
Opting out of Online Targeted Advertisements: Is it easy?

Dhanuja Shaji

Carnegie Mellon University
Pittsburgh, PA 15213, USA
dshaji@andrew.cmu.edu

Eduardo Schnadower

Carnegie Mellon University
Pittsburgh, PA 15213, USA
eschnado@andrew.cmu.edu

Aditi Jannu

Carnegie Mellon University
Pittsburgh, PA 15213, USA
ajannu@andrew.cmu.edu

Tong Liu

Carnegie Mellon University
Pittsburgh, PA 15213, USA
liu3@andrew.cmu.edu

Abstract

It is a common practice for websites to offer opt-out options of Online Behavioral Advertising. However, users are not generally aware of these options or their implications. We present an online survey and a laboratory study to evaluate awareness of the opt-out settings and to see how easy or difficult it is for general consumers to opt out. Though more than 60% participants agreed that they should have control over their data collected online, few of them are aware of the opt-out options or where to find them. Through the lab study, we evaluated the usability of the opt-out options offered by Facebook, Amazon, Google and NAI. Based on the participants' behaviors and their responses to the follow-up questions, we could identify several usability flaws of the options and some incorrect mental models that people hold.

Author Keywords

Privacy; Opt-out; Online behavioral advertising; Usability; tracking; Facebook; Amazon; Google; NAI;

ACM Classification Keywords

K.4.1. Computers and Society: Privacy

Introduction

Online behavioral advertising (OBA) is defined by the United States Federal Trade Commission (FTC) as "the

Copyright is held by the author/owner. Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee. Poster presented at the 13th Symposium on Usable Privacy and Security (SOUPS 2017).

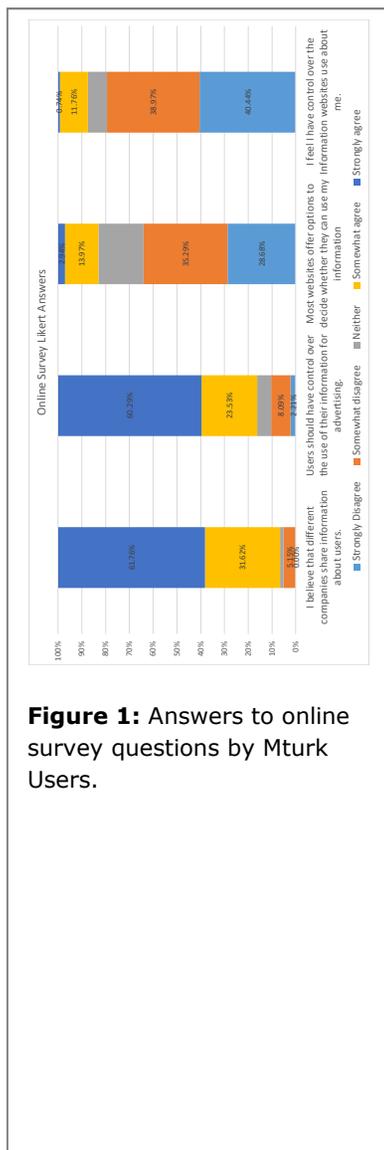


Figure 1: Answers to online survey questions by Mturk Users.

practice of tracking an individual’s online activities in order to deliver advertising tailored to the individual’s interests” [1]. Previous studies shown that consumers have several concerns about targeted advertising [2].

Many of the websites that use OBA provide options for consumers to opt out of interest-based advertising. However, to utilize these opt-out options to express their preferences, consumers need to be aware of the existence of such options, locate and understand the options, and use them to effectively opt out. Though these opt-out options could help consumers have more control of their privacy, to our knowledge there has not been sufficient usability evaluation about such options.

In this paper, we conducted an online survey and a laboratory study to evaluate awareness of the opt-out settings and to measure how difficult it is for consumers to locate those options, to understand them and to exercise them in a way that is consistent with their privacy preferences. Both studies were approved by the CMU Internal Review Board.

Related work

Making good privacy decisions for users can be difficult and confusing, and the lack of proper understanding of the uses of their personal information can affect consumer trust. Luo suggests that lack of consumer trust and privacy concerns can hamper e-commerce growth [3]. Hoffman, et al, in addition, suggest that the current opt-out mechanisms may generate mistrust from consumers [4].

