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# What Do Online Behavioral Advertising Disclosures Communicate to Users?

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## ABSTRACT

Online Behavioral Advertising (OBA) is the practice of tailoring ads based on an individual's online activities. We conducted a 1,505-participant online study to investigate Internet users' perceptions of OBA disclosures while performing an online task. We tested icons, accompanying taglines, and landing pages intended to inform users about OBA and provide opt-out options; these were based on prior research or drawn from those currently in use. The icons, taglines, and landing pages fell short both in terms of notifying participants about OBA and clearly informing participants about their choices. Half of the participants remembered the ads they saw but only 12% correctly remembered the disclosure taglines attached to ads. The majority of participants mistakenly believed that ads would pop up if they clicked on disclosure icons and taglines, and more participants incorrectly thought that clicking the disclosures would let them purchase their own advertisements than correctly understood that they could then opt out of OBA. "AdChoices," the tagline most commonly used by online advertisers, was particularly ineffective at communicating notice and choice. 45% of participants who saw "AdChoices" believed that it was intended to sell advertising space, while only 27% believed it was an avenue to stop tailored ads. A majority of participants mistakenly believed that opting out would stop all online tracking, not just tailored ads. We discuss challenges in crafting disclosures, and we provide suggestions for improvement.

## Categories and Subject Descriptors

H.5.2 [Information Interfaces and Presentation]: Miscellaneous;  
K.4.1 [Computers and Society]: Public Policy Issues

## General Terms

Human Factors, Experimentation, Security

## Keywords

Usability, Privacy, Online Behavioral Advertising (OBA) Disclosures, Notice, Choice

## 1. INTRODUCTION

Online advertising companies are increasingly using a sophisticated online tracking mechanism called Online Behavioral Advertising (OBA) to tailor ads based on individuals' online activities. By gathering data about users' online activities, advertising companies can build models to infer users' tastes and interests and display advertisements accordingly.

OBA benefits online advertisers by increasing the price of ads and click-through rates [4, 49]. It also can benefit Internet users by supporting free Internet services and delivering more relevant ads. Given user privacy concerns regarding this practice and FTC demands for better notice and choice [14], the online advertising industry has established a self-regulatory program for online behavioral advertising. The key elements of this program are user education, transparency, and consumer control over OBA [10].

The primary mechanisms that advertisers use to provide transparency and control for behavioral advertising are OBA disclosures in the form of icons and accompanying taglines. These icons and taglines are placed near behaviorally tailored ads. Clicking on these disclosures directs users to *landing pages* that explain OBA in more detail and outline the choices users have for managing their opt-out preferences.

We present the results of a 1,505-participant online, between-subjects study investigating the messages that icons, taglines, and landing pages actually communicate to Internet users. We tested the "advertising option icon" and three taglines that the online advertising industry currently uses. We also tested an alternative "asterisk man" icon [18], as well as three additional taglines selected based on prior research on users' perceptions of OBA [43]. In combination with these features, we also tested five landing pages from major online advertising companies. We showed each participant one combination of icon, tagline, and landing page.

We found that the OBA disclosures and landing pages fell short both in terms of effectively drawing participants' attention and communicating clearly about notice and choice. First, participants typically did not notice OBA disclosures. Only a quarter of participants (27.64%) remembered seeing the OBA disclosure icons; fewer than 12% correctly recalled the taglines they had been shown. Of the taglines tested, "Why did I get this ad?" the tagline that Google started using in Fall 2011<sup>1</sup> had statistically better memorability than the other taglines. Similarly, "Why did I get this ad?" was the most effective tagline for communicating notice about OBA, followed by "Interest based ads" and "Learn about your ad choices." However, no tagline was effective at communicating choice. Furthermore, more than half of the participants believed that clicking on the icon

<sup>1</sup>As of March 2012, Google appears to be using a variety of taglines including "AdChoices" and "Why these ads?"

or tagline would trigger pop-up ads and a similar fraction believed that by clicking on OBA disclosures, they would be indicating interest in the advertised product. Additionally, we found that “Ad-Choices,” the current tagline used by many advertising companies, was not effective at communicating notice or choice. 45% of participants who saw this tagline believed that its purpose was to sell advertising space.

Landing pages were effective at communicating notice but the majority of users (63%) were left with the mistaken impression that by opting out they would stop online tracking.

In the next section we discuss background and related work. In Section 3, we explain our methodology. In Section 4, we present our results. Finally, in Section 5, we discuss the implications of our results, as well as potential opportunities for improvement.

## 2. BACKGROUND AND RELATED WORK

We first provide a brief background on online behavioral advertising and industry self-regulation. We then review related work evaluating OBA disclosures and tools. We then discuss work on the effectiveness of disclosure icons and taglines in a variety of domains. Finally, we discuss work on the design of privacy notices.

### 2.1 Online Behavioral Advertising

The Federal Trade Commission (FTC) defines *online behavioral advertising* as “the practice of tracking an individual’s online activities in order to deliver advertising tailored to the individual’s interests” [14]. Online advertisers track users as they navigate the Internet, constructing profiles for the purpose of delivering targeted advertisements. Third-party HTTP cookies are the main mechanism used for online tracking [26]. Unlike first-party cookies, which are placed by the domain a user is visiting, third-party cookies are placed by another domain, such as an advertising network. In a longitudinal study, Krishnamurthy and Wills find that, over time, a steadily decreasing number of third-parties is collecting information from a steadily increasing number of sites, encompassing the majority of popular pages using third-party cookies [26]. Other tracking mechanisms, such as Flash Local Shared Objects (LSOs) and HTML 5 local storage, enable tracking even when the user clears cookies or switches browsers [3, 39].

Studies have found that behavioral advertising increases click-through rates. Employing clickthrough logs from a commercial search engine, Yan et al. found that behavioral targeting led to improvements up to 670% in the clickthrough rates of ads [49]. However, using econometric techniques and the frontpage of a popular website as their testbed, Farahat and Bailey find that positive bias towards a product is a major factor in the clickthrough rate of tailored advertising, sometimes resulting in overestimates that are orders of magnitude larger when not accounting for these biases [13].

While behavioral advertising is popular with advertisers, the practice raises concerns with Internet users. In a 2009 telephone survey of 1,000 Americans, Turow et al. [42] found that 68% of Americans, if given a choice, “definitely would not” and 19% “probably would not” allow advertisers to track them online even if their online activities would remain anonymous. McDonald and Cranor found that only 20% of respondents to their online study of 314 Americans prefer targeted ads to random ads, while 64% of respondents find the idea of targeted ads invasive [31]. Hastak and Culnan found in 2010 that only 24% of their respondents were comfortable with OBA in the absence of transparency and choice [18]. In a 2012 Pew telephone survey of 2,253 participants, 68% of respondents answered that they were “not okay with targeted advertising because [they] don’t like having [their] online behavior tracked and analyzed” [36]. Ur et al. interviewed 48 Internet users in 2011,

finding that they perceive benefits from OBA but that a combination of concerns about transparency and misunderstandings of data collection processes make them reluctant to embrace the practice [43].

### 2.2 Industry Self-Regulation

In February 2009, the Federal Trade Commission released a set of principles designed to guide industry groups’ efforts to self-regulate OBA practices [14]. The FTC’s principles focus on transparency, disclosure, and consumer consent. The advertising industry responded in July 2009 with a self-regulatory program built on corresponding principles. The Network Advertising Initiative (NAI) and Digital Advertising Alliance (DAA) are industry organizations that have published self-regulatory principles that call for users to be able to opt out of ad targeting. Both organizations maintain websites<sup>2</sup> where users can set advertising network opt-out cookies that replace cookies containing unique identifiers and signal that users do not want to be tracked.

Komanduri et al. found many instances of non-compliance with the NAI and DAA principles [25]. A 2010 FTC staff report stated that “industry efforts to address privacy through self-regulation have been too slow, and up to now have failed to provide adequate and meaningful protection” [15].

One form of notice adopted by the industry is the use of uniform icons, links, and accompanying text—which we term “taglines”—disclosing that displayed advertisements are behaviorally targeted. For instance, the DAA advises its members, “Entities participating in the [self-regulatory] program may use the Advertising Option Icon and one of the approved wordings to represent adherence to the Self-Regulatory Principles for Online Behavioral Advertising and as a means for providing enhanced notice of online behavioral advertising practices.”<sup>3</sup>

These disclosures are typically placed just above a targeted ad. The icon and tagline serve as clickable links to a landing page, which describes the advertiser or advertising company’s OBA practices and gives the user the option to opt out of OBA or otherwise change his or her OBA preferences with this advertiser or advertising company.

### 2.3 Evaluation of OBA Disclosures and Tools

In 2009, the Future of Privacy Forum (FPF), an advocacy group, contracted with the WPP advertising company to develop icons to label OBA. The FPF commissioned Hastak and Culnan to conduct a study to test possible icons and taglines. Based on results from two focus groups, two icons and seven taglines were selected for study. The two icons tested were the “Power I” and “Asterisk Man.” Power I looks like a letter “i” with a circle around it, similar to a computer’s power button. Asterisk Man looks like a cross between an asterisk symbol and a stick figure.

In an online study of 2,604 participants, Hastak and Culnan measured the effectiveness of the icons and taglines at communicating OBA to the user. They found that some of the taglines were moderately effective at communicating to consumers that the associated ads involved behavioral advertising. However, Hastak and Culnan found that, overall, the taglines and icons did not appear to adequately communicate what OBA is or that advertisements are behaviorally targeted. The study concluded that Asterisk Man performed slightly better than Power I on several comprehension measures [18]. However, the Power I was selected as the industry standard, which was later modified to use a triangle rather than a

<sup>2</sup>[http://www.networkadvertising.org/managing/opt\\_out.asp](http://www.networkadvertising.org/managing/opt_out.asp) and <http://www.aboutads.info/choices/>

<sup>3</sup><http://www.aboutads.info/participants/icon/>

circle and dubbed the “Advertising Option” icon. Our work differs from Hastak and Culnan’s since we evaluate OBA disclosures in the context of a simulated browsing scenario, rather than on a single page. We also evaluate the landing pages to which users are taken when they click on the icon.

During interviews with 48 Internet users in Summer 2011, Ur et al. found that most interviewees were unfamiliar with and had difficulty interpreting OBA disclosure icons and both the “Adchoices” and “Interest Based Ads” taglines. Furthermore, multiple participants misread “Interest Based Ads” as “*Internet* Based Ads” [43]. These results informed the selection of our conditions, as described in Section 3.2.

Leon et al. conducted a study of the effectiveness of tools to limit OBA. They had 45 participants install, configure, and use nine popular privacy tools. They found that users had significant difficulty installing and configuring the tools, which led a number of users to mistakenly believe that the tools were configured to block OBA even when they were not configured to do so [29].

## 2.4 Communicating with Icons

A number of studies have examined icons as a means to communicate information. Some work has compared the effectiveness of visual and text representations at communicating semantic meaning. Huang and Bias compared how visual representations (icons and pictures) and textual information (Chinese characters and English text) were interpreted by a sample of 78 undergraduate and graduate students. They found participants understood the semantics of an object or concept more quickly and more accurately when communicated with text, rather than a visual representation [19]. Wiedenbeck studied the performance of sixty undergraduates using a computer interface where information was communicated using only icons, using only text, or employing both icons and text in a redundant manner. Although participants initially rated the text-only interface poor on perceived ease of use, participants performed poorly when using the icons-only interface for the first time, suggesting the importance of text in initially communicating information in unfamiliar situations [47]. Haramundanis surveyed the use of icons in computer software, arguing that text performs an essential role in accompanying icons; she posits that icons cannot stand alone in computer software [17]. Taken together, this work suggests that text taglines should accompany unfamiliar icons.

Some studies have focused exclusively on the mechanics of representing information through visual icons. Wang et al. compare and contrast icon taxonomies from the literature, finding that many taxonomies classify icons using the abstractness or concreteness of their visual representation. They further identify “arbitrary” icons, lacking direct visual connection to the concept communicated, as a common category [46]. Kunnath et al. compared the learning and performance of 53 graduate students when information was communicated using icons in one of three conditions: abstract, pictorial (photos), and line drawings. They found pictorial icons resulted in better learning and performance than the abstract and drawing conditions [27]. This prior work on icons suggests that the abstract icons used for OBA disclosures might not communicate semantic meaning or concepts effectively.

Icons have been evaluated in domains ranging from pharmaceuticals to foods, often in the context of communicating warnings or risk information. In a study of 406 college students, Wang used a yellow “warning symbol” as a means of drawing attention to health disclosures on pharmaceutical advertisements, finding that this method of visual priming leads study participants to express greater trust towards the advertisements [45]. Employing a sample of 520 adults, Andrews et al. studied the “smart choices” nutri-

tion icon, which is designed to condense all of a product’s nutritional information into a single front-of-package indicator. They find that participants more positively evaluate the nutritional content of products displaying this icon, even when this icon is placed on products with debatable nutritional content [1].

## 2.5 Evaluating Taglines

Taglines and other phrasal, textual communications have been studied in the context of advertising slogans, particularly as they relate to brand recognition. Lee found that including a tagline with a brand name can cue a person to recall the brand from memory [28]. In a study of 174 undergraduates, Boush found that slogans can either ease or undermine attempts to extend a brand to new products [5]. Dahlén and Rosengren found that slogans carry brand equity and are thus better liked when they are associated with stronger brands [9].

