

A G o on nca n no
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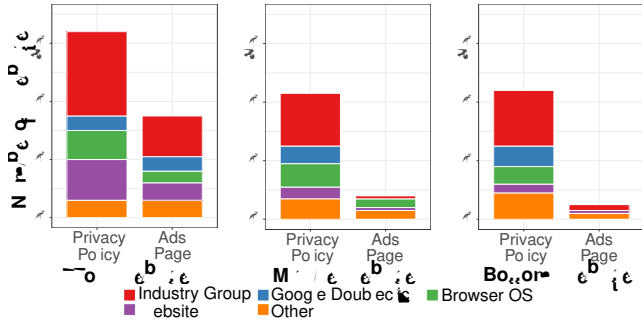
p o n n

4.1 Template for Analysis

p n o p n p n o
o n o p o
n o p o n o n
o n o p n n

po n n p on po
po o p po
on o n

4.3 Data Collection



Privacy policies and ads pages are often found on the same website. This suggests that websites that have a privacy policy also tend to have an ads page. The data shows that for every website with a privacy policy, there is a corresponding ads page. This indicates a strong correlation between the two types of pages.

Websites include other data collection controls. In addition to privacy policies and ads pages, many websites also include other data collection controls. These controls can include things like cookies, tracking pixels, and analytics tools. The presence of these controls suggests that websites are actively collecting and processing user data. This data can be used for a variety of purposes, including targeted advertising and website optimization.

Data deletion controls were provided in privacy policies and account settings.

Privacy policies and account settings often provide users with controls to delete their data. This is a key requirement of the GDPR, which gives users the right to be forgotten. Websites that provide these controls are demonstrating a commitment to user privacy and data protection. The presence of these controls suggests that websites are taking steps to ensure that user data is not stored indefinitely and can be removed upon request.

The GDPR contributed to more deletion controls.

The implementation of the GDPR has led to an increase in data deletion controls across many websites. This is because the GDPR requires websites to provide users with the ability to delete their data. As a result, many websites have updated their privacy policies and account settings to include these controls. This has helped to increase transparency and give users more control over their personal information.

N-Gram	Email Comm.	Targeted Adv.	Data Deletion
<p>o_ ,</p> <p>op_ q ,</p> <p>p_ on</p> <p>p_ on r_ o_</p> <p>_ p</p> <p>o ,</p>			
<p>q_ o</p> <p>q_ r_ o_</p> <p>q_ _</p>			

B _ o , _ n n _

	Clicks	Boxes	Hovers	Form	Other	Total
Co	▼	▼	▼	▼	▼	5.32
A	▼	▼	▼	▼	▼	

A A A n o
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r

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A A A o A o
C no Y A Yo o on
n n A on o
ppp n n n ro n so t Con r n
on Hu n F tors n Co put n st s CH p

An on n B
A C on c o A
c n n n n , ppo
oo nt rn t on ourn o Hu n-Co put r tu
s

B o o on B
Y n n o C n
n n n p oo co n o
n n n ro n so t 2 ur t n
r or s op 2

A B n po
o p on n n ourn o
t n

op C Bo n
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A n n ourn o
A r t s n

B oo B n B n o
A o n p

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p po n
ro n s o t n t r n t on Con r n on
nt n p

Co on on n
ro on p n on p

Co on o n on
p n p o n
on o n po

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n p p o on A p o
p p o n n

o n n n p c n
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oc Art o r t n p

