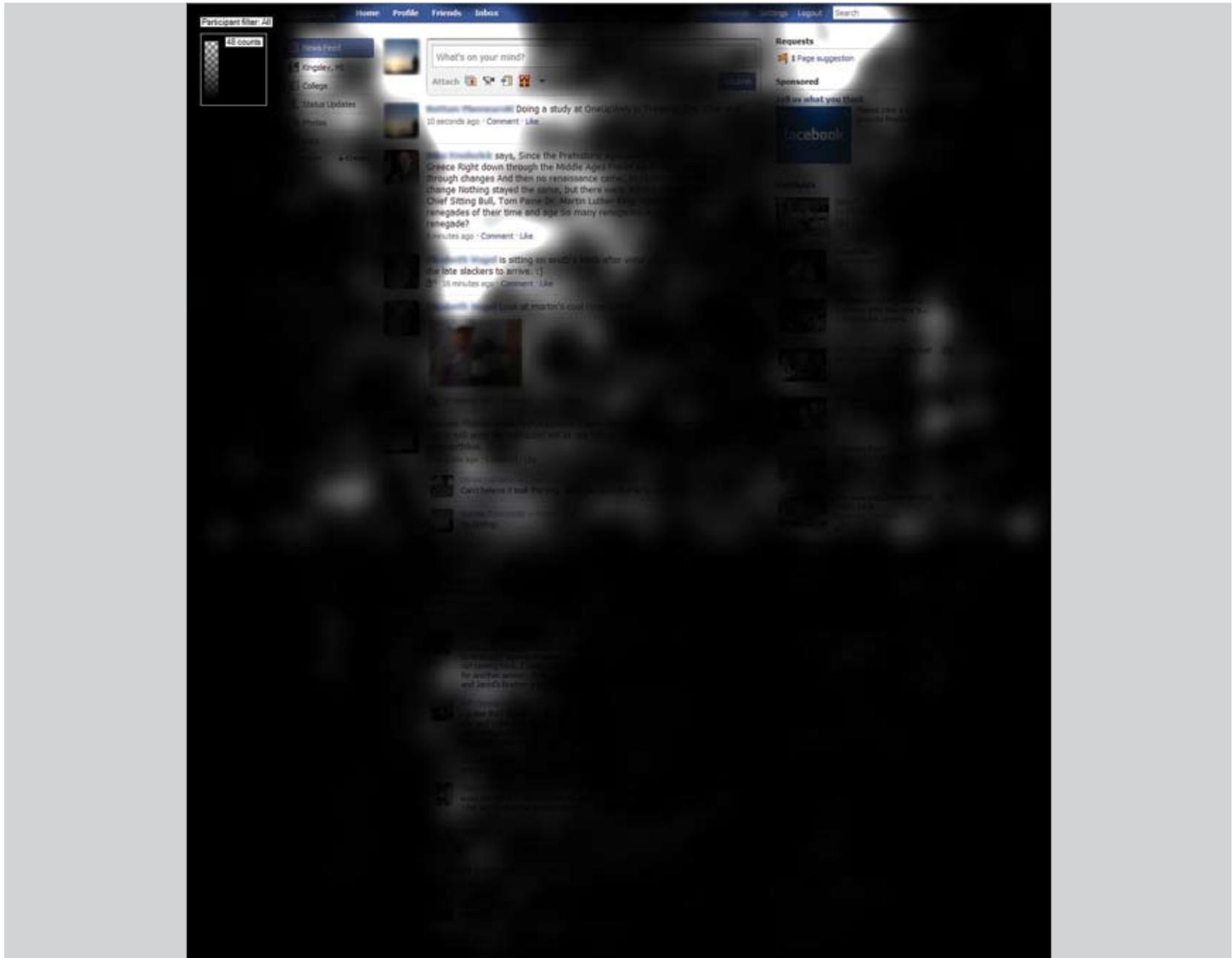
Figure 3b. *Normal viewing behavior recorded on Facebook. Dark areas show where users did not look.*
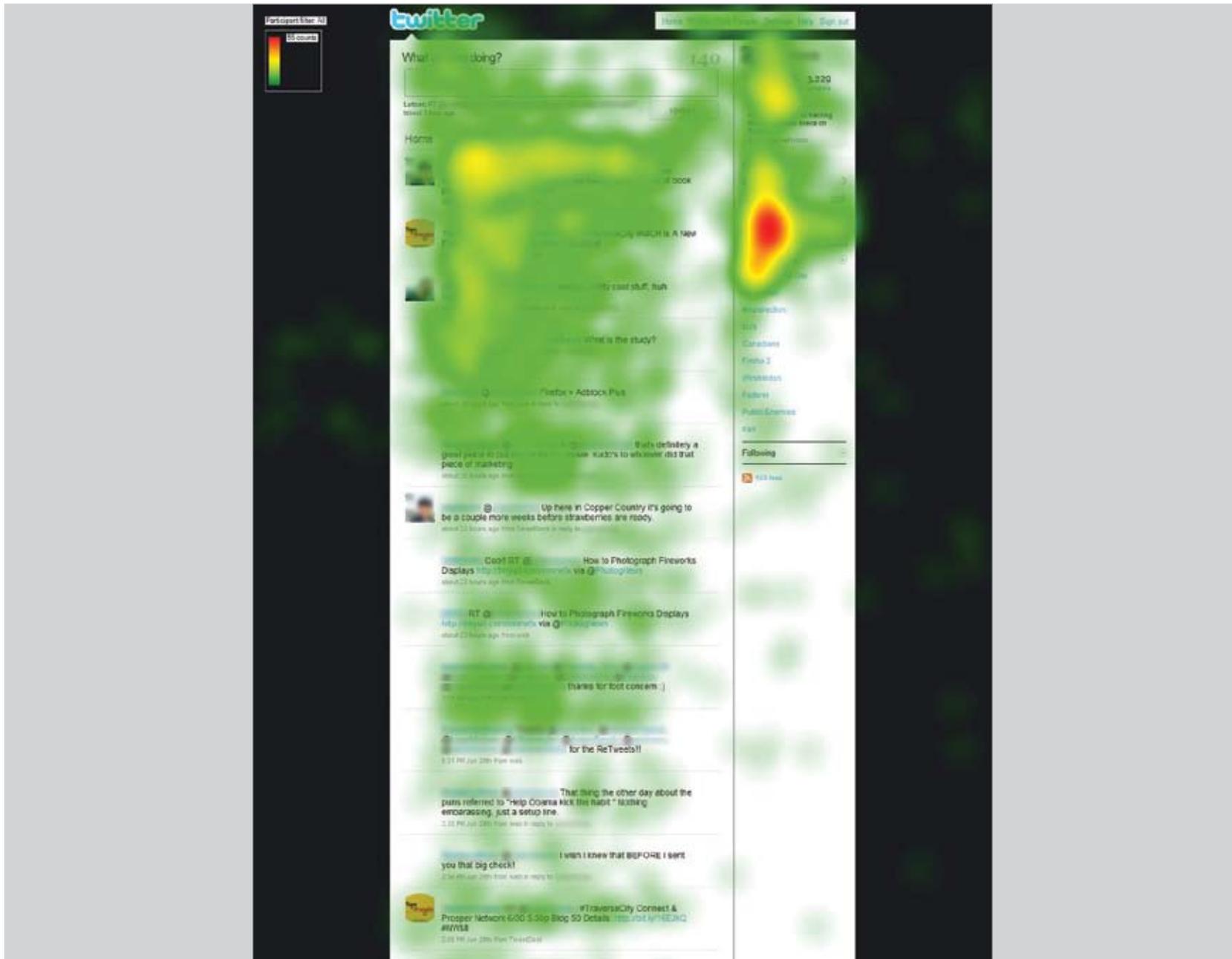
Figure 4a. Normal behavior on Twitter shows heavy