Taglines have been studied in both the healthcare and consumer marketing domains. Williams and Koepke evaluated 18 potential taglines for promoting Medicare information sources. They found “answers to your health care questions” and “helping you help yourself” were preferred by participants when the participants ranked a set of taglines. In contrast the less context-specific taglines, “so much more than you think,” “it’s all you need to know,” and “get the most out of it” were rated lowest by participants [48]. Other researchers have proposed methods for selecting and evaluating taglines. For instance, Teas and Grapentine [40] proposed a framework for using multidimensional perceptual mapping to evaluate how potentially an advertising theme communicates its message.

## 2.6 Communicating Privacy

A growing body of work has examined ways in which privacy disclosures can be made more usable. Most privacy disclosures are presented as long plain-text documents. Studies have indicated that people do not read these policies, do not understand them, and do not like them [2, 22, 32]. McDonald and Cranor estimated that if Americans actually read privacy policies, it would consume 201 hours per year per person and cost a total of \$781 billion annually [30].

Researchers have evaluated alternatives to text-based privacy policies. Kelley et al. proposed and tested a tabular “privacy nutrition label,” taking cues from the standardized presentation of the nutritional information of foods. In laboratory and online studies, Kelly et al. found that standardized privacy policy presentations allowed users to better understand privacy policies and do so more quickly [23, 24]. The privacy nutrition label they developed could be generated automatically from computer-readable Platform for Privacy Preferences (P3P) privacy policy information [44]. Garrison et al. [16] found that a table format significantly improves comprehension of a privacy notice in comparison to other formats, including those currently popular.

Reducing the visual complexity of privacy policies to iconic form has proved challenging in past work. Internet Explorer 6 (IE6) introduced a status bar privacy icon that shows when cookies have been blocked. [33]. The icon—a stylized eye with a red “do not enter” road sign—can be difficult to notice and understand. Cranor et al. developed “Privacy Bird”: a browser helper object that uses bird-shaped icons with word balloons to indicate whether web sites comply with a user’s privacy preferences. Although half the test subjects were able to correctly identify the meaning of all the Privacy Bird icons, misinterpretations of the icons was not uncommon [8]. Byers et al. developed a search engine that integrated Privacy Bird into Google search results [7]. To reduce confusion associated with the Privacy Bird icons, later versions of this pri-

vacy search engine used a privacy meter consisting of 0 to 4 green boxes rather than bird icons [41].

A number of designers have proposed icons for communicating privacy information. Aza Raskin proposed a set of icons that focus on data handling [37]. Raskin’s icons are circular, with red or green colored borders. Travis Pinnick of TRUSTe designed another set of circular privacy icons for use in privacy “short notices.” Each icon indicates a type of privacy setting; whether the policy for that setting is privacy protective is indicated through red or green borders and accompanying text. Pinnick conducted a 10-user qualitative assessment of short notice designs that used his icons, finding that users expected the icons to change state (either through design or color) when indicating different policy settings [35]. Ianella and Finden proposed icons to represent privacy concepts for social networking services, including concepts like “some networks,” “friends of friends,” and “only friends” [20].

Egelman et al. studied the impact of timing and placement on the effectiveness of online privacy indicators [12]. They found that timing had a significant impact. Study participants paid more attention to privacy indicators when those indicators accompanied search results; indicators presented later were more likely to be ignored.

### 3. METHODOLOGY

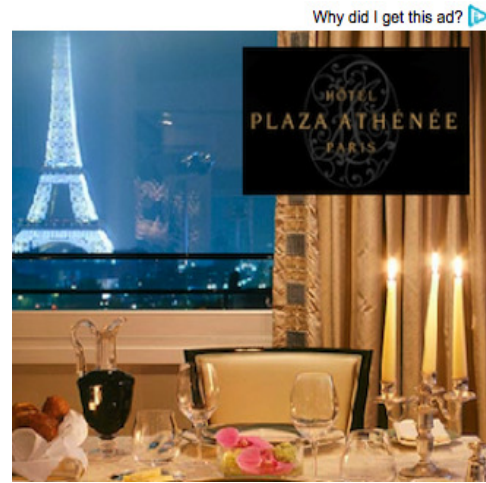
Our goal was to evaluate whether participants noticed OBA icons and taglines on a webpage and to understand how participants interpreted the messaging provided by OBA icons, taglines, and companies’ landing pages. We randomly assigned each participant in an online study to an experimental condition that consisted of an icon, tagline, and landing page. Half the participants were also assigned to a condition in which they were primed to believe that ads they were shown during the study were behaviorally targeted.

Participants were first directed to perform an online search task. Next, we asked participants to perform a brief task on a simulated version of the front page of *New York Times* website that contained several ads (related to the prior search for participants in the priming condition) with the assigned icon and tagline. Participants were then directed back to a survey page and asked questions about whether they had noticed the icon and tagline on the website. We then showed the participants the assigned icons, taglines, and landing pages absent a website task and used survey questions to elicit participants’ interpretations. We describe the full protocol in Section 3.1 and describe the various experimental treatments in more detail in Section 3.2.

We recruited 1,548 users of Amazon’s Mechanical Turk (MTurk) crowdsourcing service to participate in what we described as an “Internet Usage Survey” in December 2011. We required that participants be at least 18 years old and live in the United States. Participants were compensated \$1 for the study, which took 24 minutes on average. 20 participants were excluded from the data set for using web blocking tools that prevented them from seeing part of the study. 23 other participants were excluded for providing answers unrelated to the study in response to the majority of open-ended questions. The remaining 1,505 respondents comprise our data set.

#### 3.1 Study Protocol

The study protocol was conducted entirely online in a participant’s web browser. After giving informed consent, participants began the study by providing demographic information and rating their agreement or disagreement with general statements about Internet advertising. To allow us to simulate behavioral advertising in the following browsing task for half the participants, we then asked participants to conduct a Google search on one of two possible topics: “traveling to Paris” or “buying a Nissan car.” We asked



**Figure 1: Advertisement shown to all participants for a Paris hotel. The OBA disclosure icon and tagline on the top-right corner were assigned randomly from two and six different options, respectively.**

participants to visit two websites from the search results and report briefly on their experiences and impressions.

Participants next answered several general questions about Internet usage. We then asked them to go to a simulated version of the *New York Times* front page and provide an impression of the page, report the most interesting headline, and identify any privacy protection mechanisms that they saw. The page contained advertising with the OBA privacy disclosures (icon and tagline). Participants were unaware that this advertising and its associated disclosures would be the focus of the remainder of the study.

Each participant was randomly assigned to an experimental treatment that specified the form that these OBA privacy disclosures would take (described in Section 3.2). The top of the simulated news page contained two advertisements for Air France, both of which contained the OBA privacy disclosures specified by the participant’s treatment group. Consistent with many currently deployed OBA disclosures, disclosures in the study were located above the ad, justified to the right side. The page also contained a large ad for a Parisian hotel, depicted in Figure 1, that did not require participants to scroll down the page. This advertisement contained the same privacy disclosures as the AirFrance ads.

After viewing the simulated news page, participants clicked a button to continue the survey, automatically closing the *New York Times* browser window or tab so that they could not refer back to it. We then asked participants about the products advertised on the website, and whether they had seen a symbol or short phrase near the advertisements. These symbols and phrases were the OBA privacy disclosures. If they answered affirmatively, participants were asked to answer more detailed questions about the symbol or phrase. Taken together, this portion of the study investigated the extent to which participants noticed OBA privacy disclosures, in context, on a webpage.

Next, we showed participants an ad with their treatment condition OBA disclosures, absent any website context. We asked participants to interpret these disclosures through multiple-choice questions, open-ended prompts, and a series of true/false statements to which participants responded on a 5-point scale (“Definitely not,” “Probably not,” “Not sure,” “Probably,” or “Definitely”).

In the final portion of the study, we asked participants to click on



**Figure 2: The two OBA disclosure icons studied. Each participant was randomly selected to see one. The “Asterisk Man” icon is on the left, and the “Advertising Option” icon is on the right.**

an OBA disclosure icon and visit a company’s landing page. On a landing page consumers are presented information about OBA and given the opportunity to opt out of receiving behavioral advertisements. A participant’s assigned treatment dictated which of five landing pages, described in Section 3.2, he or she would see. We again asked participants questions in a variety of formats about their interpretation of this landing page’s messaging. We concluded the study with a final set of questions about participants’ privacy concerns and uses of privacy protective mechanisms.

## 3.2 Treatments

We assigned participants randomly to experimental treatments across three major dimensions: the priming they received before the simulated browsing scenario, the privacy disclosures they saw during the scenario, and the landing page they were shown.

### 3.2.1 Priming

The first dimension of the experimental treatment specified whether participants would have reason to believe the advertisements they saw in the simulated browsing scenario were behaviorally targeted. Before the simulated browsing scenario, participants were asked to search for, visit, and describe two websites on a specific topic. Each participant was randomly assigned to search for either “traveling to Paris” or “buying a Nissan car,” which we describe as their priming. Those who searched for Paris travel were considered to be primed for behavioral advertising. During the browsing scenario that followed, all participants were shown a simulated version of the New York Times website that contained ads related to traveling to Paris, regardless of their priming. This webpage is depicted in Figure 8 of the appendix. Participants primed towards a trip to Paris could have reason to believe that these ads had been tailored to their search priming scenario, while participants who were thinking about buying a car would not have been primed to believe that the ads were behaviorally targeted.

### 3.2.2 Icon

All study participants were randomly assigned to see one of two icons: the blue Asterisk Man icon previously tested by Hastak and Culnan [18], or the Advertising Option icon consisting of the letter “i” in a blue triangle. The Advertising Option icon is the current standard used by members of the Digital Advertising Alliance [11]. The icons we tested are shown in Figure 2.

### 3.2.3 Tagline

Independent of the icon participants saw, they were randomly assigned one of seven conditions for the tagline, a text phrase positioned to the left of the icon. In one condition, no tagline was seen. Each of the other six conditions saw one of the following taglines: “Why did I get this ad?” “Interest based ads,” “AdChoices,” “Sponsor ads,” “Learn about your ad choices,” and “Configure ad preferences.”

We selected the first three taglines (“Why did I get this ad?” “Interest Based Ads,” and “AdChoices”) because they have been

approved by the Digital Advertising Alliance.<sup>4</sup> Hastak et al. previously tested these three taglines and found that they were not effective at communicating notice [18]. “AdChoices” is the tagline that has been most widely used by advertising companies, and is currently being used in multiple languages. Similarly, “Why did I get this ad?” is the tagline that Google started using in Fall 2011.<sup>5</sup>

“Sponsor ads” was a tagline used by Hastak et al. as a control, and is not expected to communicate effectively about notice and choice [18]. We tested “Learn about your ad choices,” as a more meaningful alternative to “AdChoices” that includes a specific action work. We tested “Configure ad preferences” to test the impact of “configure” and “preferences” as key words.

### 3.2.4 Landing page

The final dimension of our experimental treatment randomly assigned participants one of five landing webpages currently in use. These webpages are intended both to notify consumers about data collection and use as well as to provide consumers with the opportunity to opt out of receiving OBA. The five landing pages we used come from the advertising companies AOL, Yahoo!, Google, Microsoft, and Monster Career Network. Screenshots of these pages are shown in Figures 9 through 13 in the appendix.

## 3.3 Statistical Analysis

Most of our data for this study were categorical. For instance, we provided participants with statements about online advertising to which they responded on a 5-point Likert scale (“Strongly Agree,” “Agree,” “Neutral,” “Disagree,” “Strongly Disagree”). For our analysis, we binned participants’ responses into *agreement* (“Strongly Agree” or “Agree”) and *non-agreement* (“Neutral,” “Disagree,” or “Strongly Disagree”). We also showed participants statements about the OBA disclosures tested, some of which were true and some of which were false. Participants again responded on a 5-point scale (“Definitely Not,” “Probably Not,” “Not Sure,” “Probably,” “Definitely”). We again binned participants’ responses into *yes* (“Definitely” or “Probably”) and *non-yes* (“Not Sure,” “Probably Not,” or “Definitely Not”).

For omnibus comparisons among conditions, we used Pearson’s chi-squared test (noted in our results as  $\chi^2$ ) on the binned responses. We also performed pairwise comparisons of all treatments. Since the frequency of responses in some categories could potentially be low, rendering  $\chi^2$  p-values unreliable, we used Fisher’s Exact Test (noted in results as FET) to perform these pairwise comparisons. All post-hoc comparisons, including the pairwise comparisons, were corrected for multiple testing using the Bonferroni-Holm method when appropriate. Corrected p-values are reported as such in our results.

To determine correlation in responses between related questions, we performed Spearman correlation, or Spearman  $\rho$ . Positive values indicate that responses to one question tend to increase in value on the 5-point scale when the response to the other question increases, while a negative value indicates that higher values in response to one question are associated with lower values in response to the other question. For all tests,  $\alpha = 0.05$ .

## 3.4 Limitations

Our study was conducted online, which enables a large number of participants to take part, yet introduces a number of limitations. As with any online study, we were not able to prevent participants from answering randomly or disregarding instructions.