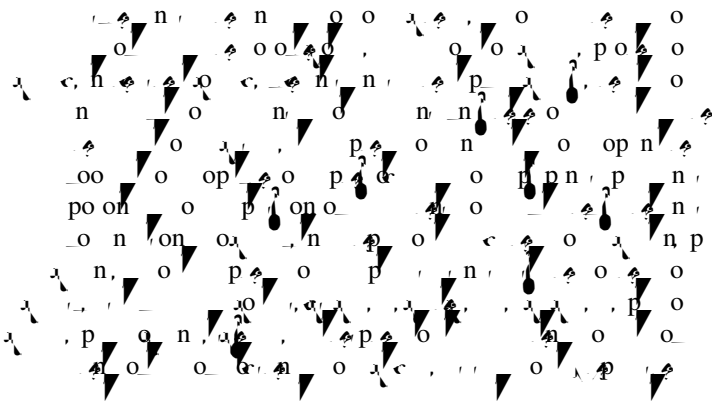
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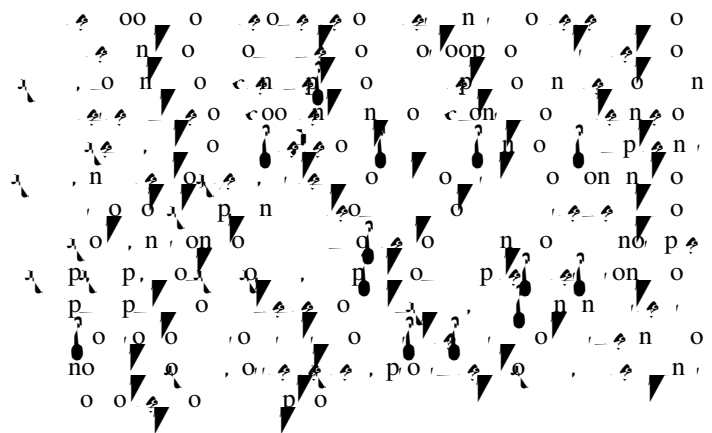
n A A C o on
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Middle Websites

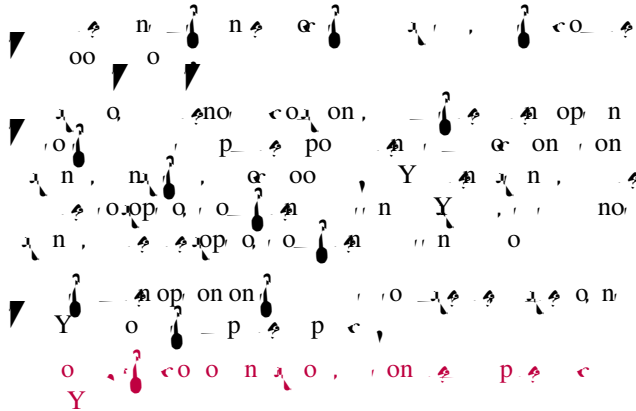


Bottom Websites

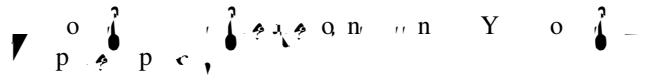
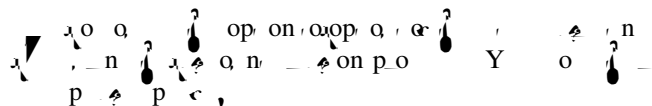


B Website Analysis Template

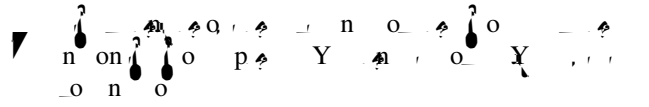
Step 1: Visit the homepage of the website



Step 2: Please create a user account for this site.



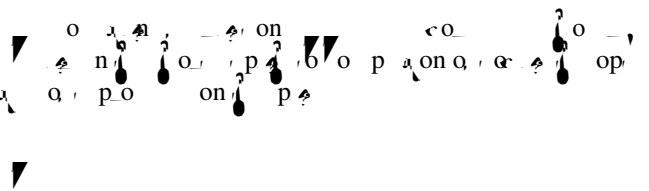
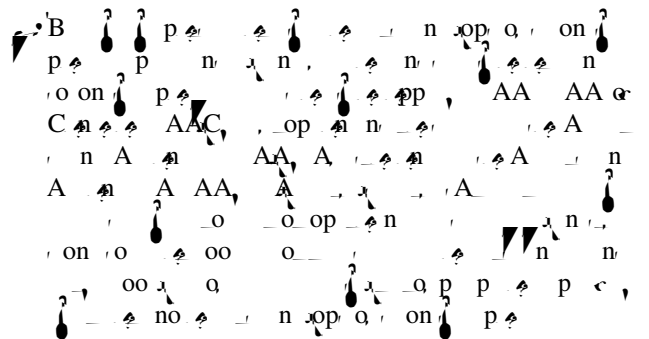
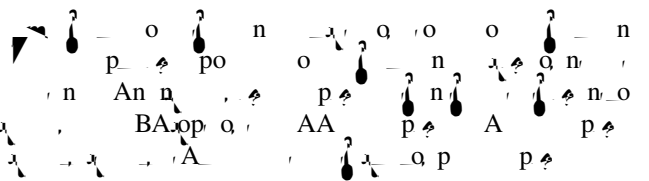
Step 3: Look for an “about advertising” or “ad choices” related link on the home page. Click on the “about advertising” or “ad choices” link if it is there.