gaze intensity in the right column and on the first four results.
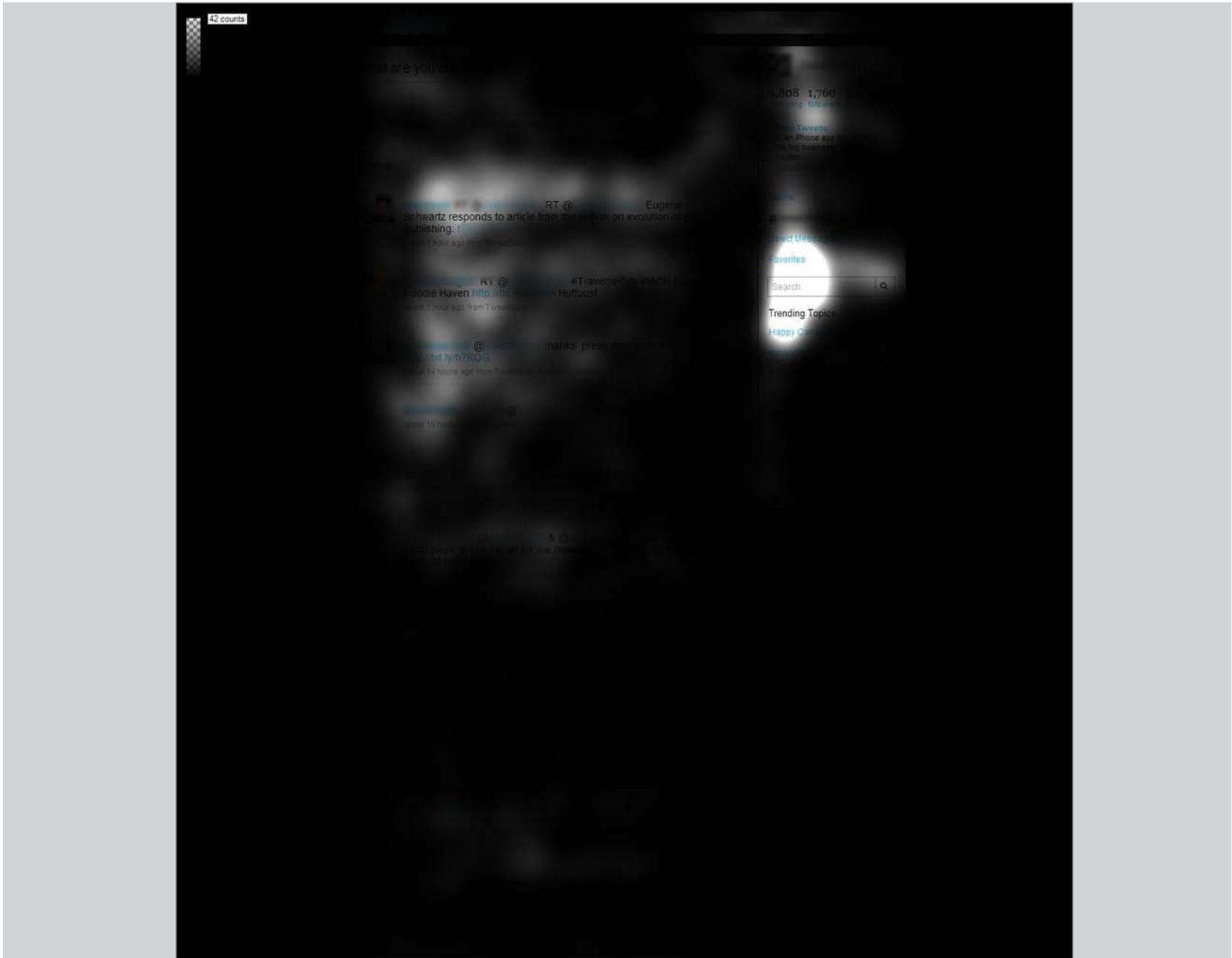
*Figure 4b. What didn't the users see in the first 60 seconds on Twitter?*
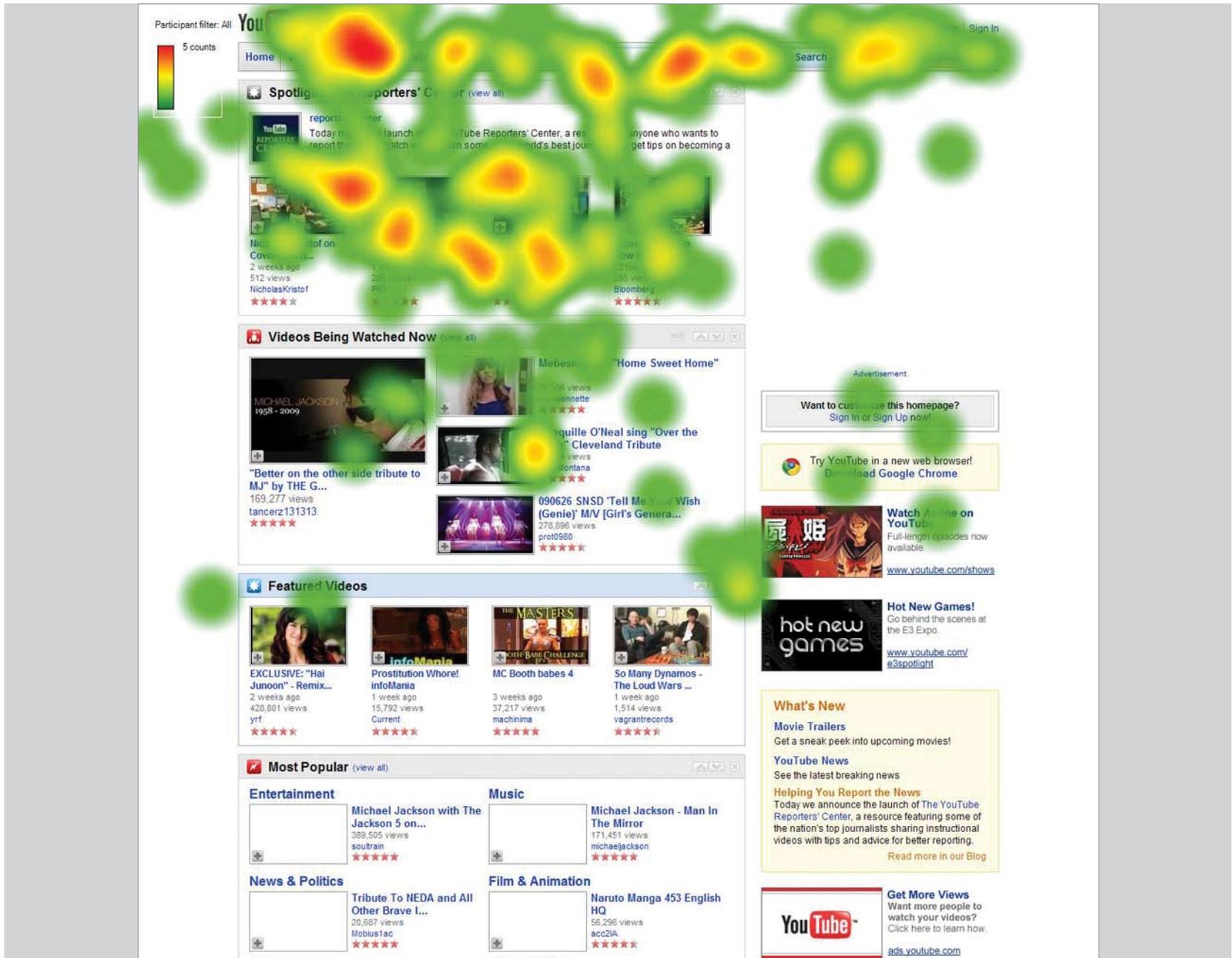