<sup>4</sup><http://www.aboutads.info/participants/icon/>

<sup>5</sup>As of March 2012, Google appears to be using a variety of taglines including “AdChoices” and “Why these ads?”

However, we manually verified key responses to open-ended questions to verify that the participant’s answers related to the study and excluded participants for whom the majority of responses to open-ended questions were unrelated to the study (23 participants). Participants could view the study on any operating system and browser, with their preferred plugins installed. We could not perfectly control the context in which the participant took the study. Participants could have searched for information about OBA disclosures online or tried to keep the simulated browsing session open while answering questions about it. We used Javascript to close the simulated browsing session when the participant moved forward in the study, although it is possible that some participants found a workaround.

As we conducted our study on MTurk, we are subject to its demographic biases. United States MTurk workers are not representative demographically of US Internet users. However, MTurk’s demographics have been studied and are known. MTurk workers in the U.S. trend younger, more female, and more educated than the general population [38]. They also tend to be lower income than overall US Internet users [21]. Despite the known biases, previous studies have shown that the behavior of Mturk participants in studies is similar to that of subjects recruited from other sources [34], and that MTurk can provide a sample that is at least as diverse as participants recruited from other online sources or traditional laboratory channels [6].

Some of the icons and taglines, and all of the landing pages, we tested are deployed in the wild. It is possible that some participants had seen their experimental treatment previously, potentially influencing their responses. Furthermore, due to the time-limited nature of an online study, the context in which study participants viewed OBA disclosures is not a perfect proxy for viewing these icons over a long period of time. However, if a user does not understand the purpose or message of a disclosure the first time it appears, repeated exposure to this disclosure will not necessarily clarify its meaning.

## 4. RESULTS

We analyzed responses from 1,505 participants, finding that the OBA disclosures we tested perform poorly. A majority of participants misunderstood the choices that these disclosures are intended to communicate. However, some taglines better communicated notice and choice than others.

Participants ranged in age from 18 to 82 (mean = 32, SD = 11.5). We did not observe any statistical differences in education, technical background, gender, age, or Internet usage across the different treatments. Participant demographics are summarized in Table 1.

We first discuss the effects of our priming conditions. We then present results on the extent to which participants recognized the OBA disclosures as privacy mechanisms, whether they noticed them, and whether they could recall them later. Next we discuss the messages conveyed by the disclosures, including the extent to which they conveyed notice and choice, clickability, and the purpose of the link. Finally, we present participants’ perceptions and understanding of the landing pages to which OBA disclosures link.

### 4.1 Effect of Priming

In an attempt to simulate the experience of seeing tailored ads, half of the participants were assigned to perform a Google search about taking a vacation to Paris, while the other half of participants were asked to perform a search about buying a Nissan car as a control. When participants later saw ads from Air France and a Paris hotel, we expected that participants who had searched for information about travel to Paris would perceive these ads as targeted due to their priming, while participants who had searched for cars would not.

	Number	Percent
<b>Gender</b>		
Male	614	41%
Female	891	59%
<b>IT Background</b>		
Yes	283	19%
No	1,222	81%
<b>Internet Usage (hr/week)</b>		
Fewer than four	43	2.86%
Four to six	97	6.45%
Seven to nine	238	15.81%
Ten to 25	415	27.57%
More than 25	712	47.31%
<b>Occupation</b>		
Employed (Science, Engineering or IT)	143	9.5%
Employed (Business, Management or Finances)	149	9.9%
Employed (Teacher)	92	6.11%
Employed (Other fields)	416	27.6%
Student	266	17.67%
Unemployed	204	13.55%
Decline to answer	18	1.2%
Other	217	14.41%
<b>Education</b>		
Some High School	31	2.06%
Associates	162	10.76%
High School	142	9.44%
Graduate	234	15.55%
Bachelors	443	29.44%
Some College	493	32.76%

Table 1: Participant demographics.

After performing pairwise comparisons between these two priming conditions, we did not find statistically significant differences for any questions in our study. We cannot conclude whether our priming task was ineffective, or whether participants would not notice connections between their browsing and the selection of advertising in any case. Since the priming did not seem to have any significant effect, the results presented in the following sections consider all participants together, regardless of their priming condition.

### 4.2 Identifying Privacy Mechanisms

While showing the news website, we asked participants to “Explain as completely as possible what privacy protection mechanisms (if any) do you see on this news webpage.” A handful of participants expressed uncertainty about how to identify privacy mechanisms, and a few dozen explicitly mentioned that there were not any privacy protection mechanisms on the news website.

For the most part, participants did not perceive the icons and taglines as being associated with privacy protection mechanisms. However, a small number of participants (fewer than 10% in any treatment) recognized that some of the taglines might be associated with privacy protection mechanisms. In particular, 16 participants who received the “Configure your ad preferences” tagline mentioned that configuring ads might be part of a privacy mechanism, and 14 participants mentioned that “Why did I get this ad?” might inform them about online tracking and offer privacy protection. Similarly, “Learn about your ad choices” was mentioned by 8 participants. One participant in the “AdChoices” treatment expressed “...seems you may be able to filter or choose what ads you don’t mind viewing.” Six participants in the “Interest based ads” treatment referred to the icons when asked about privacy protection mechanisms. One of these participants misread the tagline saying “there is a little icon to opt out of *internet* based ads.”



Tagline	Remembered (%)	Not remembered (%)
Why did I get this ad?	49 (22.3%)	171 (77.7%)
Interest based ads	27 (12.6%)	187 (87.4%)
Learn about your ad choices	24 (10.7%)	200 (89.3%)
Configure ad preferences	22 (10.8%)	181 (89.2%)
AdChoices	17 (7.9%)	199 (92.1%)
Sponsor ads	15 (7%)	200 (93%)
Overall	154 (11.9%)	1,292 (88.1%)

**Table 2: Tagline recall across conditions. Overall, only 11.9% of participants correctly remembered the tagline they were shown. However, “Why did I get this ad?” was recalled at a significantly higher rate.**

Regardless of the tagline treatment, many participants referred to the privacy policy link and TRUSTe seal at the bottom of the page. A few others mentioned the “Terms of Service,” “Your Ad Choices,” and “Contact Us” links at the bottom of the page. In addition, some participants mentioned that the opportunity to create an account or login to the news website could be seen as mechanisms to protect their privacy. Some said they believed that registered users would receive better privacy protection. On the other hand, a small number of participants noted that by logging in they would be identifying themselves to the website, which could reduce their privacy. Several participants mentioned that the sole fact that the news website was not asking for personal information could be seen as a privacy protection mechanism. Finally, a few participants conflated privacy with security and referred to the lack of security on the page (i.e. no https) as something that could affect their privacy.

### 4.3 Recall of Ads and OBA Disclosures

After participants closed the news webpage, we evaluated whether they had noticed and were able to remember the OBA disclosure icons and taglines shown on that page by asking them, “Was there a symbol placed near, but not inside, at least one of the advertisements?” Only about a quarter of participants (27.64%) remembered having seen the disclosure icons, with no significant differences between the Asterisk Man and the advertising option icon. Participants were significantly more likely to remember the ads than icons ( $p < 0.0005, \chi^2$ ). Only 11.9% of participants both said that they remembered a tagline and correctly selected the particular tagline they had seen from a list. In comparison, approximately half (49.3%) of the participants remembered the ads shown on the news webpage, with no significant differences between participants in different icon or tagline treatments. The memorability of taglines did significantly differ, however, across conditions ( $p < 0.0005, \chi^2$ ). When we performed pairwise comparisons, we found that participants who were shown the “Why did I get this ad?” tagline remembered it at a significantly high rate than participants in all other tagline conditions except “Interest based ads.” ( $p < 0.05$ , pairwise corrected FET). Nevertheless, “Interest based ads” was not statistically significantly more memorable than any other tagline. Tagline recall results are summarized in Table 2.

### 4.4 Messages Conveyed by Taglines and Symbols

We showed participants the icon and tagline above the ad for a Paris hotel, absent a website context, as shown in Figure 1. We asked them the free-response question: “What, if anything, does this symbol [and phrase] communicate to you?” Participants’ opinions varied considerably by treatment. Across most treatments, the icon and tagline did not communicate effectively the concepts

of notice and choice about targeted advertising. The “Why did I get this ad?” tagline was most effective at communicating notice. While some of the taglines communicated that users had choices, they did not communicate that the choices were related to OBA.

Many participants who received the “Why did I get this ad?” tagline associated it with behavioral advertising. For example, one participant explained, “It communicates that there is a logical reasoning behind the ad, most likely tracking my cookies.” Similarly, another participant wrote, “This conveys that my web usage may be monitored so that the ads are tailored to my particular interests.” Another common response was that this tagline was intended to explain why ads were shown on the news page. For example, one participant wrote, “The New York Times understands that people may not like ads and may be wondering why they are there.”

Three main messages were communicated by the “Learn about your ad choices” tagline: users can set preferences about what ads to see or that they don’t want to see any ads, the ads were selected based on previous browsing activity, and users can buy advertising space.

The “Configure your ad preferences” tagline mainly communicated the possibility to change the layout of the ad as well as the opportunity to set preferences regarding the types of ads the user is interested in seeing. For example, one participant wrote, “It means you can make the ad smaller if you want,” while another explained, “ability to control the nature of ads (i.e. static vs. animated ads).”

Many participants who saw the “Interest based ads” tagline correctly inferred that it communicates about tailored ads. Similarly, some participants also inferred that online tracking was involved. Other common thoughts included a signal that the ads are for legitimate products, and an explanation that the ad is not part of the website’s content. In addition, many participants wrote that the displayed ads were exclusively for the Internet. For example, one participant commented “This advertisement is based only on the Internet. Not on a television or newspaper.” This suggests, as has been found in prior work, that participants might have misread the word “Interest,” thinking that it was “Internet” [43].

Opinions about the “AdChoices” tagline were more varied. Although many participants wrote that they had no idea about the purpose of the disclosure, a few participants mentioned the possibility that the tagline was providing notice about tailored ads based on previous pages visited. Other common beliefs about what the tagline included: it indicates that it is possible to select the types of ads you want to view, it provides a link to the ad supplier website, and it provides a way to differentiate between web page content and advertisements. Other participants inferred that “AdChoices” was the ad’s sponsor.

For those in the “Sponsor ads” treatment, the most common response was that the tagline and symbols were intended to offer ad space to buy. For example, one of those participants expressed, “you as an individual (the symbols looks like a little person) can put your ad on this site” and another explained, “I can click on the emblem for the possibility to advertise there myself.” Similarly, another common thought was that the ads were from a third party.

Finally, symbols alone did not communicate anything related to tailored ads. The Advertising option icon alone was mostly seen as a play button with a few participants suggesting it meant “click to play advertisement” or “click to see next picture.” Similarly, many of those who saw the asterisk man symbol thought it was intended to point the user to read more detailed information at the bottom or inform them about terms and conditions that might apply.

### 4.5 Communicating Notice and Choice

We evaluated the effectiveness of icons and taglines at commu-



communicating notice and choice by presenting participants with true and false statements describing the purpose of these disclosures. Participants evaluated these statements on a five-point scale (“Definitely not,” “Probably not,” “Not sure,” “Probably,” or “Definitely”), which we then binned into *agreement* (“Definitely” or “Probably”) and *non-agreement* (all other responses). To examine the consistency of responses across related questions, we performed Spearman correlations across those questions.

#### 4.5.1 Communicating notice

We evaluated the degree to which different icons and taglines provided *notice* that OBA was occurring. We found that the “Why did I get this ad?” tagline was significantly better than all other taglines at communicating notice, with no significant differences between icons.

Our evaluation focused on responses to the following two questions:

Q1: As best as you can tell, what is the purpose of placing this symbol and phrase [icon+tagline shown] on the top right corner of the above ad?

Q2: To what extent, if any, does this combination of the symbol and phrase [icon+tagline shown], placed on the top right corner of the above ad suggest the following?

For both of these questions, participants rated their agreement with the following statements (as well as others, shown in the complete survey reproduced in the Appendix), which form the basis of our comparison between icon and tagline treatments. The correct answer to each statement is given in square brackets:

S1: To tell you that the ad is targeted to you. [true] (Q1)

S2: To tell you how this ad was chosen for you. [true] (Q1)

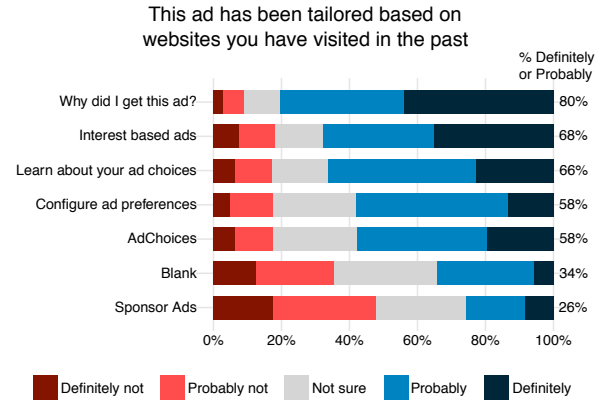
S3: To give you information about placing advertisements on this website. [false] (Q1)

S4: This ad has been tailored based on websites you have visited in the past. [true] (Q2)

We performed Spearman correlations between the four statements above, finding agreement with the three true statements (S1, S2, and S4) to be significantly correlated. Responses to S1 and S2 were significantly correlated (Spearman’s  $\rho = 0.64$ ,  $p < 0.0005$ ), as were responses to S1 and S4 (Spearman’s  $\rho = 0.58$ ,  $p < 0.0005$ ). In contrast, responses to S1 and S3 were not correlated (Spearman’s  $\rho = 0.06$ ,  $p = 0.06$ ). To evaluate the effectiveness of icons and taglines at providing notice about OBA, we focused on participants’ agreement with statement S4, which most directly captures the targeting element of OBA.