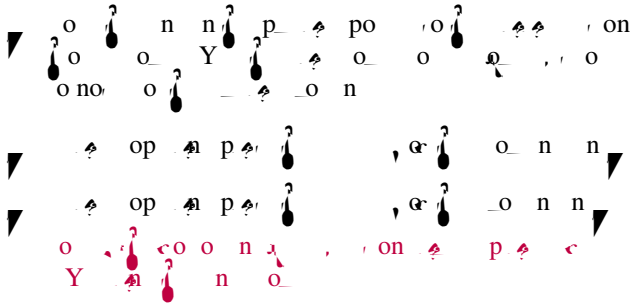
o o o n , on p c
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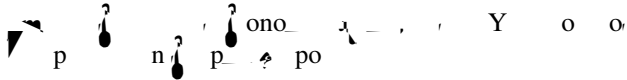
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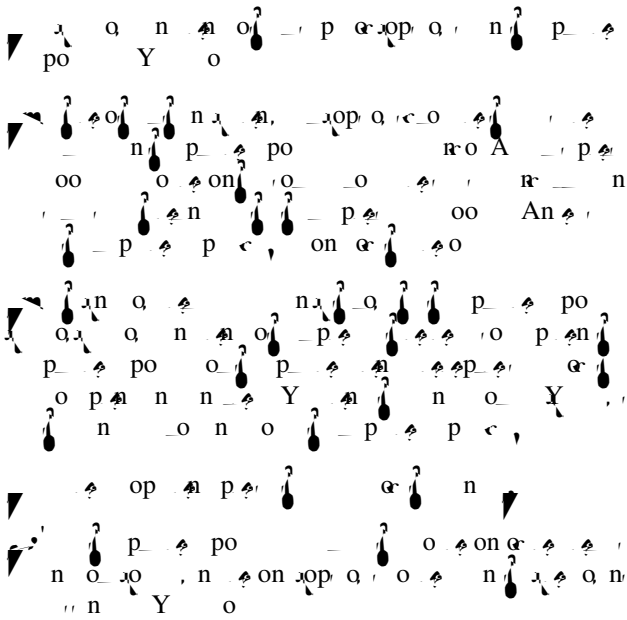
Step 8.2: Next, one by one click the links to the data deletion choices.



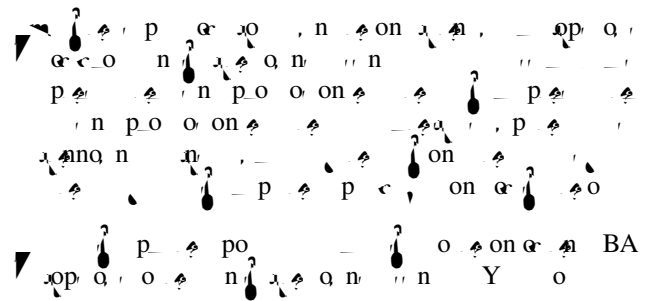
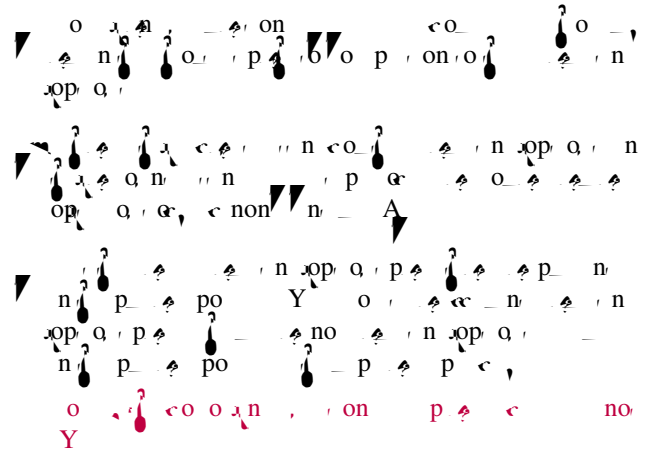
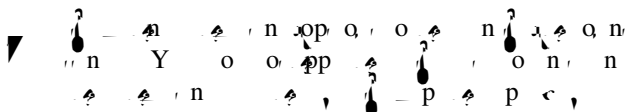
Step 9: Next, search for “Do Not Track” or “DNT” in the privacy policy.