Figure 5a. On YouTube we can see heavy engagement with the four videos featured on top of the page.
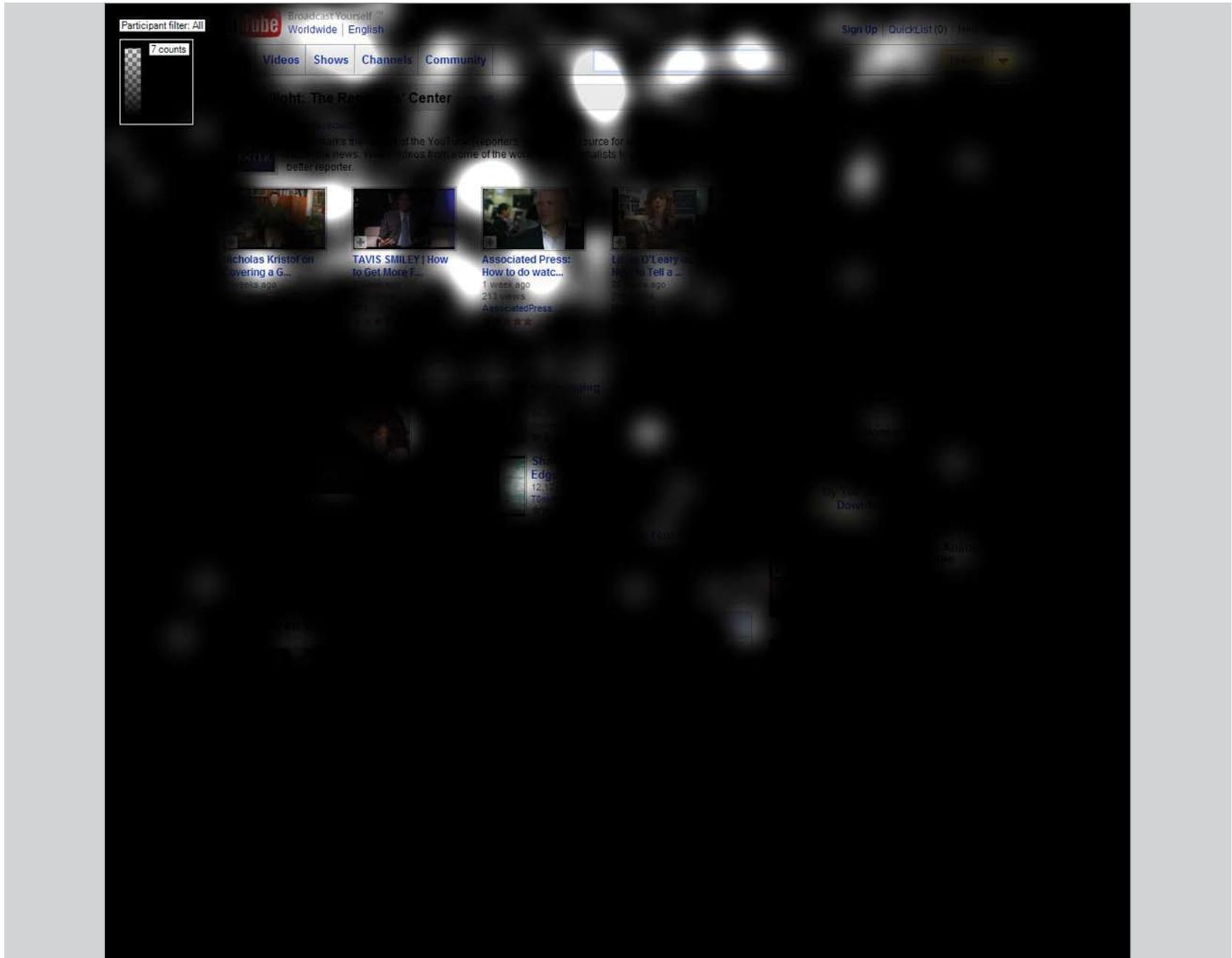
Figure 5b. The participants didn't see the Michael Jackson video in the first 30 seconds of viewing.