Agreement with S4—the combination of the symbol and phrase suggest that “This ad has been tailored based on websites you have visited in the past”—was not significantly different between the Asterisk Man icon (57%) and advertising option icon (55%) treatments ( $p = 0.4$ ,  $\chi^2$ ).

In contrast, different taglines seemed to provide different degrees of notice. Participants’ agreement with S4 differed significantly across tagline treatments ( $p < 0.0005$ ,  $\chi^2$ ); responses are summarized in Figure 3. “Sponsor ads” and no-phrase treatments were the least effective at communicating notice. The five other taglines performed statistically better than both the “Sponsor ads” tagline and not having a tagline ( $p < 0.005$ , pairwise corrected FET). “Why did I get this ad?” performed the best among all treatments. In particular, 80% of participants who received this tagline responded



**Figure 3: Agreement with the statement that the combination of the symbol and phrase suggests that “This ad has been tailored based on websites you have visited in the past.”** As shown, “Why did I get this ad?” was significantly better than most other taglines at communicating notice about OBA.

“probably yes” or “definitely yes” to S4, compared with 68% in the “Interest based ads” treatment ( $p = 0.03$ , pairwise corrected FET), 66% in the “Learn about your ad choices” treatment ( $p = 0.01$ , pairwise corrected FET), 58% in the “Configure ad preferences” treatment ( $p < 0.0005$ , pairwise corrected FET), and 58% in the “AdChoices” treatment ( $p < 0.0005$ , pairwise corrected FET).

#### 4.5.2 Communicating choice

We also investigated the degree to which different icons and taglines communicated to participants that they could make a *choice* about receiving OBA. Although we found that the “Configure ad preferences” tagline was significantly better than all others at communicating choice, none of our icons or taglines were all that successful.

The following two questions form the basis of our comparison:

Q2: To what extent, if any, does this combination of the symbol and phrase [icon+tagline shown], placed on the top right corner of the above ad suggest the following?

Q3: What do you think would happen if you click on that symbol or that phrase?

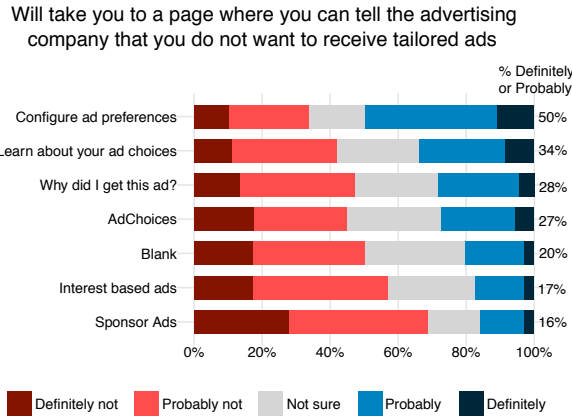
For these questions, we focused on the level of agreement with the following associated statements. The correct answers are indicated in square brackets, and the question for which the statement was presented is indicated in parentheses:

S5: You can stop tailored advertising. [true] (Q2)

S6: It will take you to a page where you can tell the advertising company that you do not want to receive tailored ads. [true] (Q3)

S7: More ads will pop up. [false] (Q3)

Responses to S5 and S6 were significantly correlated (Spearman’s  $\rho = 0.46$ ,  $p < 0.0005$ ), while responses were inversely correlated for both S5 and S7 (Spearman’s  $\rho = -0.13$ ,  $p < 0.0005$ ) and S6 and S7 (Spearman’s  $\rho = -0.12$ ,  $p < 0.0005$ ). To evaluate the effectiveness of the icons and taglines at providing choice



**Figure 4: Agreement that clicking the OBA disclosures “will take you to a page where you can tell the advertising company that you do not want to receive tailored ads.”**

about OBA, we focused on the level of agreement with statement S6, which conveys the ability to opt out.

As with *notice*, the two icons did not differ significantly with regards to communicating *choice*. The level of agreement with S6 was not statistically different between icon treatments ( $p = 0.26, \chi^2$ ).

While taglines were not successful at communicating to participants that they had choice, with only 27% of participants agreeing to S6, there were significant differences between tagline treatments ( $p < 0.0005, \chi^2$ ). Figure 4 summarizes participants’ responses. The “Sponsor ads,” “Interest based ads,” and no-phrase treatments were the least effective at communicating choice. “Configure ad preferences” performed significantly better than all the other treatments ( $p < 0.01$ , pairwise corrected FET). 50% of participants who received the phrase “Configure ad preferences” responded “probably yes” or “definitely yes” to statement 6, compared with 34% in “the Learn about your ad choices” treatment, 28% in the “Why did I get this ad” treatment, 27% in the “AdChoices” treatment, 20% in the no-phrase treatment, and 17% in the “Interest based ads” treatment.

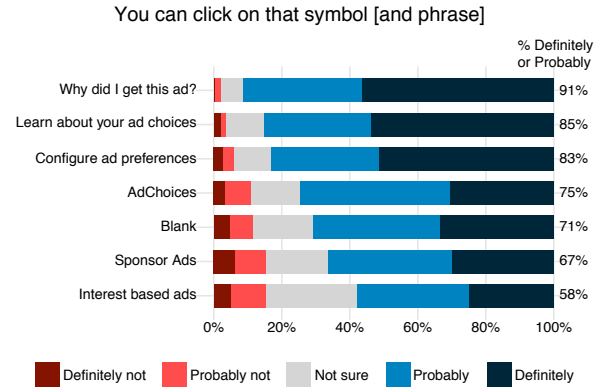
#### 4.6 Communicating “Clickability”

A primary mechanism used to visit network advertisers’ landing pages is clicking on the icon or tagline disclosures located near ads. However, if users do not realize that these disclosures are clickable, then they will not be able to use this mechanism. We evaluated the extent to which participants understand that they can click on the icon and tagline, and refer to this as “clickability.” We found that clickability was fairly high in most treatment conditions, but there were significant differences between both tagline and icon treatments.

In Q2, we asked participants, “To what extent, if any, does this combination of the symbol and phrase [icon+tagline shown], placed on the top right corner of the above ad suggest the following?” Our analysis focuses on participants’ agreement with the statement:

S8: You can click on that symbol [and phrase].

Overall, participants believed the disclosures to be clickable, with 76% of participants responding “probably yes” or “definitely yes” to S8. A larger fraction of participants given the advertising option



**Figure 5: Agreement with “You can click on that symbol [and phrase].” “Why did I get this ad?” better conveyed clickability than all other taglines. In contrast to other questions, “AdChoices” performed significantly worse than “Why did I get this ad?”**

icon (82%) agreed with S8, compared with 69% of those given the asterisk man icon ( $p < 0.0005, \chi^2$ ).

Taglines also differed in the clickability they conveyed. Figure 5 summarizes participants’ levels of agreement with S8, for which we found significant differences across tagline conditions ( $p < 0.0005, \chi^2$ ). “Why did I get this ad?” performed the best, significantly better than the “AdChoices,” “Interest based ads,” “Sponsor ads,” and no-phrase treatments ( $p < 0.0005$ , pairwise corrected FET). Differences between “Why did I get this ad?,” “Learn about your ad choices,” and “Configure ad preferences” were not statistically significant.

#### 4.7 Attitudes Towards Clicking

Understanding what participants believe will happen when they click on a disclosure is important because it may influence their willingness to click. We found that participants had significant misconceptions about the purpose of OBA disclosures, with more than half of them believing that if they clicked on the disclosure they would receive pop-up ads or signal interest in the advertised product.

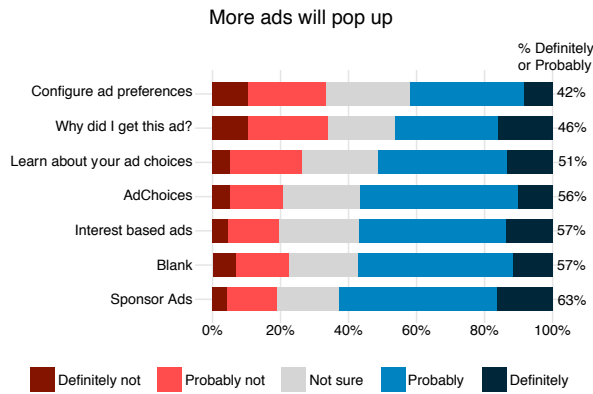
We evaluated participants’ agreement with the following statements, which were provided in response to question Q3, “What do you think would happen if you click on that symbol or that phrase?”

S9: More ads will pop up. [false]

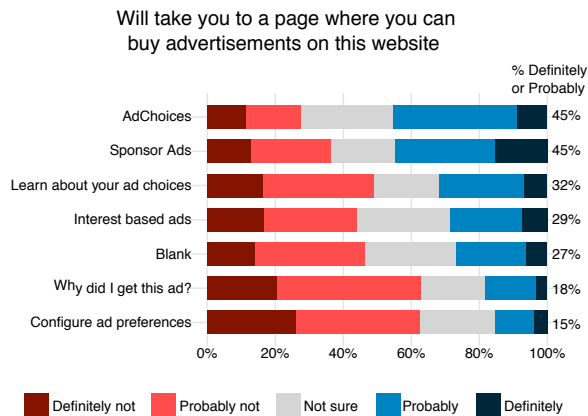
S10: You will let the advertising company know that you are interested in those products. [false]

S11: It will take you to a page where you can buy advertisements on this website. [false]

Overall, 53% of participants responded that clicking on the icon or tagline disclosure would probably or definitely trigger more ads to pop up. Figure 6 summarizes participants’ responses. A lower percentage of participants shown the asterisk man icon thought incorrectly that additional ads would pop up if they clicked on the disclosure. 50% of participants shown the asterisk man icon responded “probably yes” or “definitely yes” to S9, compared with 57% of those who were shown the advertising option icon ( $p = 0.003, \chi^2$ ).



**Figure 6: Agreement with the statement, “More ads will pop up,” if they click the OBA disclosures. Overall, participants believed that clicking the disclosures would cause additional ads to pop up.**



**Figure 7: Agreement that clicking the OBA disclosures “will take you to a page where you can buy advertisements on this website.” Participants in the “Configure ad preferences” and “Why did I get this ad?” treatments were less likely to believe that the disclosures aimed to sell advertising space.**

There were also differences across tagline conditions in the belief that clicking the disclosure would result in ads popping up. The fraction of participants receiving the “Sponsor ads” tagline who responded “probably yes” or “definitely yes” (63%) to S9 was significantly greater than the fraction who received the “Configure ad preferences” (42%) or “Why did I get this ad?” (46%) treatments ( $p < 0.02$ , pairwise corrected FET).

The majority of participants was also mistaken about S10, believing that clicking on the disclosure would signal interest in the advertised product to the advertising company. 51% of participants responded “probably yes” or “definitely yes” in response to S10, with no statistical differences across treatments.

Participants differed across tagline treatments in their level of agreement with the false statement that the OBA disclosures are intended to sell advertising space, which was measured in S11 ( $p < 0.0005$ ,  $\chi^2$ ). Figure 7 summarizes participants’ responses. Participants in the “Configure ad preferences” and “Why did I get

this ad?” treatments were significantly less likely than participants in other treatments to believe that those disclosures were intended to sell advertising space (all  $p < 0.0005$ , pairwise corrected FET). In particular, 15% of participants in the “Configure ad preferences” and 18% of participants in the “Why did I get this ad?” treatments responded “probably yes” or “definitely yes”, compared with 27% (no-phrase), 29% (“Interest based ads”), 32% (“Learn about your ad choices”), 45% (“AdChoices”), and 45% (“Sponsor ads”).

Overall, these clickability results suggest that users have significant misconceptions about the purpose of OBA disclosures. Although 27% of participants correctly believed that by clicking on the disclosure they would be taken to a webpage on which they could stop receiving tailored ads (see figure 4 in section 4.5), larger percentages of participants believed they would receive pop up ads (53%), signal interest in a product (51%), and learn about placing advertisements themselves (30%). Of the taglines, “Configure ad preferences” and “Why did I get this ad?” did the best job of conveying what happens when someone clicks on the disclosure.

## 4.8 Landing Pages

Landing pages, the webpages that appear when a user clicks the icon or tagline disclosures, were the final element we tested. First, we report on what choices participants inferred from these pages and on user sentiment towards these pages. We then report on participants’ understanding of the opt-out process after visiting the landing page.