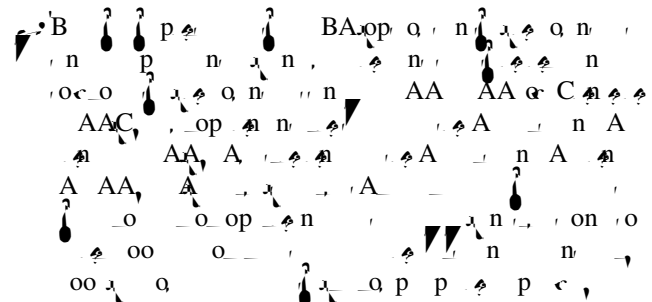
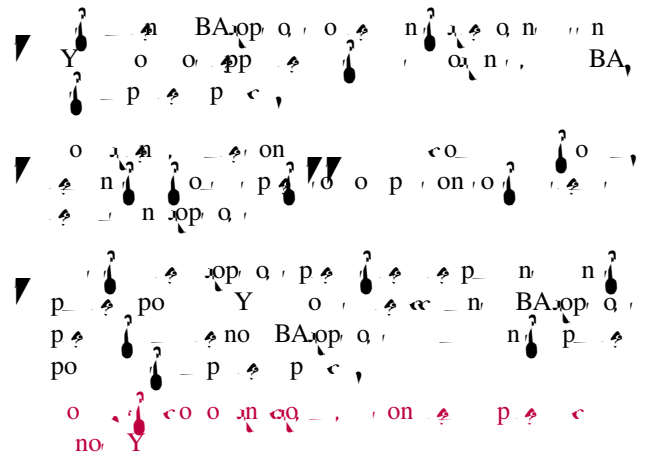
Step 10: Next, skim through the policy for things users can opt-out of. Adjust your previous answers if necessary and complete the following questions.

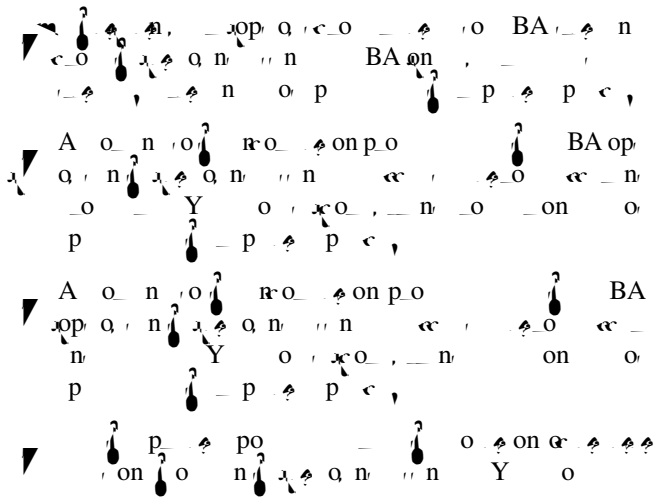


Step 11: Go to this described location in the account settings or look through the main levels of the account settings for marketing, email, or communication choices. Click links which seem to indicate user choice or preferences.

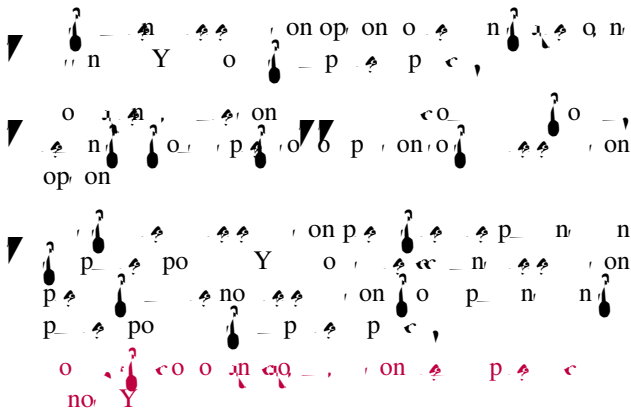


Step 12: Go to this described location in the account settings or look through the main levels of the account settings for advertising choices. Click links which seem to indicate user choice or preferences.