Our analysis of the first thirty seconds of the search process on Facebook and YouTube include:

- *Detecting patterns of interest across individual gaze plots.*

- *Identifying areas of high gaze intensity on heat map visualizations.*

- *Analyzing aggregate data sets by doing a comparative analysis of "time to first fixation" and "fixation duration."*

We also observed search habits on Twitter. However, Twitter does not currently support sponsored ads so we could not include Twitter in the comparative analysis of user engagement with natural and paid search results. Nonetheless, Twitter is drawing a lot of attention for its use as an essential social media marketing tool. Twitter is experiencing a population boom—seeing over a 400% increase in U.S. users since January 2009.[15] And Twitter will likely continue to gain more attention from marketers as more and more people sign on.

We find it important to include Twitter in this study to better understand *how* users approach a search task—we suspected many users would look for the search query in the right column of their page instead of navigating to the search site associated with Twitter (*http://search.twitter.com*). These preliminary results will help guide the direction for further marketing research.

Analysis: First Impressions

Individual gaze plots were analyzed to identify patterns in the order the participants viewed the search results. Heat maps summarize multiple gaze data, displaying gaze points, fixations and scan paths superimposed over the stimuli viewed during the study.

Figure 6. Outline for conducting the Eye Tracking study.

Search Tasks on Facebook and Twitter
Step 1: Login to Facebook / Twitter and interact with account as usual.
Step 2: Search for an item either recently purchased or considering to purchase. Look on Facebook / Twitter for information about that product.
Step 3: Search for one of the five brands listed. Look for the brand page on Facebook / Twitter.
Search Tasks on YouTube
Step 1: Navigate to YouTube.
Step 2: Search for the same brand as on Facebook and Twitter. Freely interact with video results.

Within the first ten seconds of viewing the search results, participants gaze fixated on the sponsored ads. Contrary to expected behavior, the participants viewed the sponsored ads *prior* to viewing the second and third results (*Figure 7, page 13*). The heat map visualization shows the aggregate group data for the initial impressions when viewing the Pepsi search results on Facebook (*Figure 8, page 14*).

Similar behavior was observed throughout the YouTube search (*Figure 9, page 15 and Figure 10, page 16*). Again, the participants engaged with the sponsored ads in the process of completing the search task.
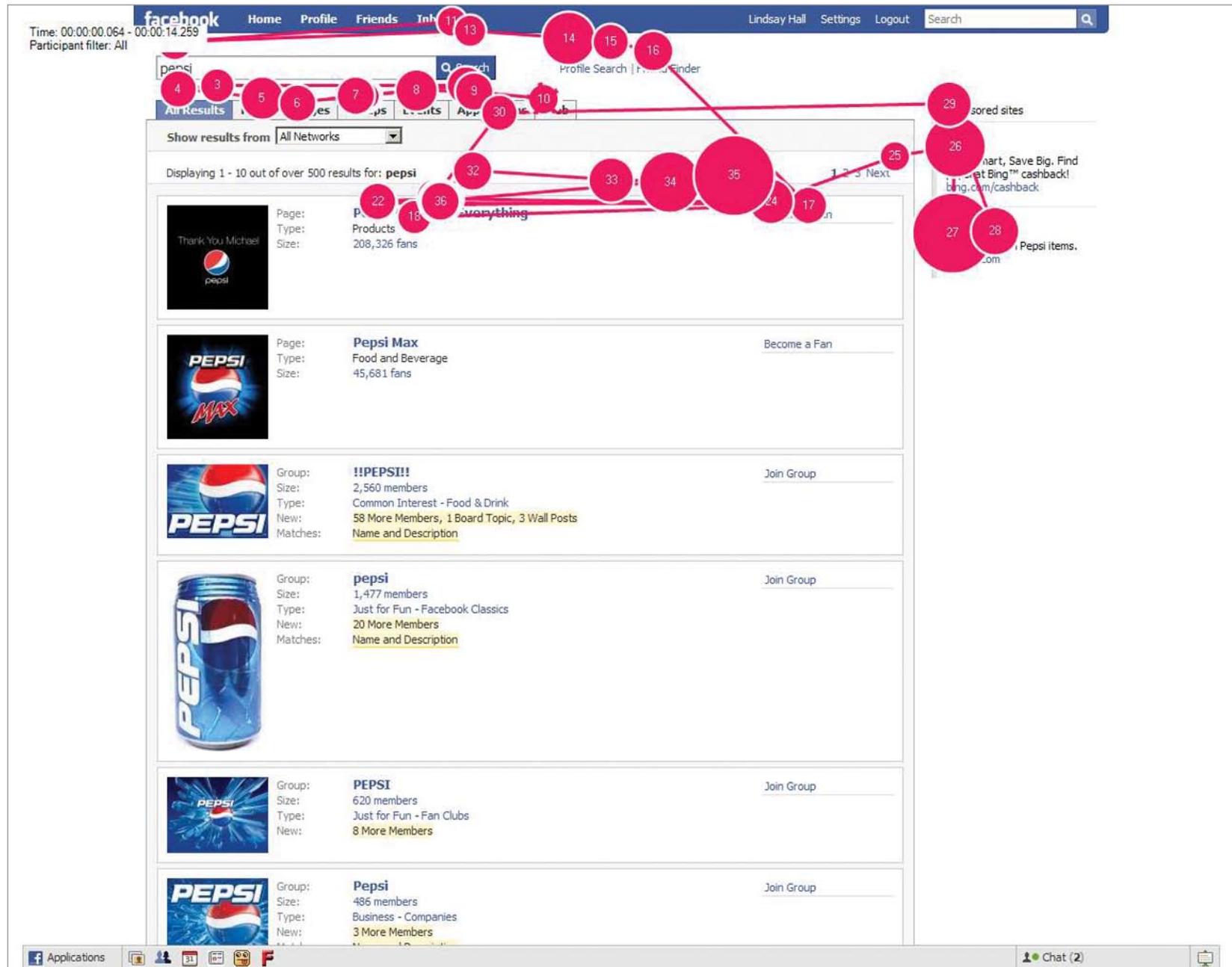
Figure 7. Gaze plot visualization for a participant conducting a search for a Pepsi profile page on Facebook. It took this individual 21 gaze fixations on search bar and menu options before arriving at the first result. Within four more gazes, the participant is viewing the sponsored results. Overall, this individual spends more time fixating on the sponsored ad than on the second or third result. Time: 0.00 - 22.87 seconds.
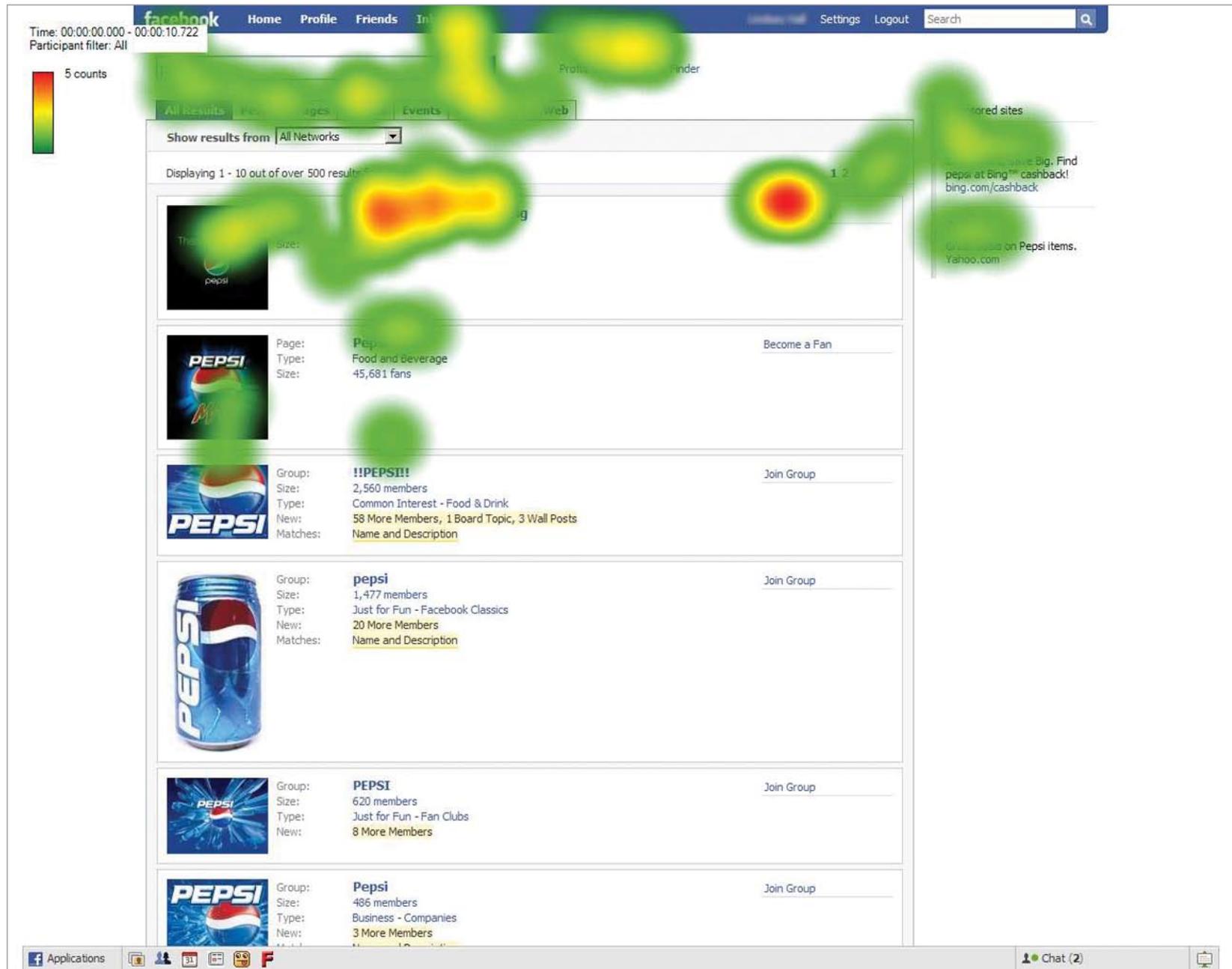
Figure 8. Heat map visualization of aggregate views of Pepsi search results on Facebook. Time: 0:00 -10.72seconds.