### 4.8.1 Choices Inferred from Landing Pages

We asked participants the free-response question: “What choices, if any, do you think this ‘landing page’ provides? Please be as complete as possible.” After visiting the landing pages, many participants became informed of the possibilities of opting out of tailored ads and customizing ad preferences. We identified two types of participants, those who believed the landing page allowed them to limit or opt-out of tracking or behavioral advertising, and those who believed the landing page allowed them to express preferences that would result in more relevant ads. For example, one participant who visited the Yahoo! landing page wrote, “This offers some ways to limit the information that they gather, or opt out of the tracking altogether.” Another participant who visited the same page wrote, “It provides a way for advertisers to be more directly targeted towards my interests.” Similarly, two participants who read the Microsoft webpage expressed, “I can opt out in two different ways so I won’t be tracked” and “allows me to go to a dashboard page where I can help make the ads more relevant to what I would be interested in.” Participants who visited the Google landing page made similar comments.

Most of the participants who visited the Monster webpage mentioned only the possibility of configuring job preferences. In general, the Monster webpage was hard for users to understand. One participant explained, “I haven’t a freaking clue. It’s too jumbled up to be able to figure out what they are asking the viewer to do or consider... Even after reading the whole thing, I am still not sure if they are trying to help people find a job with this thing, or sell advertising, or get employers to post a job...”

After visiting the landing pages, about half of participants misunderstood the meaning of opting out, either believing that it would stop online tracking or remove all advertisements. For example, one participant who visited the AOL landing page wrote, “It gives users the ability of opt out of having our data taken.” Another participant who visited the Yahoo! landing page wrote, “It gives you the option to tell websites to not monitor your browsing history.” Similarly, a participants who visited the Google landing page ex-

plained that the page offered “the ability to stop companies from monitoring your web activity.” One participant who visited the Microsoft landing page thought the page provides “ways to advertise or ways to opt out of seeing advertisements (for a fee).” Another participant thought the Microsoft landing page allowed him to decide “what ads you see or if you see any at all.”

Finally, some participants expressed mistrust about the opt-out process. For example, a participant who visited the Microsoft landing page complained, “This is really hardly a choice at all since nothing stops them from continuing to gather the information.” A participant who visited the AOL landing page wrote, “Information to cover the company’s butt for taking my info.”

#### 4.8.2 *Opinions About Landing Pages*

To evaluate participants’ sentiment toward the landing page they saw, we asked participants to rank the information it presented on three different dimensions: informativeness, understandability, and level of interest. Responses to these dimensions were significant and positively correlated. The majority of participants felt the information on the landing pages was “very easy” or “easy” to understand (70%) and “very informative” or “informative” (75%), but only 41% felt it was “very interesting” or “interesting.” All landing pages tested are reproduced in the appendix.

The Monster opt-out page performed poorly. It was seen as less understandable than each of the other four landing pages ( $p < 0.0005$ , pairwise corrected FET). Only 54% of participants believed the page was very easy or easy to understand, compared with significantly higher percentages for AOL (74%), Microsoft (74%), Google (74%) and Yahoo! (72%). Similarly, the Monster opt-out page was perceived as less informative (all  $p < 0.0005$ , pairwise corrected FET), with 52% of participants believing the page was very informative or informative, compared with Google (83%), Yahoo! (82%), Microsoft (80%), and AOL (77%).

#### 4.8.3 *Notice Provided by Landing Pages*

To evaluate the extent to which each landing page conveyed notice about OBA, we presented participants with the following completions to the phrase, “To what extent, if at all, does the information on the ‘landing page’ suggest to you that...” The correct answers are presented in square brackets.

S12: Everyone who visits this news website sees the same ads. [false]

S13: This news website does not collect any information about your visits here. [false]

S14: Your visit to the news website is being monitored. [true]

S15: The ads you see in the news website are based on your visits to this news website and other websites. [true]

S16: The ads you see on other websites in the future may be based on activity during your visits here. [true]

S17: This news website protects your privacy by not sharing your information. [false]

Overall, 77% of participants agreed or strongly agreed with S15, which states, “The ads you see in the news website are based on your visits to this news website and other websites.” This result suggests that opt-out pages are effective at communicating notice that OBA is occurring. In particular, 82% (Yahoo!), 79% (Google and Microsoft), 77% (AOL), and 67% (Monster) of participants agreed or strongly agreed with this statement. However, a significantly lower percentage of participants who saw the Monster

landing page agreed with the statement than those who saw landing pages from Yahoo!, Google, or Microsoft ( $p < 0.03$ , pairwise corrected FET).

Overall, only 24% of participants believed that the news website protected their privacy (S17), with no statistical differences between landing pages. This result suggests that although opt-out webpages are effective at communicating notice, participants do not perceive this notice as a mechanism intended to protect their privacy.

Participants who responded correctly to one completion were likely to respond correctly to other completions, as evidenced by the Spearman correlation between S12 through S17. Responses to S12 and S14, respectively false and true, were negatively correlated (Spearman’s  $\rho = -0.35$ ,  $p < 0.005$ ). Similarly, responses to S13 and S15, again respectively false and true, were negatively correlated (Spearman’s  $\rho = -0.35$ ,  $p < 0.005$ ). Responses to two true statements, S12 and S13, were positively correlated (Spearman’s  $\rho = 0.40$ ,  $p < 0.005$ ), as were responses to S15 and S16 (Spearman’s  $\rho = 0.57$ ,  $p < 0.005$ ), which are both also true.

#### 4.8.4 *The Meaning of “Opting Out”*

All landing pages tested gave participants the opportunity to opt out of OBA. To evaluate what the landing pages communicated about the meaning of “opting out,” we asked the participants to “indicate your agreement with the following statements defining what ‘opt out’ means in the context of internet advertising.”

S18: Stop advertising companies from collecting information about your browsing activities. [false]

S19: Stop seeing ads based on your browsing activities. [true]

Although S18 was false and S19 was true, participants’ responses to S18 and S19 were positively correlated (Spearman’s  $\rho = 0.49$ ,  $p < 0.0005$ ), suggesting that participants gave similar responses to both questions. Overall, 63% of participants agreed that opting out would stop advertising companies from collecting information about browsing activities, and 80% believed they would stop seeing advertisements based on their browsing activities. Only 13.4% of participants correctly answered both questions. In contrast, the majority of participants (57.9%) incorrectly believed that opting out would stop both tailored ads and online tracking.

#### 4.8.5 *Actions Encouraged by Landing Pages*

We also evaluated how each landing page tested affected participant’s willingness to opt out, as well as their likelihood of closing the page without reading it. We asked, “If you encountered this landing page after clicking on the symbol located nearby an ad, how likely would you do the following?” We analyzed participants’ responses to the following two statements:

S20: Click on the “opt-out” button.

S21: Close this “landing page” without reading it at all.

The majority of participants (53%) responded that they would “likely” or “very likely” click on the opt-out button. Significantly fewer participants who were shown the Yahoo! landing page would click the opt-out button than participants in any of the four other treatments ( $p < 0.0005$ , pairwise corrected FET). Whereas 37.8% of Yahoo! participants would click the opt-out button, 51.8% of Google, 54.7% of Monster, 57.1% of Microsoft, and 63% of AOL participants would opt out. However, more than half of the participants (51%) were likely to close the landing page without reading it at all. Participants who read the Monster landing page were more

likely to close the page than participants in any of the other four groups ( $p < 0.0005$ , pairwise corrected FET). 65.1% of Monster participants would close the opt-out page, compared with 51.6% of Yahoo!, 50% of AOL, 46.4% of Microsoft, and 42.6% of Google participants.

## 5. DISCUSSION

Our investigation of OBA disclosures informed our understanding of what the different icons, taglines, and landing pages communicate to Internet users. While some disclosures stood out as being more effective at communicating notice and choice, we found that overall none of these disclosures are currently communicating clearly to consumers. In this section we discuss our main findings and suggest ways to make OBA disclosures more effective.

**Notices are not noticed.** One challenge of informing users about OBA through icons and taglines placed on ads is that, in general, users do not notice them. After viewing the news webpage with ads that included our icon and tagline treatments, half of the participants correctly remembered the ads shown, but only a quarter of participants remembered the icons and less than 12% recognized the correct taglines. While design improvements might lead to more people noticing OBA disclosures, it seems unlikely that small icons and taglines are going to be widely noticed on a busy page of content and ads, especially when users are focusing on page content.

**“AdChoices” is not an effective tagline.** “AdChoices” is one of the official taglines recommended by the DAA, and the one that has been observed in use by the most advertising companies [25]. However, we found that other taglines provide more effective notice, including “Why did I get this ad?” and “Learn about your ad choices.” Furthermore, although it contains the word “choices,” it was not particularly effective at communicating that users could make choices about receiving OBA. “Configure ad preferences” and “Learn about your ad choices,” which contain actionable words, were most effective at communicating that users have a choice to make. “AdChoices,” which is a meaningless contraction, performed similarly to our control tagline, “Sponsor ads,” with 45% of participants believing that the purpose of these two taglines was to communicate the availability of advertising space for sale. We suggest avoiding the use of meaningless phrases or contractions, which might be perceived by users more as a brand than as something informing them about OBA.

**Users are afraid to click.** The two most effective taglines, “Learn about your ad choices” and “Why did I get this ad?” performed reasonably well at providing notice and were perceived as clickable elements, but were ineffective at communicating that participants could use them to exercise choices about OBA. In particular, more than half of the participants believed that clicking on the icon or phrase would trigger pop-up ads and a similar fraction believed that clicking on them would let the advertising company know they were interested in the advertised product. These misconceptions may be due to users perceiving the icon as an integral part of the ad. Furthermore, a third of participants believed the disclosure was intended for selling advertising space. Only 27% of participants across all treatments believed they would be taken to a page to tell the advertising company they do not want to receive tailored ads. Even in the best-performing “Configure ad preferences” condition, only 50% of participants believed that clicking on the ad would take them to a page where they could stop tailored ads. If users do not understand the purpose of clicking on the icon, it is unlikely that many users will click on it. Consumer education campaigns might be helpful to educate users about the purpose of OBA disclosures. In addition, mouse overs that provide more information

about OBA and choice options might help convey information to users who otherwise would be afraid to click on the icon.

**Users are confused about the meaning of opt out.** After reading the landing page, participants were not able to understand the meaning of opting out. Two thirds of participants believed that opting out will stop online tracking. Effective and transparent disclosures should clearly communicate the alternatives that users have to manage OBA. The distinction between opting out of tailored ads and opting out of online tracking should be clearly stated to avoid misleading users, or opt-outs should be made more inclusive to match user expectations.

**User education is needed.** Arguably, the main challenge to the effectiveness of OBA disclosures is that users do not understand OBA and are unaware that these disclosures are links to choice mechanisms. Although user education is part of the self-regulatory principles for OBA, little user education has been done by the industry to date. As of today, the online advertising industry is providing consumer education about OBA mainly through an industry website,<sup>6</sup> but this website is mainly accessed through the OBA disclosures that are currently not being noticed. In January the DAA launched the Your AdChoices campaign<sup>7</sup>; however, we have seen little evidence of this campaign beyond the campaign website and industry press releases.

## 6. ACKNOWLEDGMENTS

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## APPENDIX

### A. SUMMARY OF RESPONSES TO STATEMENTS

Q1: As best as you can tell, what is the purpose of placing this symbol and phrase [icon+tagline shown] on the top right corner of the above ad?	Why did I get this ad?	Learn about your ad choices	Interest based ads	AdChoices	Configure ad preferences	Sponsor ads	“Blank”
To tell you that the ad is targeted to you	82%	67%	62%	55%	45%	22%	22%
To allow you to choose which types of products appear in ads that you see	45%	78%	33%	50%	72%	18%	24%
To tell you that this ads are from a legitimate company	39%	33%	33%	46%	22%	57%	21%
To give you information about placing advertisements on this website	33%	39%	31%	46%	29%	38%	23%
To attract your attention to the ad	45%	42%	55%	41%	34%	49%	42%
To advertise the company that is delivering this ad	37%	41%	41%	65%	35%	57%	34%
To give you more information about the advertised product	35%	35%	35%	30%	28%	40%	51%
To get your reactions to the ad	35%	33%	22%	19%	28%	13%	24%
To get you to click on the ad	54%	55%	58%	37%	41%	48%	47%

**Table 3: Participants responses to question “As best as you can tell, what is the purpose of placing this symbol and phrase [icon+tagline shown] on the top right corner of the above ad?” Percentage of participants who answered “Probably” or “Definitely” to each statement.**

Q2: To what extent, if any, does this combination of the symbol and phrase [icon+tagline shown], placed on the top right corner of the above ad suggest the following?	Why did I get this ad?	Interest based ads	Learn about your ad choices	Configure ad preferences	AdChoices	“Blank”	“Sponsor ads”
This ad has been tailored based on websites you have visited on the past	80%	68%	66%	58%	58%	34%	26%
The ads you see on the news website are based on your visits to other websites	77%	66%	62%	47%	56%	32%	28%
This website shows ads that are chosen to match your needs	78%	66%	70%	67%	65%	31%	26%
These ads have been chosen to be relevant to you	83%	72%	73%	62%	68%	35%	27%
You can stop tailored advertising	18%	15%	31%	41%	18%	13%	6%
You can click on that symbol/phrase	91%	58%	85%	83%	75%	71%	67%
You can turn off advertisements on this website	12%	6%	20%	41%	12%	13%	7%
This ad is from one of the website’s premier partners	40%	41%	34%	33%	44%	33%	66%
You can choose to learn about the advertised product	50%	58%	54%	43%	58%	55%	66%
You can choose which ads you want to see on this website	37%	26%	71%	72%	42%	19%	13%