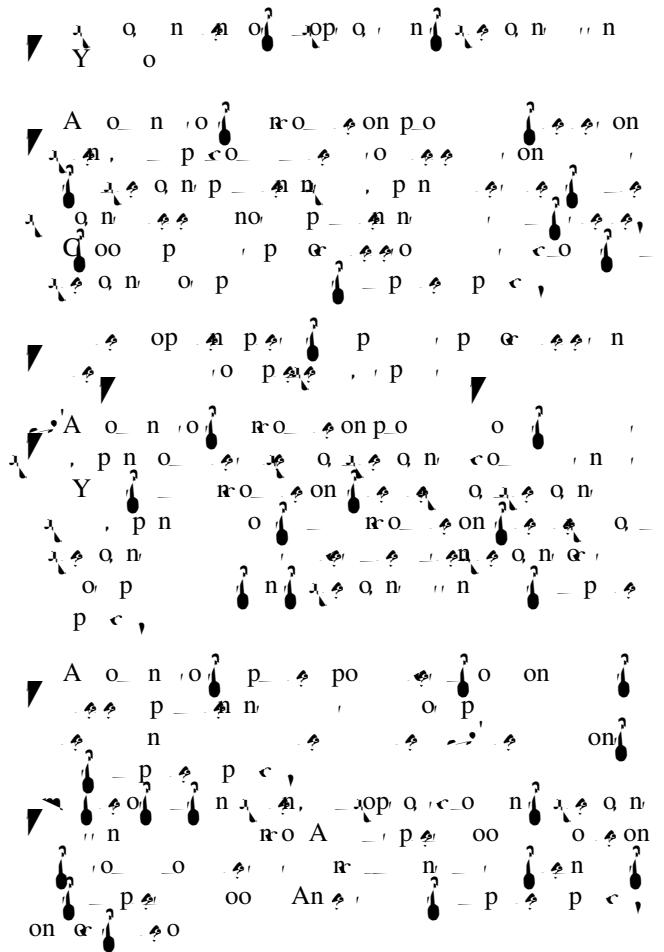




Step 13: Go to this described location in the account settings or look through the main levels of the account settings for data deletion choices. Click links which seem to indicate user choice or preferences.



Step 14: Lastly, look through the main levels of the account settings for other types of user choices. Click links which seem to indicate user choice or preferences.



“It’s a scavenger hunt”: Usability of Websites’ Opt-Out and Data Deletion Choices

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ABSTRACT

We conducted an in-lab user study with 24 participants to explore the usefulness and usability of privacy choices offered by websites. Participants were asked to find and use choices related to email marketing, targeted advertising, or data deletion on a set of nine websites that differed in terms of where and how these choices were presented. They struggled with several aspects of the interaction, such as selecting the correct page from a site’s navigation menu and understanding what information to include in written opt-out requests. Participants found mechanisms located in account settings pages easier to use than options contained in privacy policies, but many still consulted help pages or sent email to request assistance. Our findings indicate that, despite their prevalence, privacy choices like those examined in this study are difficult for consumers to exercise in practice. We provide design and policy recommendations for making these website opt-out and deletion choices more useful and usable for consumers.

Author Keywords

Privacy; usability; privacy controls; email marketing; targeted advertising; data deletion.

CCS Concepts

•Security and privacy / Usability in security and privacy;
Privacy protections; •

Regulatory Background

The European Union's General Data Protection Regulation (GDPR) requires websites to provide several types of privacy choices for European consumers and places a special emphasis

that the DAA's AdChoices icon does not clearly communicate whether or not an ad is targeted [41]. Additionally, NAI's opt-out tool led users to believe incorrectly that they were opting out of all data collection [26]. Furthermore, these opt-out tools rely on cookies, which can cause additional issues for users. For example, when users clear their cookies their opt-out preferences will also be removed in the process, which would require them to opt out again [25].

Browser extensions that block advertising trackers only partially resolve some of these issues. Studies have found that internet users download blocking extensions for a better browsing experience but still retain a limited understanding of online tracking [24, 38]. Pujol et al. found that many users use ad-blockers with default settings, which for some extensions might not actually block all web trackers [36]. This suggests that even with blocking extensions, people are not fully aware of the ad opt-out choices they can exercise online. While users state they want more control over tracking, they are reluctant to engage deeply with respective tools [27, 39].