Figure 9. A snapshot of 12.41 seconds of a participant viewing the search results for Pepsi on YouTube. The participant begins scanning the description of the first video search result (gazes 1-6). They then read the description of the second video (gazes 7-18). Their gaze moves to the sponsored videos (gaze 20-28) before viewing the third result. In this case, the participant spent more time viewing the sponsored videos than the first video search result.
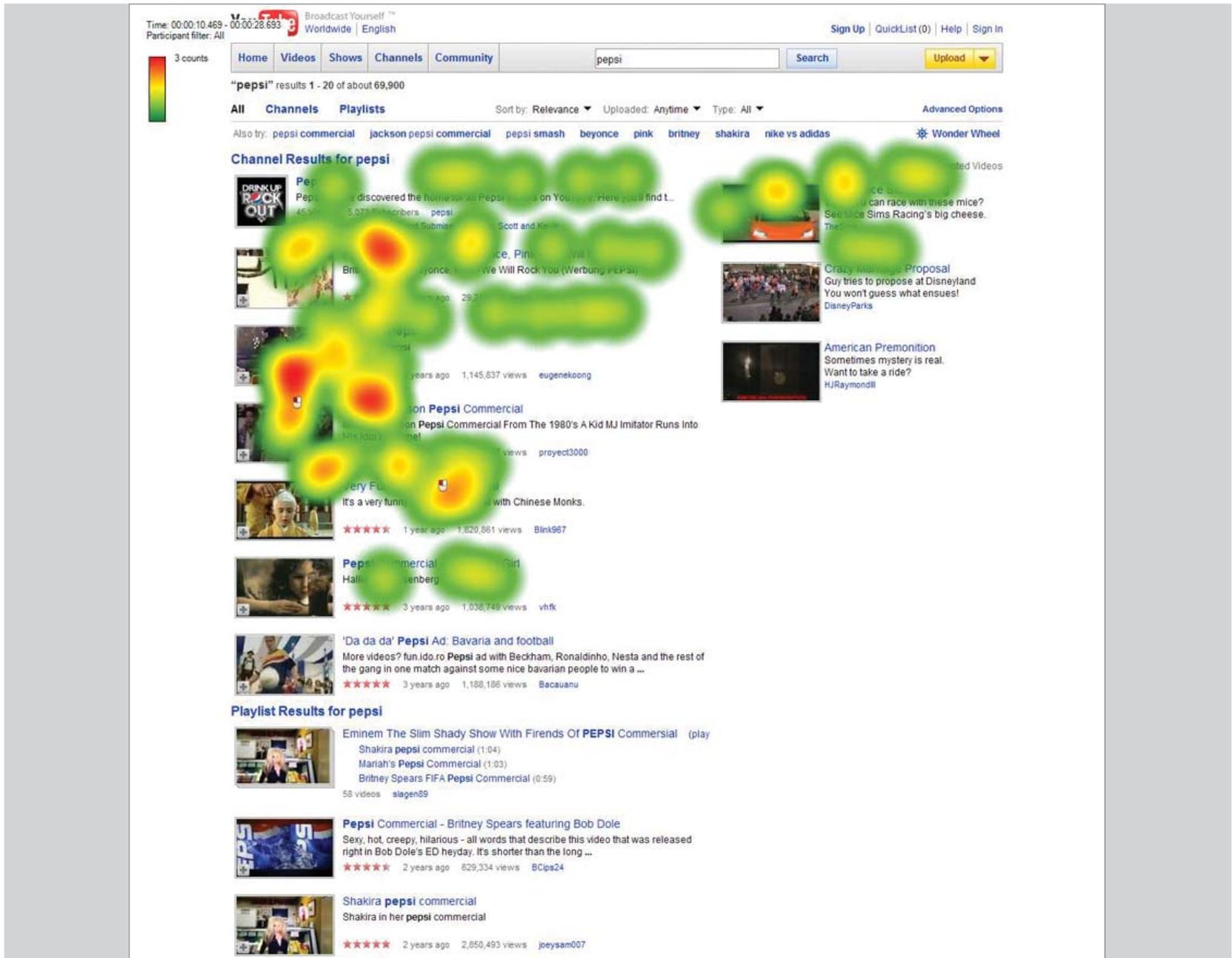
Figure 10. *Heat map visualization of aggregate views of the Pepsi search results on YouTube (12.41 seconds).*