**Table 4: Participants responses to question “To what extent, if any, does this combination of the symbol and phrase [icon+tagline shown], placed on the top right corner of the above ad suggest the following?” Percentage of participants who answered “Probably” or “Definitely” to each statement.**

Q3: What do you think would happen if you click on that symbol or that phrase?	Configure ad preferences	Learn about your ad choices	Why did I get this ad?	AdChoices	“Blank”	Interest based ads	“Sponsor ads”
It will take you to a page where you can tell the advertising company that you do not want to receive tailored ads	50%	34%	28%	27%	20%	17%	16%
It will take you to the advertised company site	39%	52%	45%	60%	71%	64%	74%
It will take you to a page where you can buy advertisements on this website	15%	32%	18%	45%	27%	29%	45%
It will take you to a page where you can tell the advertising company whether you are or not interested in the advertised product/service	60%	58%	46%	47%	33%	36%	28%
It will take you to a page where you can tell the advertising company what products/services you are interested in	73%	71%	51%	59%	40%	50%	31%
More ads will pop-up	42%	51%	46%	56%	57%	57%	63%
You will let the advertising company know that you are interested in those products	50%	53%	43%	51%	52%	59%	53%

**Table 5:** Participants responses to question “What do you think would happen if you click on that symbol or that phrase?” Percentage of participants who answered “Probably” or “Definitely” to each statement

## B. THE NEWS WEBSITE

[HOME PAGE](#)
[TODAY'S PAPER](#)
[VIDEO](#)
[MOST POPULAR](#)
[TIMES TOPICS](#)

[Subscribe: Home Delivery / Digital](#)
[Log In](#)
[Register Now](#)

Sponsor Ads

AIRFRANCE

The New York Times

Tuesday, October 25, 2011 Last Update: 11:21 PM ET

Sponsor Ads

AIRFRANCE

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[Home & Garden](#)
[Weddings/ Celebrations](#)
[TRAVEL](#)

[All Blogs](#)
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[Classifieds](#)
[Corrections](#)
[Crossword / Games](#)
[Education](#)
[First Look](#)
[Learning Network](#)
[Multimedia](#)
[NYC Guide](#)
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[Podcasts](#)
[Public Editor](#)
[Sunday Magazine](#)
[Sunday Review](#)
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[Community Affairs](#)

[Europe Faces New Hurdles in Crisis Over Debt](#)

By STEVEN ERLANGER and RACHEL DONADIO 20 minutes ago

On the eve of a European Union summit meeting, crucial financial measures were still unresolved.

Tempers Flare as European Meeting Nears

[I.B.M. Names Virginia Rometty as New Chief Executive](#)

By STEVE LOHR 22 minutes ago

The selection of Ms. Rometty, a senior vice president at I.B.M., will make her one of the highest-profile women executives in corporate America.

[Archive Offers Glimpse Inside the Mind of Hussein](#)

By MICHAEL R. GORDON 9 minutes ago

Materials depict a leader who harbored grand ambitions for his country but was prone to epic miscalculations.

Document Reader: Hussein's Private Ruminations

[THE WORLD SERIES](#)

Dilip Vishwanat for The New York Times

[Baseball's Game of Telephone](#)

By PAT BORZI 3 minutes ago

Monday night's bullpen debacle by the Cardinals has put a new spotlight on baseball's reliance on landlines.

[New Poll Finds a Deep Distrust of Government](#)

By JEFF ZELENY and MEGAN THEE-BRENNAN 3 minutes ago

With Election Day just over a year away, a deep sense of economic anxiety and doubt about the future hangs over the nation.

9%

DISAPPROVAL

84%

[Perry Calls His Flat Tax Proposal 'Bold Reform'](#)

By RICHARD A. OPPEL JR. 9:46 PM ET

Gov. Rick Perry's plan, which includes a flat tax, would lower the rate the richest Americans pay.

Economic: How Rick Perry's Tax Plan Would Affect You

[Panel Endorses HPV Vaccine for Boys of 11](#)

By GARDINER HARRIS 10:21 PM ET

The vaccine will protect against cancers that can result from sexual activity, a federal advisory committee said.

[President to Ease Student Loan Burden for Some](#)

By TAMAR LEWIN 8:53 PM ET

An expansion of the income-based college-loan repayment program is expected on Wednesday.

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Why do we find tiny-size sweets enchanting if they are

[OPINION](#)

[OP-ED | CLIFFORD WINSTON](#)

[Are Law Schools and Bar Exams Necessary?](#)

The barriers to entry for the legal industry exist to protect lawyers from competition with non-lawyers.

[Brooks: The Fighter Fallacy](#) | [Comments](#)

[Nocera: Jobs's Biographer](#)

[Cohen: Defending the E.U.](#)

[Bruni: Have Glock](#)

[Editorial: Refinancing](#)

[Room for Debate: Will Amazon Kill Off Publishers?](#)

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A new book chronicles the rise and fall of America's first music video channel.

[ArtsBeat: MTV Basics](#)

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['Desdemona' Talks Back to 'Othello'](#)

Toni Morrison creates a response to Peter Sellars's version of "Othello."

MARTHA MARCY MAY MARLENE

NOW PLAYING

[REAL ESTATE](#)
[AUTOS](#)
[JOBS](#)
[ALL CLASSIFIEDS](#)

[CHEVROLET AT 100](#)

[From Cheap Date to America's Sweetheart](#)

It's the marvelous cars it produced while baby boomers were growing up that have made Chevy such an endearing part of American culture.

[Video: Chevrolet Turns 100](#)

[Famous Fans Name Their Favorite Chevys](#)

36 EAST 22ND ST

2 & 3BR Condo Lofts

In the Heart of Flatiron

212.697.8679

The StoryHouse

[Place a Classified Ad](#)

Figure 8: The news webpage. We displayed this page and asked whether there were any mechanisms in this page to protect privacy. We later measured ad, icon and tagline recall.

## C. LANDING PAGES

### About Our Ads

To create a more customized online experience for consumers, some of the ads you may receive on AOL sites and services are tailored to previous online behaviors/visits on this computer.

#### Where Can I Learn More About Advertising On AOL?

The practices of AOL Advertising, including advertising on our network of websites, as well as across other internal sites, products, and services that are offered by AOL Advertising are detailed in our [Advertising Privacy Policy](#).

AOL's advertising practices can be found at [Advertising and Privacy](#).

#### Where Can I Learn About Third Party Advertisers and Service Providers On AOL?

AOL uses ad networks and other service providers to help present customized content and advertisements on AOL and other websites. See AOL [Advertising and Privacy](#).

#### What Are My Choices About Interest-Based Ad Serving From AOL Advertising?

You can [view your interest categories](#), [opt-out of the use of your data](#) for interest-based advertising, and manage the collection and use of your [AOL Search](#) information.

The Self-Regulatory Program for Online Behavioral Advertising offers a [consumer education page](#).

#### Questions?

If you have any questions or concerns, you may contact us at:

**AOL Privacy**  
22000 AOL Way  
Dulles, VA 20166  
or [email us](#).

#### Advertisers and Publishers

[Learn more](#) about AOL advertising solutions.


#### How to Opt-Out

Opt-Out

Clicking the Opt-Out button above will opt you out of behavioral advertising delivered by the AOL Advertising Network.

#### Where Can I Learn More About Online Advertising?

The Self-Regulatory Program for Online Behavioral Advertising offers a [consumer education page](#).





[AOL.com](#) | [Download AOL](#) | [Get AIM](#) | [Free Email](#) | [Advertise with Us](#) | [AOL Inc.](#) | [Privacy](#) | [Terms of Service](#) | [Site Map](#) |  
© 2011, AOL Inc. All rights reserved. | [Help](#) | [My Account](#)

Figure 9: The AOL Landing Page.

## AdChoices: Learn More About This Ad

### FOR CONSUMERS

The Web sites you visit work with online advertising companies to provide you with advertising that is as relevant and useful as possible. Some of the online ads you are served may be based on the content of the Web page you're visiting; some others may be based on registration information you provide; and other ads may be customized based on predictions about your interests generated from your visits to other Web sites.

#### Who placed this ad?

- ▶ This ad was served by Yahoo!.

#### Where can I learn more about how Yahoo! selects ads?

- ▶ Please read about [Yahoo!'s privacy and advertising practices](#).
- ▶ Yahoo! may use your [searches](#), demographics data, and location information to select the ads you see. To manage your location, please visit [Yahoo!'s Location Management page](#).

#### What choices do I have about interest-based advertising from Yahoo!?

- ▶ [Manage](#) interest-based advertising categories, or opt-out of all categories, from Yahoo!
- ▶ Visit the [Network Advertising Initiative](#) and the [Digital Advertising Alliance](#) to see your opt-out choices from other participating companies.

### Learn More!

- ▶ Find out about how online advertising [supports the free content, products and services you use online](#).
- ▶ [Understand your choices](#) for online advertising from the Digital Advertising Alliance.
- ▶ [Learn more](#) about online advertising from the Network Advertising Initiative.
- ▶ [Explore](#) browser controls and plug-in tools to help set and maintain your privacy choices.

### FOR ADVERTISERS AND PUBLISHERS

Yahoo! delivers custom solutions to build your brand and drive the response you want. Yahoo!'s industry-leading targeting tools turn audiences into customers, helping you reach the people who matter to your business and deliver the right message.

#### Yahoo! Advertising Solutions

- ▶ Yahoo! [display advertising solutions](#) combine vast, engaged audiences with deep consumer insights, industry-leading targeting tools and other innovations to help you drive better results, and turn those audiences into customers.
- ▶ Yahoo! offers the [Right Media Exchange](#) - the first, largest Exchange marketplace for digital advertising.

#### Yahoo! Publisher Network

- ▶ Web site publishers can generate income from their sites by joining the [Yahoo! Publisher Network](#) and displaying clickable Yahoo! text ads, relevant to their content.

Figure 10: The Yahoo! Landing Page.

## AdChoices: Learn about ads

### Who delivered this ad to you?

This ad was delivered to you by Microsoft Advertising.

### Why are some ads personalized?

To provide you with a more relevant online experience, Microsoft Advertising customizes a portion of the online ads that you see based on your past online activity. Information about your past online activity, or the activity of other people using this computer, might be used to help predict your interests and select the ads that you see.

### Where can I learn more about my online information? New

View and manage your online information in the Microsoft Personal Data Dashboard Beta.



### Where can I learn more about how Microsoft Advertising uses the information that it collects?

For more information about Microsoft Advertising privacy practices and principles, see the Display of Advertising (Opt-out) section of the Microsoft Online Privacy Statement and Microsoft Privacy Principles for Search and Online Behavioral Targeting.

### What options do I have about personalized advertising?

You can:

- **Opt out** of receiving personalized ads on websites that use the Microsoft Advertising Platform and manage your advertising interests with the My Interests tool.
- Opt out of receiving personalized ads from other advertising companies by visiting the Consumer Choice Page.

### How can I learn more about online advertising?

For more information about online advertising, see the Understanding Online Advertising page on the Self-Regulatory Program for Online Behavioral Advertising website.

For more information about how online advertising affects your privacy, see the Learn More page on the Network Advertising Initiative (NAI) website.

For more information about how Internet Explorer 9 can help maintain your privacy choices, see the Internet Explorer 9 Features page on the Internet Explorer website.

About Us / Microsoft Advertising Worldwide / Privacy / Legal / © 2011 Microsoft

Listen to Microsoft perspectives on online privacy, safety, and personalized advertising.

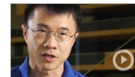


Figure 11: The Microsoft Landing Page.



## Ads Preferences

▸ Ads on Search

▼ Ads on the web

Opt out

### Ads on the web

#### Make the ads you see on the web more interesting

Many websites, such as news sites and blogs, partner with us to show ads to their visitors. To see ads that are more related to you and your interests, edit the categories below, which are based on sites you have recently visited. [Learn More](#)

Your interests are associated with an advertising cookie that's stored in your browser. If you don't want us to store your interests, you can opt out below. Your ads preferences only apply in this browser on this computer. They are reset if you delete your browser's cookies.

▸ [Watch a video: Ads Preferences on GDN explained](#)

#### Your categories and demographics

No interest or demographic categories are associated with your ads preferences so far. You can [add or edit](#) interests and demographics at any time.

#### Your cookie

Google stores the following information in a cookie to associate your ads preferences with the browser you're using:

`id=cc945733d000001|t=1318956051|et=730|cs=002213fd4845ed3432ca4bb35e`

Visit the [Advertising and Privacy](#) page of our [Privacy Center](#) to learn more.

Google is a participating member of the [Network Advertising Initiative](#) and follows the [industry privacy standards for online advertising](#). You can opt out of this cookie, as well as other companies' cookies used for interest-based ads, by visiting the [aboutads.info choices page](#). If you want to persist your opt-out of interest-based ads from all NAI member companies, you can install the [Keep My Opt-Outs plugin](#).

Google may use your Google account information, such as items you +1'd on Google websites and across the web, to personalize content and ads on non-Google websites. If you'd like to control how you see +1 recommendations from people you know, and how your +1 recommendations are shown to others, please visit the [+1 button settings page](#).