Prior research has largely evaluated controls for targeted advertising on the basis of compliance with industry guidelines and users' perceptions of what they do, but has not holistically examined the end-to-end interaction required to use them. Our study provides additional insights by looking more deeply into how users discover targeted advertising controls, in the context of how they are commonly presented on websites.

Data Deletion Choices

Few studies have evaluated data deletion mechanisms, and thus there are few guidelines or best practices. Murillo et al.'s 2018 qualitative study examined user understanding of online data deletion and expiration. They found that most participants were aware of a "backend" to the data deletion process (versus having an understanding completely based on user interface components such as delete buttons and trash icons), and they suggested that information about data deletion should use this understanding to explain technical constraints of data deletion and to help users understand data retention periods. They also found that participants preferred to have context-dependent control over the expiration of their data, rather than just having



Figure 1. Terminology used to present relative frequency of themes.

details, such as name and address, that a small number of our participants revealed during their interview. We conducted

ID	Gender	Age	Education	Technical	Task 1	Task 2
P1	F	35-44	Professional		maj orgeeks	runescape
P2	F	18-24	Bachelors		wordpress	internshala
P3						

Figure 3. List of data rights available onrunescape.com which misleadingly seem clickable.

Figure 4. Number of clicks, scrolls, form fields, check boxes, hovers, and other user actions, averaged over all websites, in the participants' interaction with account settings and policy choices.

Conversely, colorado.edu 's privacy policy contained links to the three advertising opt-out tools in a single paragraph, which led participants to at least see all three tools (even if none actually selected all three, as discussed in the next subsection).

On phys.org a clear "Manage account" button visible on the landing page of the account settings conveyed the correct interaction path to almost all participants assigned to the website. However, some of the participants who clicked this button and saw the setting to delete the account were unsure whether that mechanism would also delete their data, and navigated away from the page to look for other options. A statement indicating that profile data will be erased permanently was not presented until after clicking the initial delete button. However, once participants saw this confirmation they were assured that the mechanism would accomplish their task.

Physical Action: Using Privacy Choices

Exercising privacy choices required a high level of effort from participants, as measured by the number of actions such as clicks, scrolls, and checkboxes in the interaction path of using a choice mechanism. Certain practices used by the websites in our sample made exercising choices more difficult.

High level of effort exerted in exercising policy choices

Figure 4 displays the number of user actions in participants' interaction path when using privacy choices located in the account settings and privacy policy. Using a choice mechanism in account settings resulted in an average of 26.1 user actions (min: 8, max: 43, sd: 11.5). Interactions using links in the privacy policy had 37.5 actions (min: 11, max: 59, sd: 15.2), on average, and those with text instructions in the policy had 57.6 (min: 18, max: 87, sd: 27.5). While policy links took participants exactly where they needed to go, text instructions were vague and required extra effort to figure out what to do. Furthermore, participants took many more steps than

text. However, it is still unclear which privacy rights listed can be accomplished by the two mechanisms shown.

the shortest, ideal path for completing a task. The shortest interaction path for account settings mechanisms would have taken 9 total actions averaged over the three websites, while policy link choices needed 22.3, and policy text required 9.3.

Most participants who used the account settings mechanisms on wordpress.com or phys.org said that they were easy to use because of the simplicity of the setting. For example, P6 described the account deletion process on phys.org : "It said delete my account which was pretty clear. And then there was this other page that like made it very clear that that's what was going to happen." Some noted that these mechanisms were easy to find. A few appreciated that, unlike another mechanism they used, the account settings option would be applied right away and did not require a response from the website. Nearly all participants assigned to opt out of emails from onjorgeeks.com also found the mechanism straightforward or easy to use, but most found the setting hard to find.

Participants who were assigned to tasks with privacy choice links or text instructions in the website's privacy policy explicitly mentioned that they found these mechanisms hard to find or that finding them required too much reading. Reactions to the data deletion request form on times.com were mixed. Most participants disliked being presented with many similar-seeming options related to data processing, only being able to submit one request type at a time, or having to manually select 22 services from a list. However, others reported that the policy was easy to find through the account settings and the form was straightforward to use.