Analysis: Fixation on Areas of Interest (AOI)

Areas of Interest (AOI) is a quantitative tool used for comparative analysis of certain features on a web page. Eye Tracking tools work by detecting and tracking fixations. A fixation is counted when a gaze is positioned on an area of approximately 50 pixels for at least 100 millisecond (ms)—that is 1/10 of a second. Eye movements are rapid and move across many areas of a page in just a minute. The ability to define specific AOIs for comparison makes it possible to do a quantitative analysis of the results.

For the purpose of this study, we first analyzed the cluster data looking for areas of high intensity—those areas where the majority of participants spent time and for how long. From that data we were able to confidently select AOIs that would provide the most robust and meaningful comparisons. We defined the section for sponsored ads as AOI 1(*Figure 11, page 18 and Figure 12, page 19*). The four top areas in the search results were defined as AOI 2, AOI 3 and AOI 4, respectively. This allowed us to do a more rigorous comparison of gaze fixation on the sponsored ads compared to the search results.

The ability to define specific AOIs gives us the capability to analyze the percentage of users fixating on a particular element and the length of their stay on that feature. Time to first fixation and fixation duration are powerful metrics to begin understanding how viewers distribute their attention across a webpage.

What we found corroborated evidence from previous research on the speed at which users view search results. Overall, participants spent less than a second fixating on each search result (*Figure 13, page 20*). But more importantly, this study found that there was *not* a significant difference in fixation duration on sponsored ads compared with that of the overall top search results (*Figure 10, page 16 and Figure 14, page 20*).

Users fixated on the first result within the first two seconds and would see the sponsored ads, on average, within the first ten seconds—inside the timeframe before they are likely to take any action (*Figure 10, page 16*). This data also suggests that perhaps users do not view ranked results in order, as previously thought.

An interesting observation from this particular study was the way users spent more time interacting with the search results page on Facebook compared with time engaged with results on YouTube. However, once a participant clicked on a YouTube video, they continued to interact with the related results on the right of the screen while they waited for the video to load.

Figure 11. Areas of Interest (AOIs) defined for the Pepsi search results on Facebook for a quantitative analysis comparing viewer engagement with sponsored ads and search results.

Figure 12. *Areas of Interest (AOIs) defined for the Pepsi search results on YouTube for a quantitative analysis comparing viewer engagement with sponsored ads and search results.*

Figure 13. *Average fixation duration on sponsored ads compared to the top four search areas during the first twenty seconds of scanning search results. Facebook R2 value = 0.37; YouTube R2 value = 0.44 indicating there is no predictable trend (increase or decrease) in the duration of fixation across the selected AOIs.*
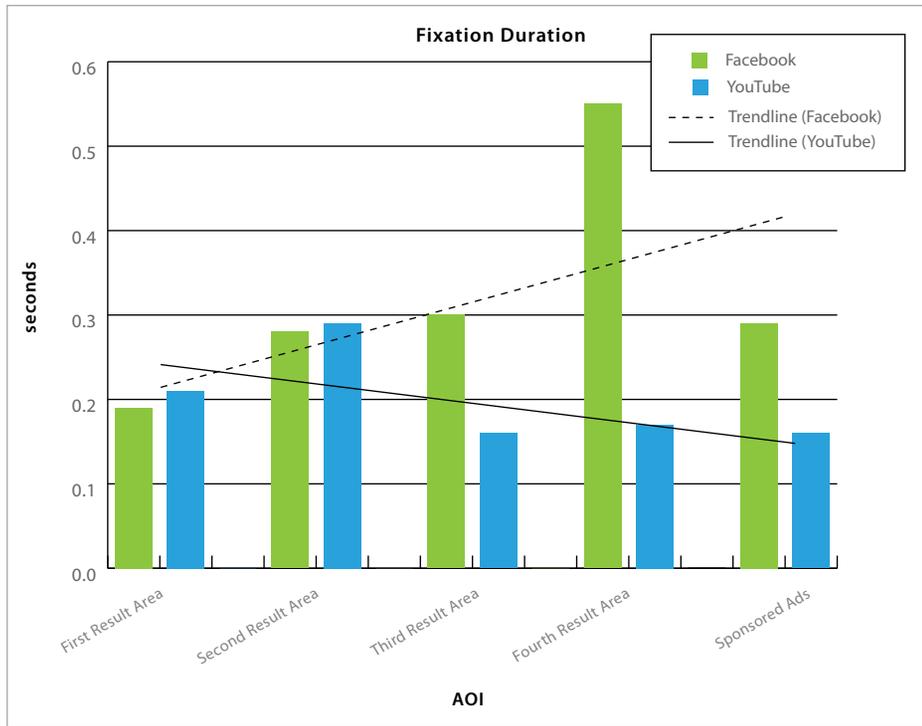