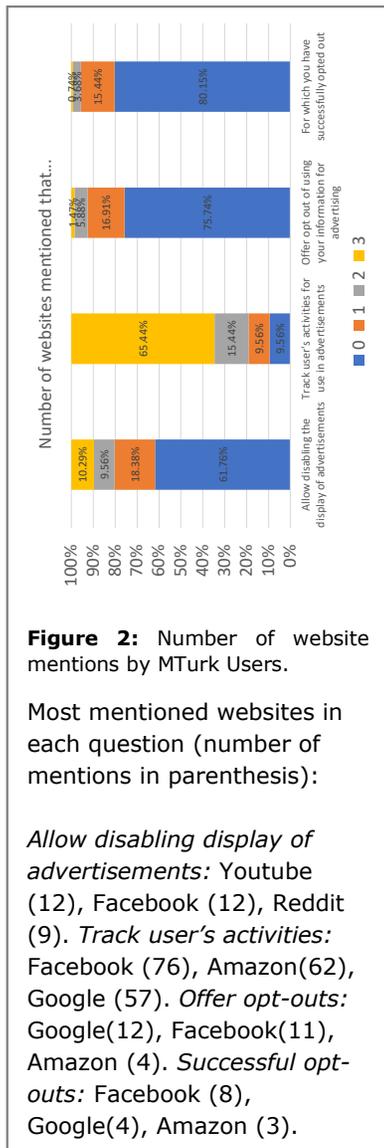
Previous studies show just how big is the lack of understanding by current users of how websites use personal data. Leon et al. showed that half of the

participants in a study misunderstood the meaning of opt-out options, and a lack of trust towards the opt-out process [5]. It is important to note that in this study, users were guided towards landing pages of opt-out options. In another study, Leon et al. showed the apparent usability flaws of nine opt-out tools, including external tools, browser extensions and the DAA website [6]. All the tools examined in such experiments had significant flaws. Our study is focused on the accessibility of the opt out options provided by some of the most popular websites used today.

Online Survey

We performed a short, eight-minute survey that was applied to both our lab participants at the start of the study and a group of Amazon Mechanical Turk (MTurk) users, showing similar results for both groups. Due to space constraints, we only explain results for MTurk participants in this poster. 136 valid answers were obtained from the MTurk group whose demographics were similar to the average MTurk population.

Also, due to space limitations we will discuss only the last four questions, in which they agreed strongly that companies share information about users for use in advertising (question 5), that users should have control over such information (question 6) and strong disagreement with websites offering options for users to decide over the use of the information (question 7) and with feeling in control over it (question 8). Results along with full text of questions can be observed graphically in figure 1. This result shows that most Mturk users are aware of companies sharing their information, and that, even if most believe that they should have control over the use of their personal data for advertising, they are not generally aware of the opt-



out options offered by websites, and feel they don't have control over their information. We found a significant correlation between being aware of the opt out options and feeling in control (questions 7 and 8, $\rho=0.6608$, $P<=0.05$).

The final section of the survey asked users to mention up to three different websites that complied with certain characteristics. Most users were not able to mention even a single website that offered the disabling of the display of advertisements (question 1, which was added as a distracting question), that offered opt-out options for targeted advertising (question 3) or in which they successfully exercised those options (question 4). However, most participants could recall three websites that track their activities for use in advertising (question 2). Figure 2 shows the details. This demonstrates that not only awareness in general is low, but also practical awareness of where to find the options. Also, the data showed no significant correlation between answers to question 7 of the Likert section and question 3 of the "mention" section, which means that general awareness of the existence of the options does not enable the user be able to find or exercise those options. As shown in the sidebar, the most mentioned websites in questions 2, 3 and 4 were Google, Facebook and Amazon, which was used as a base for our lab study.

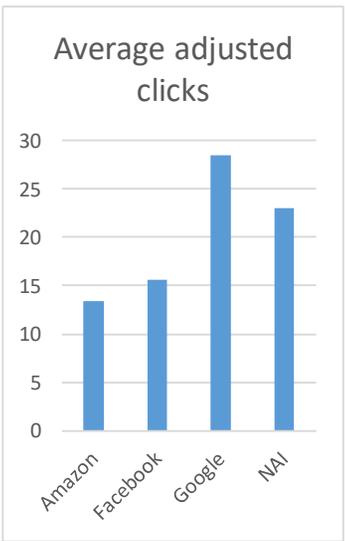
Lab Study

To measure the usability of opt-out options, we performed a 30 - 45 minute laboratory study with 17 members of the Carnegie Mellon University community over 18 years of age. The laboratory study consisted of three main phases - the MTurk online survey provided; an instructional video by the Internet Advertising

Bureau UK about behavioral advertising [7] and a set of tasks to be performed on Facebook, Google, Amazon and the Network Advertising Initiative (NAI). Participants were asked to follow a think-aloud protocol. After each task, a short interview was conducted consisting of Likert questions based on SUS, a simple usability questionnaire [8] and open ended questions to gather more information about their perceptions. Each task required the participant to find the option offered by each website to opt out of targeted advertising and exercise it. During each task, the mouse click count and audio was recorded. For each task, we determined the least number of clicks to complete the task, which we call the expert path.

The main usability problems which were obtained through the qualitative data of the study were that finding the option which provides the page to submit a user's advertising preference i.e. opt in or opt out of targeted advertisements was hard and the process of submitting the preferences was simple. The flaws observed across all the four websites were that the participants thought they were provided with too much information and options for opting out of personalized ads. Some of the common mental models were that opting out of targeted advertisements can disable the display of advertisements all together and the connected first party mental model was discussed by Wang et al. while studying the mental models of the Internet [9]. The results of each website in addition to the ones mentioned above are discussed below:

Facebook - A few participants had a misconception that ads personalization options can be found in the 'News Feed Preferences', 'Advertising on Facebook' or Privacy Setting and tools' options respectively.