Unsubscribe links within emails were also considered straightforward to find and use. Participants highlighted user-friendly features these pages that they encountered previously or during the study. These included opt-outs that were automatically applied without extra confirmation or entry of their email address, as well as interfaces that allowed users to select emails

from the website they would like to continue to receive (as long as a button to opt-out of all emails was visibly present).

Choices require unnecessary user effort

Some practices used by websites for offering privacy choices place undue burden on users. An example is requiring users to submit written requests, a common practice websites use to offer data deletion [15]. Participants had difficulties articulating such requests. P4, who was trying to opt-out of targeted advertising on wordpress.com, drafted a message to customer service that asked

However, privacy controls for which a login is not essential should also be available without requiring users to log in or even to have an account.

Privacy controls could also be implemented as an interface within web browsers, which in turn could convey users' choice information to websites in a computer-readable format. This could allow for opting out once for all websites (the idea behind the Do Not Track mechanism), or for all websites that meet certain criteria. It could also save users the effort of finding choice mechanisms on websites and instead allow them to go to the choice menu in their web browser, where they would be provided with available choices that could be exercised through the standard interface.

Supplement with additional paths and in-place controls

Even after unifying choices in one place, websites should still offer multiple paths to those controls so that they are easy to find. Links to privacy controls should be placed anywhere users might look, such as the account settings, privacy policy, and website help pages. For example, all participants assigned to the *nytimes.com* reached the deletion request form in the privacy policy through the account settings, not the link in the website footer mandated by the California Online Privacy Protection Act (CalOPPA). Websites should ensure that if they have multiple links or mechanisms they are consistent with each other and lead to the same results.

Control mechanisms that are offered within the context of how data is used by the website can also supplement unified privacy dashboards. With email marketing, participants in our study were generally aware of unsubscribe links in emails and thought they were easy to find. Similarly, a few participants recalled the ability to control targeted ads on a website by interacting with the corner of an ad.

Reduce effort required to understand and use choice

Websites in our study imposed much of the effort required to exercise privacy choices onto users. It was up to users to distinguish between multiple targeted advertising opt-out tools and figure out how to articulate written deletion requests. For these choices to actually be useful, websites need to place more effort into packaging them into simple settings offered through the website. The mechanisms participants favored the most in our study were toggles or clearly-labelled buttons offered in the account settings. Such settings could automatically place opt-out requests through commonly used industry tools such as those offered by the DAA and NAI, or trigger database queries to remove a user's personal information.

How privacy controls are labelled and organized in a unified privacy dashboard will impact their usability. Our study highlighted that imprecise navigation labels may confuse users. Within a page, controls should be clearly organized and labelled. Websites should conduct user testing with the design of their particular privacy dashboard pages to ensure that people can find the information they need.

Bolster confidence that choices will be honored

Participants in our study were skeptical that privacy choices would actually be honored by websites. Better communication about what exactly a setting does also could help relieve

skepticism. For example, *phys.org* stated the time period after which account data would be deleted in the final step of the account deletion process. Websites should also provide confirmation that a choice has been applied after users complete the process. A confirmation message can be displayed within the website itself if the choice is immediately applied. For choices, such as email unsubscribes, that require time to process and complete, at minimum there should be a confirmation message that acknowledges the request and provides a clear estimate of how long it will take to honor the request. For requests, such as those for data deletion, that may take more time before the choice is fully applied, the website should also send a confirmation email.

Public Policy Implications

The recent enactment of comprehensive privacy legislation, such as the GDPR and CCPA, require companies to not only offer privacy choices, but also make them usable. Prior laws, such as the CAN-SPAM Act, included requirements for privacy mechanisms to be clear and conspicuous. Our results indicate that website privacy choices similar to those in our study remain difficult for users to find and use, but that some of these usability requirements are having an impact.

We observed that unsubscribe links within emails had better usability relative to the user account and privacy policy mechanisms we studied. This is likely an effect of CAN-SPAM Act requirements. From our study, it is apparent that unsubscribe links are widely used and that, over time, people have learned to expect these links in the marketing emails they receive. For other regulation to have similar impact, design

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- [1] Alessandro Acquisti, Idris Adjerid, Rebecca Balebako, Laura Brandimarte, Lorrie Faith Cranor, Saranga Komanduri, Pedro Giovanni Leon, Norman Sadeh, Florian Schaub, Manya Sleeper, and others. 2017. Nudges for Privacy and Security: Understanding and