Figure 14. *A comparison of time to first fixation of the sponsored ads and the first four result areas for Facebook and YouTube. This shows that users are likely to see sponsored ads within their search of the top four results.*
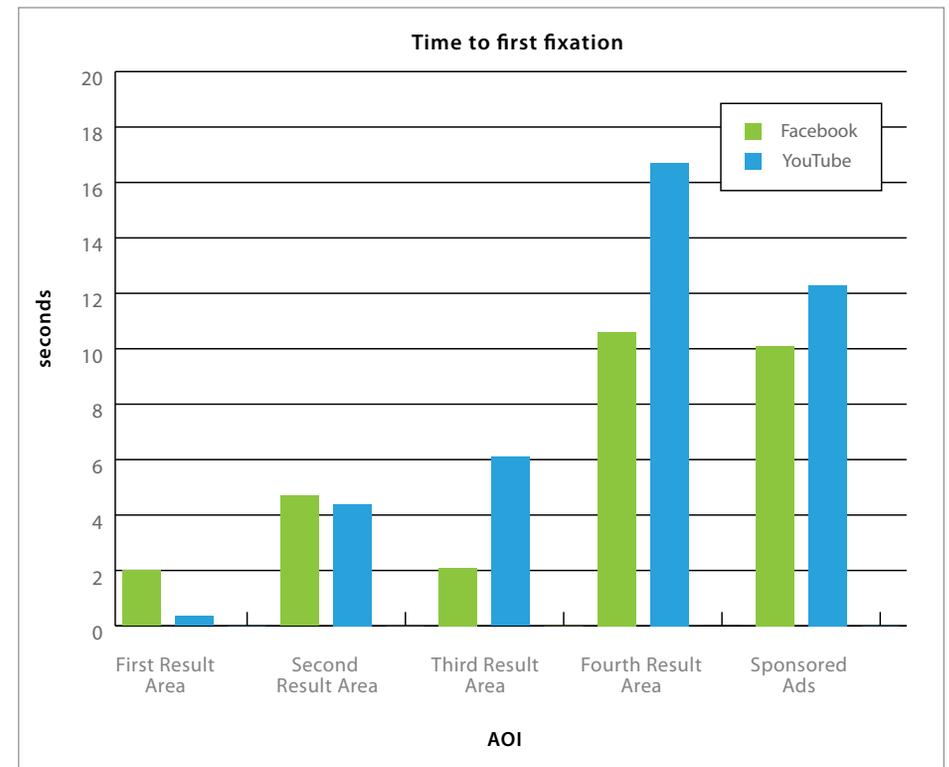
Analysis: Search Satisfaction

Brand presence on social networking sites is increasing in importance as the segment of online communities grow. But do people using Facebook, Twitter and YouTube know how to search for brands in online social environments? Sponsored ads, personalized to individuals, may increase in importance as marketers learn more about how people use social search.

Our survey results indicate that 90% of the participants were satisfied with the search results on YouTube—compared to 50% of participants satisfied with the Twitter results and 63% liking the search results on Facebook (*Figure 15*).

The comments, like the results, were divided regarding the usefulness of Twitter for doing a product search. Many participants said that they felt indifferent to the search results on Twitter, most likely because the real-time search results show a list of the most current Tweets containing the search phrase and does not necessarily lead the searcher to the brand's profile page (*Figure 16, page 22*). On the other hand, the participants favoring the results on Twitter said that they "liked seeing others asking the same questions" and that Twitter would be a good place to "find real opinions."

Facebook fared better in overall search satisfaction compared to Twitter, but not by much. 63% of the participants thought the search results were useful. Many cited that they were confused when trying to determine the official credibility of a profile.

Figure 15. When surveyed, respondents were most satisfied with search results on YouTube and the least satisfied with Twitter search results.
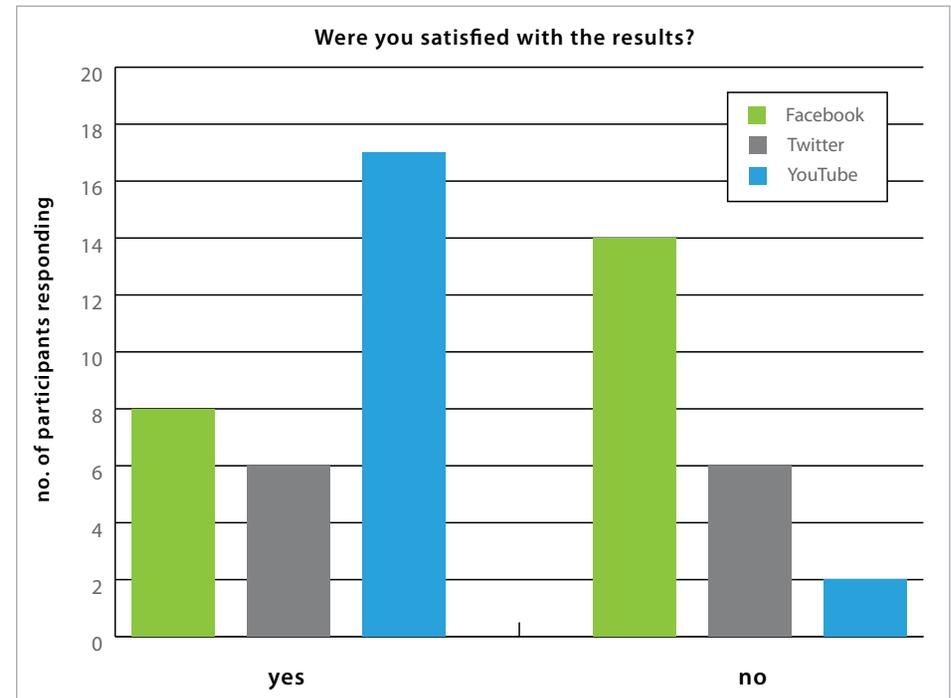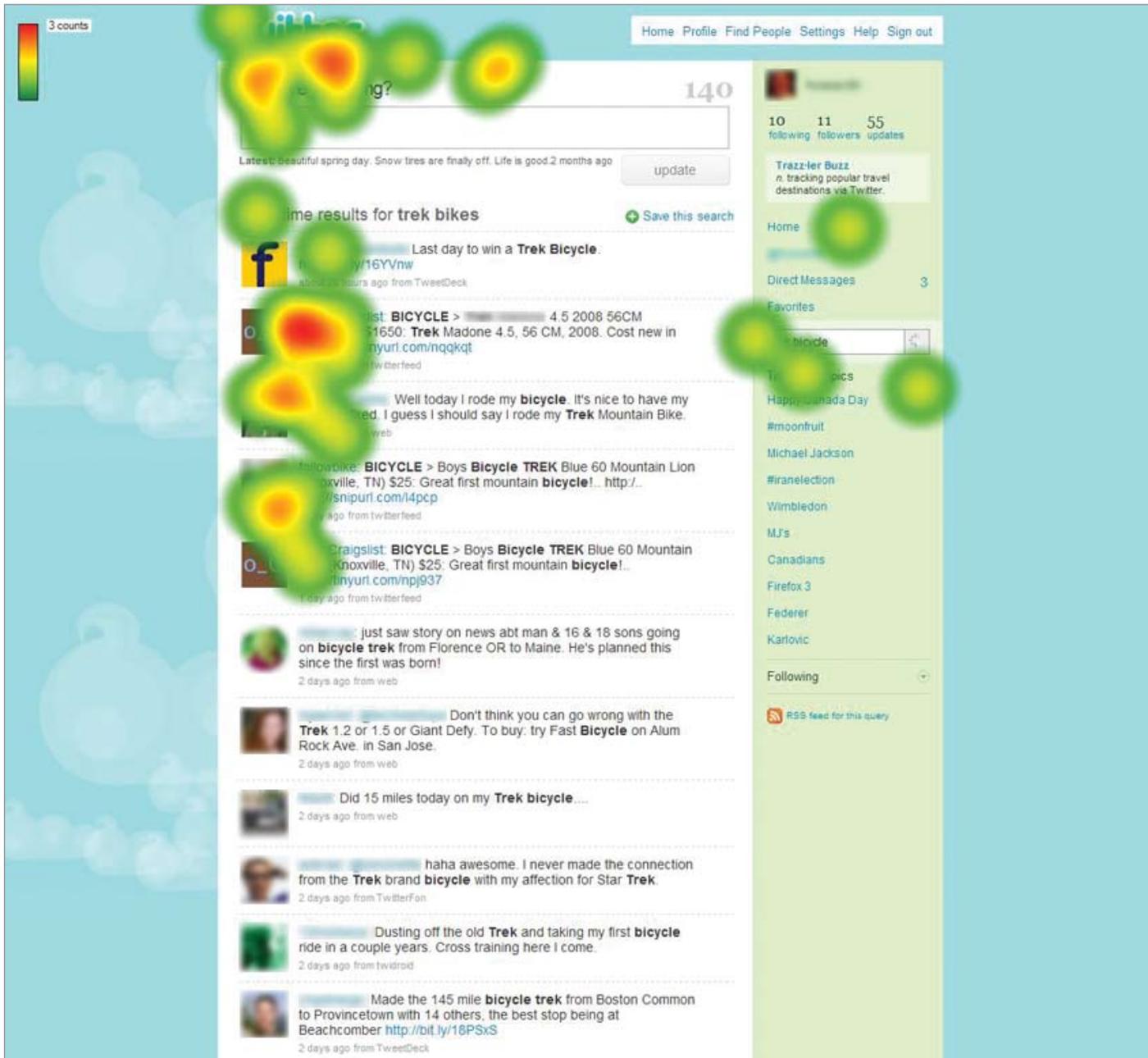
Figure 16. *A heat map visualization of what participants looked at during a search on Twitter.*