	Expert Path	Average clicks	Adjusted clicks	St. Dev.
Amazon	7	20.4	13.4	9.5
Facebook	14	29.6	15.6	9.9
Google	8	36.5	28.5	25.6
NAI	3	26.1	23.1	23.1

Figure 3: Average number of clicks for each task. Adjusted clicks is the average clicks minus the expert parts. All unadjusted clicks differed significantly from the expert paths. $(P(|T| > |t|) < 0.001$ for all tasks)

Amazon – Participants seemed to misunderstand opting out of OBA as opting out of “recommendations” even though Amazon clearly states otherwise.

People also expected the option to opt out to be noticeable in “My Account” page and didn’t expect to navigate so much to find it.

Google – Participants had a mixed response for Google opt out options. While some found the task easy and the opt out options to be straightforward, others found them confusing. The toggle button provided by Google was a simple on-off button which a few participants appreciated. On the other hand, this toggle button was unnoticed due to its placement on the page. Participants tried customizing the topics of ads they wanted to view.

Another behavior we observed was that a few participants visited the privacy policy page to get to the opt-out options, which were accessible from there but hidden deep within a heavy amount of text.

Some participants had the notion that Google will stop tracking them after opting out of personalized ads, while some thought they prevented Google from sending spam mail to them in addition to non-personalized ads.

NAI – More than 40% of the participants complained that there was something they didn’t understand about the website - how they work, why they do it, what they do etc. Many participants complained about the long text on the front page, indicating that the data thrown at them was overwhelming. The overwhelming number

of unfamiliar companies on the opt out page was another factor which contributed to their confusion.

23% of participants specified that the NAI website was not designed for consumers.

There were no specific mental models established among the participants as the comprehension of the website was poor. However, participants had ideas that the ads would not be personalized, the listed companies would stop tracking them online, the ads would get disabled after the task was completed or that the site deleted cookies from browsers to prevent personalized ads.

Conclusion

Our study was conducted on samples that differ from the average U.S. population, as we expect them to be more tech savvy. Nevertheless, we found that majority of our participants agree that companies share information for advertisements, that they should have control over the use of their information and are not generally aware of opt-out options, and this might make them feel less in control, which can affect their trust in companies. We would expect the general population to be even less aware. Therefore, more effort needs to be done to increase the awareness of these options.

The lab study examined the usability of the opt-out options offered by Facebook, Amazon, Google and NAI. Several usability flaws and wrong mental models were found by our users, despite them being more tech savvy than the average U.S. population, which is a clear indicator that more needs to be done to make these options more usable and understandable.

Acknowledgements

This study was supported in part by the National Science Foundation under grant CNS-1330596. We thank Lorrie Cranor and Javed Ramjohn for their insight and expertise during the project.

References

1. Federal Trade Commission. 2009. Self-Regulatory Principles For Online Behavioral Advertising. (February 2009). Retrieved May 29, 2017 from <https://www.ftc.gov/sites/default/files/documents/reports/federal-trade-commission-staff-report-self-regulatory-principles-online-behavioral-advertising/p085400behavadreport.pdf>
2. Aleecia McDonald and Lorrie Faith Cranor. 2010. Beliefs and Behaviors: Internet Users' Understanding of Behavioral Advertising. TPRC (2010).
3. Facebook. Retrieved March 29, 2017 from <http://www.facebook.com/> Requires login.
4. Donna L. Hoffman, Thomas P. Novak, and Marcos Peralta. 1999. Building consumer trust online. *Communications of the ACM* 42, 4 (January 1999), 80–85. DOI:<http://dx.doi.org/10.1145/299157.299175>
5. Pedro Giovanni Leon et al. 2012. What do online behavioral advertising privacy disclosures communicate to users? *Proceedings of the 2012 ACM workshop on Privacy in the electronic society - WPES 12* (2012). DOI:<http://dx.doi.org/10.1145/2381966.2381970>
6. Pedro Leon, Blase Ur, Richard Shay, Yang Wang, Rebecca Balebako, and Lorrie Cranor. 2012. Why Johnny can't opt out. *Proceedings of the 2012 ACM annual conference on Human Factors in Computing Systems - CHI 12* (2012). DOI:<http://dx.doi.org/10.1145/2207676.2207759>
7. iabuk. 2012. How online behavioural advertising works. (July 2012). Retrieved May 29, 2017 from <https://www.youtube.com/watch?v=Y9Y4Efyxmk4>
8. Assistant Secretary for Public Affairs. 2013. System Usability Scale (SUS). (September 2013). Retrieved May 29, 2017 from <https://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html>
9. Yaxing Yao, Davide Lo Re, and Yang Wang. 2017. Folk Models of Online Behavioral Advertising. *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing - CSCW 17* (2017). DOI:<http://dx.doi.org/10.1145/2998181.2998316>