**Figure 12: The Google Landing Page.**





## D. SURVEY QUESTIONNAIRE

CMU Internet Study December 2011

Page One

This survey is being conducted by Carnegie Mellon students and faculty. It collects information on your demographics, Internet usage, and opinions about webpages and online advertising. All data collected through this questionnaire will only be used for research and will be kept confidential.

For more information, please contact the Principal Investigator: Lorrie Cranor. Email: [lorrie@cmu.edu](mailto:lorrie@cmu.edu).

The Carnegie Mellon University Institutional Review Board (IRB) has approved the use of human participants for this study. If you have questions pertaining to your rights as a research participant, or to report objections to this study, you should contact the Research Regulatory Compliance Office at Carnegie Mellon University. Email: [irb-review@andrew.cmu.edu](mailto:irb-review@andrew.cmu.edu) Phone: 412-268-1901 or 412-268-5460.

To participate in this study you have to be at least 18 years old and understand the information above.\*

- ☐ I have read and understand the information above and I am older than 18. I want to participate in this study.
- ☐ I prefer not to participate in this study.

Page Two

1) What's your gender?\*

- ☐ Male
- ☐ Female

2) What's your age (in years)?\*

3) Which of the following best describes your primary occupation?\*

- ☐ Administrative Support (e.g., secretary, assistant)
- ☐ Art, Writing, and Journalism (e.g., author, reporter, sculptor)
- ☐ Business, Management, and Financial (e.g., manager, accountant, banker)
- ☐ Education (e.g., teacher, professor)
- ☐ Legal (e.g., lawyer, law clerk)
- ☐ Medical (e.g., doctor, nurse, dentist)
- ☐ Science, Engineering, IT professional (e.g., researcher, programmer, IT consultant)
- ☐ Service (e.g., retail clerks, server)
- ☐ Skilled Labor (e.g., electrician, plumber, carpenter)
- ☐ Student (Please specify area of study): \_\_\_\_\_
- ☐ Unemployed
- ☐ Retired

- ☐ Decline to answer
- ☐ Other (Please specify): \_\_\_\_\_

4) Which of the following best describes your highest achieved education level?\*

- ☐ No high school
- ☐ Some high school
- ☐ High school graduate
- ☐ Some college - no degree
- ☐ Associates/2 year degree
- ☐ Bachelors/4 year degree
- ☐ Graduate degree - Masters, PhD, professional, medicine, etc.

5) Do you have a college degree or work experience in the fields of computer science, software development, web development or similar?\*

- ☐ Yes
- ☐ No

Page Three

We are interested in understanding how you experience things online. The following questions seek your views about Internet advertising. Here, "Internet advertising" refers only to ads that are displayed as part of the content of a web page. It excludes pop-up and email advertising.

6) Internet advertising is necessary to enjoy free services on the Internet.\*

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Neutral
- ☐ Agree
- ☐ Strongly Agree

7) In general, I find Internet advertising useful.\*

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Neutral
- ☐ Agree
- ☐ Strongly Agree

8) In general, I find Internet advertising distracting.\*

- ☐ Strongly disagree
- ☐ Disagree

- ☐ Neutral  
☐ Agree  
☐ Strongly Agree

9) In general, I find Internet advertising relevant to my interests.\*

- ☐ Strongly disagree  
☐ Disagree  
☐ Neutral  
☐ Agree  
☐ Strongly Agree

#### Page Four

Note: Only one of these two hypothetical scenarios was shown to each participant.

Planning to buy a car

Imagine that you are planning to buy a new car and you are particularly interested in a Nissan model. Please open a new tab in your browser and perform a Google search for "Nissan Dealers". Then, visit two of the links that you deem more relevant for this search from the first page of results.

Planning a vacation to Europe

Imagine that you are planning your next vacations to Paris, France. Please open a new tab in your browser and perform a Google search for "Paris Vacation Packages". Then, visit two of the links that you deem more relevant for this trip from the first page of results.

For the FIRST visited webpage, answer the following two questions:

10) Describe in one or two sentences the content that you saw in the first visited webpage:\*

11) What was your overall impression of the first visited webpage? Would you say that it was:\*

- ☐ Very Unfavorable  
☐ Somewhat Unfavorable  
☐ Neither Favorable Nor Unfavorable  
☐ Somewhat Favorable  
☐ Very Favorable

For the SECOND visited webpage, answer the following two questions:

12) Describe in one or two sentences the content that you saw in the second visited webpage:\*

13) What was your overall impression of the second visited webpage? Would you say that it was:\*

- ☐ Very Unfavorable  
☐ Somewhat Unfavorable  
☐ Neither Favorable Nor Unfavorable  
☐ Somewhat Favorable  
☐ Very Favorable

#### Page Five

14) Whether for work or personal use, using either a computer or a mobile device (smart phone, i-pod or similar), approximately how many hours do you spend on the Internet per week?\*

- ☐ Fewer than 1  
☐ Between 1 and 4  
☐ Between 5 and 7  
☐ Between 8 and 14  
☐ Between 15 and 25  
☐ More than 25

15) How many hours of the reported above do you use a mobile device (smart phone, i-pod or similar) to browse the Internet?\*

- ☐ Fewer than 1  
☐ Between 1 and 4  
☐ Between 5 and 7  
☐ Between 8 and 14  
☐ Between 15 and 25  
☐ More than 25

16) Have you ever...? (Select all that apply)\*

- ☐ Purchased products and services online such as music, books or clothing  
☐ Used a membership to rent movies on line from Netflix, Blockbuster or similar  
☐ Used search engines such as Google or Yahoo! to find information  
☐ Posted or read a blog or bulletin board on a website  
☐ Read a newspaper or magazine online  
☐ Participated in social/professional network sites such as Facebook, Twitter, MySpace, LinkedIn, etc.  
☐ Watched online videos or seen movies using YouTube, Hulu or similar.  
☐ Upload a photograph onto a website

- ☐ Done online banking or financial management
- ☐ Sold or bought on Ebay, Craigslist, or similar
- ☐ Used an online mapping service such as Google Maps or Mapquest
- ☐ Clicked on an ad that appeared on a website
- ☐ Downloaded music from the Internet
- ☐ Downloaded software from the Internet
- ☐ Used public email services such as Gmail, Yahoo, Hotmail or similar
- ☐ Used the Internet to chat or talk with family, friends or coworkers
- ☐ Connected remotely to another computer that you own
- ☐ Other [please specify]
- ☐ None of the above

#### Page Six

We are interested in understanding how you experience things online. Clicking on the link below will open a new window in your browser displaying the homepage of a news website from October 25, 2011. Please look through this page at your own pace and make sure to scroll down and look at the entire page. Then, answer the following three questions. Feel free to review the opened tab as many times as you want to answer these questions.

[Click here to visit the news webpage](#)

17) What is your overall impression of this news webpage? Would you say that it was:\*

- ☐ Very Unfavorable
- ☐ Somewhat Unfavorable
- ☐ Neither Favorable Nor Unfavorable
- ☐ Somewhat Favorable
- ☐ Very Favorable

18) What was the most interesting headline you noticed on the page?\*

---

19) Explain as completely as possible what privacy protection mechanisms (if any) do you see on this news webpage.\*

---

Before clicking on "Next" close the window where the news webpage was shown.

#### Page Seven

This is a hidden iframe to signal the server that the user has clicked next

20) What were the advertised products on the news webpage? (Choose all that apply)\*

- ☐ Airlines
- ☐ Hotels
- ☐ Accessories
- ☐ Casinos
- ☐ Shows
- ☐ Cars
- ☐ I do not remember
- ☐ Other

21) Was there a symbol placed near, but not inside, at least one of the advertisements?\*

- ☐ Yes
- ☐ No
- ☐ I do not know / I do not remember

Where was the symbol placed relative to the advertisements?

- ☐ Near the upper right corner
- ☐ Near the upper left corner
- ☐ Near the bottom right corner
- ☐ Near the bottom left corner
- ☐ I do not remember/Not sure

What color was the symbol?\*

- ☐ Blue
- ☐ Black
- ☐ Red
- ☐ Orange
- ☐ Brown
- ☐ I do not remember/Not sure
- ☐ I am color blind
- ☐ Other: \_\_\_\_\_

22) Was there a short phrase placed near, but not inside, at least one of the advertisements?<sup>23</sup>

- ☐ Yes  
☐ No  
☐ I do not know / I do not remember

What was the short phrase that you saw?

- ☐ Enter text here: \_\_\_\_\_  
☐ I do not know / I do not remember

Was the short phrase any of the following?

- ☐ Why did I get this ad?  
☐ Interest based ads  
☐ AdChoices  
☐ Sponsor Ads  
☐ Learn about your ad choices  
☐ Configure ad preferences  
☐ I do not know/Not sure

Page Eight

Please observe the following advertisement and answer the questions below.

[tagline and icon in context with the Paris ad was placed here]

23) Look at the symbol in the top right corner of the above ad. Had you seen this symbol before (other than in this study)?<sup>24</sup>

- ☐ Yes  
☐ No  
☐ Maybe

24) Look at the phrase in the top right corner of the above ad. Had you seen this phrase before (other than in this study)?<sup>25</sup>

- ☐ Yes  
☐ No  
☐ Maybe

25) What, if anything, does this symbol [and phrase]<sup>1</sup> communicate to you? Please be as complete as possible.<sup>26</sup>

\_\_\_\_\_

26) What, if anything, does this symbol communicate to you? Please be as complete as possible.<sup>27</sup>

\_\_\_\_\_

Page Nine

Please observe again the following advertisement and answer the questions below.

[tagline and icon in context with the Paris ad was placed here]

27) As best as you can tell, what is the purpose of placing this symbol [and phrase] on the top right corner of the above ad?<sup>28</sup>

	Definitely not	Probably not sure	Probably	Definitely
To attract your attention to the ad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To get you to click on the ad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To tell you how this ad was chosen for you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To give you more information about the advertised product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To get your reactions to the ad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To tell you that the ad is targeted to you	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To advertise the company that is delivering this ad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To tell you that this ads are from a legitimate company	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To give you information about placing advertisements on this website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To allow you to choose which types of products appear in ads that you see	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28) As best as you can tell, what is the purpose of placing this symbol on the top right corner of the above ad?<sup>29</sup>

<sup>1</sup> Those participants in the no-tagline condition were only asked about the symbol.

	Definitely not	Probably not	Probably sure	Definitely
To attract your attention to the ad	( )	( )	( )	( )
To get you to click on the ad	( )	( )	( )	( )
To tell you how this ad was chosen for you	( )	( )	( )	( )
To give you more information about the advertised product	( )	( )	( )	( )
To get your reactions to the ad	( )	( )	( )	( )
To tell you that the ad is targeted to you	( )	( )	( )	( )
To advertise the company that is delivering this ad	( )	( )	( )	( )
To tell you that this ad is from a legitimate company	( )	( )	( )	( )
To give you information about placing advertisements on this website	( )	( )	( )	( )
To allow you to choose which types of products appear in ads that you see	( )	( )	( )	( )

29) To what extent, if any, does this combination of the symbol *[and phrase]<sup>2</sup>*, placed on the top right corner of the above ad suggest the following?<sup>2\*</sup>

	Definitely does not suggest	Probably does not suggest	Probably sure	Definitely suggest
You can click on that symbol/phrase	( )	( )	( )	( )
You can choose to learn about the advertised product	( )	( )	( )	( )
You can turn off advertisements on this website	( )	( )	( )	( )
The ads you see on the news website are based on your visits to this website	( )	( )	( )	( )
The ads you see on the news website are based on your visits to other websites	( )	( )	( )	( )
This ad has been tailored based on websites you have visited on the past	( )	( )	( )	( )
These ads have been chosen to be relevant to you	( )	( )	( )	( )
This website shows ads that are chosen to match your needs	( )	( )	( )	( )
This ad is from one of the website's premier partners	( )	( )	( )	( )
You can stop tailored advertising	( )	( )	( )	( )
You can choose which ads you want to see on this website	( )	( )	( )	( )

<sup>2</sup> Those participants in the no-tagline condition were only asked about the symbol.

30) Same as 29) but only asking about the symbol.

31) What do you think it would happen if you click on that symbol *[or that phrase]<sup>2\*</sup>*

	Definitely not	Probably not	Probably sure	Definitely
It will take you to the advertised company site	( )	( )	( )	( )
More ads will pop-up	( )	( )	( )	( )
You will let the advertising company know that you are interested in those products	( )	( )	( )	( )
It will take you to a page where you can tell the advertising company whether you are or not interested in the advertised product/service	( )	( )	( )	( )
It will take you to a page where you can tell the advertising company what products/services you are interested in	( )	( )	( )	( )
It will take you to a page where you can tell the advertising company that you do not want to receive tailored ads	( )	( )	( )	( )
It will take you to a page where you can buy advertisements on this website	( )	( )	( )	( )

32) Same as 31) but only asking about the symbol.

#### Page Ten

Click on the icon placed on the top right corner in the ad shown below, a new window will be opened displaying a "landing page" from the company that delivered this ad to the news website.

Please look through this "landing page" at your own pace and make sure you scroll down and sideways to look at the entire page. Then, answer the questions below.

Feel free to review the "landing page" on the opened window as many times as you want.