Overall Findings

A myth among marketers is that people don't like advertising on their social networking sites. We already know from recent studies that this simply isn't true.[16] And Oneupweb's research found:

- *65% of participants engaged with sponsored ads within the first 10 seconds of their search.*

- *Scan paths **do not** follow the order of the search result ranks. Often, sponsored ads were looked at **before** the third or fourth result.*

- *There is **not** a significant difference in fixation duration across the first four results and sponsored ads on both Facebook and YouTube.*

- *50% of participants were satisfied with their brand search on Twitter. Many liked that they could find the most current opinions about that product.*

Discussions for the Future

These preliminary results challenge several assumptions about search behavior and information foraging. It shows that the logical rules guiding search behavior may not apply on social sites. The different search environment may encourage users to develop different scan habits while they engage with search results.

The very social nature of these sites allows for a different logic of search. People enter these sites with different expectations and search results are socially generated. Search results on Facebook are sorted in order of association within the individual's social network. On YouTube, search results are largely based on user generated tags and descriptions. But community opinion counts, too. People can rate and comment on videos, and this will affect the ranking on the YouTube results page.

These results have some very practical—and timely—implications as businesses move into online communities to market and build their brands online. Repeated exposure through the synergy of sponsored ads and search results increases familiarity with the brand. This is vital for generating sales both online and offline. Studies looking at brand familiarity online as an indicator of purchase intent have shown promising results for marketers.[17]

Lessons Learned: Shared Knowledge, Community Choice

The habits of social network users need not be an obstacle. Gaze paths and eye fixations are proving to be one of the most relevant and robust metrics for understanding online behavior.[18]

Theories on information foraging behavior suggest that users will adapt their search behavior and interaction with search results within unique online environments, like social networking sites.[19] People value results related to their personal interests. The forecast for growth in online communities looks promising.[20]

And as this online population grows, more people are increasingly more likely to be influenced by the opinions—and connections—of those in their online social networks. A recent survey of online behavior found that people are most likely to take a product recommendation from a friend or relative.[21] Our survey results suggest that Twitter will take on a bigger role in the consumer decision making process.

Eye Tracking research rolls the power of analytics, usability and psychology all into one robust marketing tool. There is going to be an increased demand for more in-depth studies as the behavior of users adapts within the structures of online social environments. There is an open door for marketers to learn how to navigate this new terrain with the guidance of Eye Tracking research. We know search is changing—it's going social. Keep watching.

REFERENCES

[1]Mangel, Amy. 1992, "An Old Industry Finally Grows Up," AdWeek, August 10.

[2]Peabody, Patricia S. 1991, "Yellow Journalism: Advertising Trade Press' View of the Yellow Pages Industry," Link. October.

[3]Google Annual Report, Feb. 15, 2008

[4]Usability expert, Jakob Nielsen, PhD., is one of many researchers who have cited that internet users are skimming more than reading in depth. Pirolli et al. (2005) have gone further to examine the search and navigation habits suggesting that information-foraging behavior of users is adaptive to the structure of the online environment they are working in.

[5]Nielsen/Norman Group, 2006.

[6]Hotchkiss, Gordon, Steve Alston, and Greg Edwards. Google Eye Tracking Study: How Searchers See & Click on Google Search Results. Enquiro Search Solutions. July 2005.

[7]Ruder Finn Intent Index. Based on the responses of a minimum of 500 American adults reporting their intents for going online, updated quarterly.

[8]eMarketer, All About Facebook. March 24, 2009.

[9]Nielsen 2009.

[10]comScore,U.S. Search Engine Rankings, May 2009.

[11]Q Interactive 2009.

[12]Granka, L., T. Joachims, and G. Gay. 2004. Eye-tracking Analysis of User Behavior in WWW Search. Poster Abstract, Proceedings of the Conference on Research and Development in Information Retrieval (SIGIR), 2004.

[13]Josephson, S. & Holmes, M. E. 2002. Visual attention to repeated Internet images: testing the scanpath theory on the World Wide Web. Proceedings of ETRA '02 (Eye Tracking and Research Applications Symposium), New Orleans, March 25-27.

[14]Users may search on YouTube without logging into an account. Although it was not required, 56% of the participants said they used an account on YouTube.

[15]QuantCast, comparison 1/31/2009 and 5/31/2009 demographic data.

[16]Q Interactive 2009, over half of internet users favorably view personalized ads.

[17]OPA and ComScore, The silent click, June 2009.

[18]Joachims, et al., 2005. Accurately Interpreting Click-through Data as Implicit Feedback. Proceedings of the Conference on Research and Development in Information Retrieval (SIGIR), 2005.

[19]Pirolli & Card, 1999. Information Foraging. Psychological Review 106(4): 643-675.

[20]OPA and ComScore, The silent click, June 2009.

[21]Wintel, Word of Mouth and Viral Marketing, as cited by MarketingCharts. June 5, 2009.

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