[tagline and icon in context with the Paris ad was placed here]

33) In one sentence, describe the content of the "landing page" that was loaded in the opened window.\*

34) Please rate the information presented in this "landing page" on the following scale:\*

( ) Very easy to understand

- ☐ Easy to understand  
☐ Not easy neither difficult to understand  
☐ Difficult to understand  
☐ Very difficult to understand

35) Please rate the information presented in this "landing page" on the following scale:\*

- ☐ Very interesting  
☐ Interesting  
☐ Not interesting neither uninteresting  
☐ Uninteresting  
☐ Very uninteresting

36) Please rate the information presented in this "landing page" on the following scale:\*

- ☐ Very informative  
☐ Informative  
☐ Not informative neither uninformative  
☐ Uninformative  
☐ Very uninformative

37) What does the information in this "landing page" communicate to you? Please be as complete as possible.\*

\_\_\_\_\_

38) What choices, if any, do you think this "landing page" provides? Please be as complete as possible.\*

\_\_\_\_\_

39) As far as you can tell, what company delivered the ads you were shown in the news webpage?\*

- ☐ Microsoft Advertising  
☐ Yahoo  
☐ Monster Career Ad Network  
☐ AOL Advertising  
☐ Google  
☐ NY Times  
☐ Other (please specify): \_\_\_\_\_\*

40) To what extent, if at all, does the information on the "landing page" suggest to you that:\*

	Definitely suggest	Probably suggest	Not sure	Probably suggest	Definitely suggest
Your visit to the news website is being monitored	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Everyone who visits this news website	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

- sees the same ads  
 This news website does not collect any information about your visits here  
 The ads you see in the news website are based on your visits to this news website and other websites  
 The ads you see on other websites in the future may be based on activity during your visits here  
 This news website shows ads that are chosen to match your needs  
 This news website protects your privacy by not sharing your information

Only for AOL landing page:

41) If you encountered this "landing page" after clicking on the symbol located nearby an ad, how likely would you do the following:\*

	Very unlikely	Unlikely	Nor likely neither unlikely	Likely	Very likely
Click on the "Advertising and Privacy" link to learn more about AOL advertising practices	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click on the "View your interest categories" link	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click on the "opt-out of the use of your data for interest-based advertising" link	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click on the "AOL Search" link to manage the collection and use of your search information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click on the "Opt-out" blue button	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click on the "Consumer education page" link to learn more about online advertising	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Close this "landing page" without reading it at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Only for Yahoo! landing page:

42) If you encountered this "landing page" after clicking on the symbol located nearby an ad, how likely would you do the following:\*

	Very unlikely	Unlikely	Nor likely neither unlikely	Likely	Very likely
Click on the "Yahoo!'s Privacy and Advertising Practices" link to learn more about how Yahoo! selects ads	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click on the "Yahoo!'s Location	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



**Only for Monster landing page:**

45) If you encountered this "landing page" after clicking on the symbol located nearby an ad, how likely would do the following:\*

	Very unlikely	Unlikely	Nor likely neither unlikely	Very likely
Click on the "What does the Career Ad Network cookie reveal about me?" link inside the orange frame on the right hand side of the page	( )	( )	( )	( )
Click on the "Secker Privacy Policy" link	( )	( )	( )	( )
Select any of the check boxes to customize your cookie preferences	( )	( )	( )	( )
Click on the "Opt-out" link to opt out of the Career Ad Network cookie	( )	( )	( )	( )
Click on the "Learn about cookies" or "How to delete cookies" links on the right-hand side of the page	( )	( )	( )	( )
Close this "landing page" without reading it at all	( )	( )	( )	( )

46) What do you think it would happen if you decided to "opt out" by clicking on the Opt-Out blue button on this "landing page"? \*

the following:\*

	Very unlikely	Unlikely	Neutral	Likely	Very likely
1. The company will be able to meet its obligations	1	2	3	4	5
2. The company will be able to pay its debts	1	2	3	4	5
3. The company will be able to pay its taxes	1	2	3	4	5
4. The company will be able to pay its employees	1	2	3	4	5
5. The company will be able to pay its suppliers	1	2	3	4	5
6. The company will be able to pay its creditors	1	2	3	4	5
7. The company will be able to pay its interest	1	2	3	4	5
8. The company will be able to pay its dividends	1	2	3	4	5
9. The company will be able to pay its shareholders	1	2	3	4	5
10. The company will be able to pay its bondholders	1	2	3	4	5
11. The company will be able to pay its debtholders	1	2	3	4	5
12. The company will be able to pay its lenders	1	2	3	4	5
13. The company will be able to pay its investors	1	2	3	4	5
14. The company will be able to pay its stockholders	1	2	3	4	5
15. The company will be able to pay its owners	1	2	3	4	5
16. The company will be able to pay its partners	1	2	3	4	5
17. The company will be able to pay its members	1	2	3	4	5
18. The company will be able to pay its associates	1	2	3	4	5
19. The company will be able to pay its affiliates	1	2	3	4	5
20. The company will be able to pay its subsidiaries	1	2	3	4	5
21. The company will be able to pay its divisions	1	2	3	4	5
22. The company will be able to pay its departments	1	2	3	4	5
23. The company will be able to pay its units	1	2	3	4	5
24. The company will be able to pay its branches	1	2	3	4	5
25. The company will be able to pay its offices	1	2	3	4	5
26. The company will be able to pay its stores	1	2	3	4	5
27. The company will be able to pay its warehouses	1	2	3	4	5
28. The company will be able to pay its factories	1	2	3	4	5
29. The company will be able to pay its plants	1	2	3	4	5
30. The company will be able to pay its mills	1	2	3	4	5
31. The company will be able to pay its mines	1	2	3	4	5
32. The company will be able to pay its quarries	1	2	3	4	5
33. The company will be able to pay its farms	1	2	3	4	5
34. The company will be able to pay its ranches	1	2	3	4	5
35. The company will be able to pay its estates	1	2	3	4	5
36. The company will be able to pay its lands	1	2	3	4	5
37. The company will be able to pay its properties	1	2	3	4	5
38. The company will be able to pay its buildings	1	2	3	4	5
39. The company will be able to pay its structures	1	2	3	4	5
40. The company will be able to pay its facilities	1	2	3	4	5
41. The company will be able to pay its equipment	1	2	3	4	5
42. The company will be able to pay its machinery	1	2	3	4	5
43. The company will be able to pay its tools	1	2	3	4	5
44. The company will be able to pay its supplies	1	2	3	4	5
45. The company will be able to pay its materials	1	2	3	4	5
46. The company will be able to pay its inventory	1	2	3	4	5
47. The company will be able to pay its stock	1	2	3	4	5
48. The company will be able to pay its goods	1	2	3	4	5
49. The company will be able to pay its products	1	2	3	4	5
50. The company will be able to pay its services	1	2	3	4	5
51. The company will be able to pay its labor	1	2	3	4	5
52. The company will be able to pay its wages	1	2	3	4	5
53. The company will be able to pay its salaries	1	2	3	4	5
54. The company will be able to pay its benefits	1	2	3	4	5
55. The company will be able to pay its expenses	1	2	3	4	5
56. The company will be able to pay its costs	1	2	3	4	5
57. The company will be able to pay its losses	1	2	3	4	5
58. The company will be able to pay its debts	1	2	3	4	5
59. The company will be able to pay its taxes	1	2	3	4	5
60. The company will be able to pay its interest	1	2	3	4	5
61. The company will be able to pay its dividends	1	2	3	4	5
62. The company will be able to pay its shareholders	1	2	3	4	5
63. The company will be able to pay its bondholders	1	2	3	4	5
64. The company will be able to pay its debtholders	1	2	3	4	5
65. The company will be able to pay its lenders	1	2	3	4	5
66. The company will be able to pay its investors	1	2	3	4	5
67. The company will be able to pay its stockholders	1	2	3	4	5
68.					

	likely	neutral	unlikely
Click on the "Microsoft Privacy Principles for Search and Online Behavioral Targeting" or "Display of Advertising (Opt-out)" links to learn more about how Microsoft Advertising uses the information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click on the "Microsoft Personal Data Dashboard Beta" link to manage your online information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click on the "Opt-out" blue button	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click on any of the video links on the right hand side on the page to listen about Microsoft perspectives on online privacy, safety, and personalized advertising	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click on any of the links at the bottom of the page to "Learn More About Online Advertising"	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Click on the "Consumer Choice Page" link to opt out of receiving personalized ads from other advertising companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Close this "landing page" without reading it at all	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

44) If you encountered this "landing page" after clicking on the symbol located nearby an ad, how likely would do the following:\*

Only for Yahoo! landing page:

47) What do you think it would happen if you decided to "opt out" by clicking on the "Manage" grey button on this "landing page"?\*

Only for Microsoft landing page:

48) What do you think it would happen if you decided to "opt out" by clicking on the "Opt-Out" blue button on this "landing page"?\*

Only for Google landing page:

49) What do you think it would happen if you decided to "opt out" following the links on this "landing page"?\*

Only for Monster landing page:

50) What do you think it would happen if you decided to "opt out" by clicking on the "Opt-Out" link on this "landing page"?\*

51) Indicate your agreement with the following statements defining what "opt out" means in the context of internet advertising:\*

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Stop seeing ads when browsing the Internet	( )	( )	( )	( )	( )
Stop advertising companies from collecting information about your browsing activities	( )	( )	( )	( )	( )
Stop seeing ads based on your browsing activities	( )	( )	( )	( )	( )

Page Eleven

Information about your visits to websites across the Internet may be used by advertisers to decide which online advertising you see in the future. This activity is called behavioral advertising.

52) How comfortable are you with behavioral advertising?\*

- ☐ Very uncomfortable  
☐ Uncomfortable  
☐ Neither comfortable nor uncomfortable  
☐ Comfortable  
☐ Very comfortable

53) In general, I find behavioral advertising useful.\*

- ☐ Strongly disagree  
☐ Disagree  
☐ Neutral  
☐ Agree  
☐ Strongly Agree

54) In general, I like behavioral advertising.\*

- ☐ Strongly disagree  
☐ Disagree  
☐ Neutral  
☐ Agree  
☐ Strongly Agree

55) Behavioral advertising is privacy invasive.\*

- ☐ Strongly disagree  
☐ Disagree  
☐ Neutral  
☐ Agree  
☐ Strongly Agree

Assume that a website you visit does the following:

1) Explains how information about your visits to websites across the Internet is being used to try to show you online advertisements based on your interest.

2) Offers you a choice not to receive these customized online ads but to receive general online ads instead.

56) How comfortable would you be with this website sending you behavioral ads?\*

- ☐ Very uncomfortable  
☐ Uncomfortable  
☐ Neither comfortable nor uncomfortable  
☐ Comfortable  
☐ Very comfortable

57) Explain what (if anything) could make you more comfortable with receiving behavioral ads.\*

\_\_\_\_\_

#### Page Twelve

This is the last page of the survey. Please answer these last questions as accurately as possible.

58) To what extent do you agree with the following statement: "I am interested in visiting Europe within the next 12 months."

- ☐ Strongly disagree  
☐ Disagree  
☐ Neutral  
☐ Agree  
☐ Strongly agree

59) Do you use any browser add-ons?\*

- ☐ No  
☐ Yes (Please name a couple of them): \_\_\_\_\_\*  
☐ No  
☐ Yes (Please name a couple of them): \_\_\_\_\_\*

60) Do you use any browser add-on that helps to block advertisement on the Internet?\*

- ☐ No  
☐ Yes (Please name a couple of them): \_\_\_\_\_\*

61) Which of the following have you ever done (Select all that apply)\*

- ☐ Refused to give information to a website because you felt it was too personal or unnecessary  
☐ Asked a website to remove your name and address from any lists used for marketing purposes  
☐ Asked a website not to share your name or other personal information with other companies  
☐ Decided not to use a website or not to purchase something online because you were not sure how your personal information would be used  
☐ Set your web browser to reject cookies  
☐ Supplied false or fictitious information to a website when asked to register  
☐ Read a website's privacy policy  
☐ Opted out of receiving customized online advertising  
☐ Deleted cookies from your web browser  
☐ Turned on "do not track" option in your web browser  
☐ Changed the privacy settings in your web browser  
☐ None of the above

62) Read the following statements and indicate the extent to which you agree or disagree with each of them\*

	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
It bothers me when websites ask me for personal information	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am concerned that websites are collecting too much personal information about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It bothers me to give personal information to so many websites	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
When websites ask for personal information, I sometimes think twice about providing it	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consumers have lost all control over how personal information is collected and used by companies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that as a result of my visiting websites, others know more about me than I am comfortable with	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I believe that as a result of visiting websites, information about me that I consider private is now more readily available to others than I want it to be	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that, as a result of my visiting websites, information about me is out there and, if used, will invade my privacy	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I feel that as a result of my visiting websites, my privacy has been invaded by others who collect data about me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

63) Do you have any further comments?\*

\_\_\_\_\_

Thank You!

Thank you for taking the survey. Below is your confirmation code. You must retain this code to be paid - it is recommended that you store your code in a safe place (either by writing it down, or by printing this page).

REMINDER: You must correctly copy and paste the confirmation code into Mechanical Turk to be paid!

YOUR CODE IS

[ %413:Thank you.% ]