Cookies and Trust

Trust in organizations and the design of cookie consent prompts

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ABSTRACT

The General Data Protection Regulation (GDPR) was passed in 2016 to regulate companies' use and storage of personal data, such as cookies, which are a common feature of the modern internet used to track user's activity and preferences. This paper aims to examine people's perspectives on cookie consent prompts and the effects of using deceptive design in cookie consent prompts.

The results suggest that the design, rather than trust in the website's organization, is crucial for users' decisions to accept, decline, or manage cookies. Honest design is emphasized, and the dangers of deceptive design in cookie consent prompts are highlighted. Prompts that require full attention from the user and cover the content of the page are more likely to result in reflective and active decisions, but design friction that forces users to make a reflective choice causes irritation. The study also reveals a discrepancy between self-reported and observed behavior regarding cookie acceptance, as users tend to accept more cookies than they say they do.

CCS CONCEPTS

• **Human-centered computing → Empirical studies in interaction design**; *User interface design.*

KEYWORDS

trust, deceptive design, cookie consent, user study

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1 INTRODUCTION

Protecting your personal data has been a topic of rising importance as a result of the continuous problem with data breaches. Mismanagement of data by companies has made users distrusting of the way their data is shared [18]. In order to signal a stance and protect the personal data of citizens of the European Union, the General Data Protection Regulation (GDPR) was passed in 2016, which regulates companies' use and storage of personal data [21, 36].

One feature that became in focus due to the GDPR was cookies, which are a common feature of modern web design. As a result, cookie consent prompts have become ubiquitous on the internet. Cookies are used by web sites to gather data about users by for example track user's activity and preferences. The data is then used on the web site to either potentially enhance the user experience on the website or enable additional functionality [22]. Since websites can use cookies to identify a single user, they qualify as personal data and fall under the regulations of GDPR [36]. Cookies can be divided into essential and non-essential cookies. According to [21], essential cookies are those "essential for you to browse the website and use its features" and do not require consent. Non-essential cookies can be e.g., performance cookies, functionality cookies, and marketing cookies, and these can be used by companies if they have the user's explicit consent. As a result, users are now frequently prompted to provide consent for the use of cookies on websites they visit. The cookie prompt is displayed when visiting a website for the first time. The user is given a choice whether to accept, manage or deny the use of cookies.

Even though previous research show that "the perception of an organisation can be largely influenced by the way it handles its cookies" [9, p. 4], most people agree to the use of cookies since they have become blind to cookie prompts and click accept almost reflexively without reading the terms of use [24]. This may be due to some cases where if the users choose not to accept, the page will not work the way it was intended or even deny access to the web site.

The objective of this paper is to investigate peoples' attitudes toward cookie consent prompts and the impact of deceptive elements in the design of cookie consent prompts.

2 THEORY

2.1 Cookies

HTTP cookies, or commonly known just as cookies, are small pieces of data stored, by a website, on a user's computer by a website as a text file [23]. The file is later accessed, by the website, when the user is revisiting the website to tell if two requests come from the same browser. There is nothing inherently bad about cookies. On the contrary, they have been an important technology used by all major browsers since the very beginning of the Internet [19]. The data in the cookie can contain information about the website itself or information about the user to make the website operate more efficiently.

There are three main types of cookies — persistent, session, and third-party [17]. Persistent cookies are stored on a user's computer for a longer period of time and may be used to remember login information or preferences. Session cookies are only stored temporarily while the browser is open and are often used to maintain a user's session, such as remembering the contents of a shopping cart or keeping a user logged in. Finally, third-party cookies are cookies that belongs to a different website than the one currently being visited by the user. These can track users' online activity between different websites and be used to personalise ads.

2.2 Trust

According to Rousseau et al. [30, p. 395], trust can be defined as a "psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another". If a person does not trust someone they tend to avoid interacting with them. When it comes to trusting an entity (something that can be identified by name, identification, signature, location, etc) a person places its trust in it to accomplish what has been agreed upon. If the entity disrespect what was approved by the trustor, then the trust is broken [1]. Trust over the internet can be different since the entity can in some cases differ due to the online environment. Entities on the internet can in some cases have physical stores, names, and other things that identify them however in other cases the organization is anonymous or does not have certain attributes where humans can build trust [1, 7]. Furthermore, in situations on the internet where important information is shared initial trust is important for the long-term use, e.g. the use of password managers [12].

2.3 Personal data and the GDPR

Over the last couple of years, several laws have been set in place to protect personal data. The *General Data Protection Regulation* (GDPR) [36], is the most comprehensive and affects all firms dealing with citizens of the European Union. The legislation identifies personal data as "any information relating to an identified or identifiable natural person" [11]. This includes information such as name, home address, email address, gender, location data, IP-address, biometric data, and HTTP cookies.

2.4 Design to encourage user action

There are many ways to make someone do what you want them to. Persuasion is the most common ans is "an attempt to change attitudes or behaviors or both (without using coercion or deception)" [13, p. 15]. In the realm of design this becomes persuasive design, which "focuses on increasing motivation, increasing ability (simplicity), and triggering behavior" [14]. Persuasive design can be used in various design contexts, e.g., websites, mobile applications, and products.

2.4.1 Nudging. According to Thaler and Sunstein [34, p. 6], a nudge is "is any aspect of the choice architecture that alters people's behavior in a predictable way without forbidding any options or significantly changing their economic incentives". Hence, nudging promotes options and guides users towards an intended directions that are in the users' best interest [28, 31]. However, these options are still easy to avoid. The ideas of nudging is based on utilizing the two parts of the human mind, the Automatic System (System 1) and the Reflective System (System 2) [32]. According to Kahneman [20] System 1 runs automatically while System 2 is working secondary when easy tasks are performed. When more problem solving abilities are needed, System 2 overrides System 1 and becomes primary. Hence, different nudges, depending on which system is in use and the level of transparency, can be categorized Hansen and Jespersen [16]. Digital nudging can be defined as the use of design elements in a user interface to guide or influence users' decisions in online choice environments [26, 27, 35].

According to Sunstein [33], there are ten important nudges, where 'default rules' are suggested as one of the most effective. Default rule nudges steer users towards a certain direction whilst still letting them have the freedom of choice. One example is automatic enrollment, where the user is included until they actively choose to leave.

2.4.2 Deceptive design. Deceptive design could be seen as persuasive design taken to its extreme and implementing nudges without the users' best interest in mind. Deceptive design is design patterns that are used to make the user take specific actions that benefit the company and, most often, not the user [15]. According to Brignull [4], deceptive design can be defined as a part of an interface that is "carefully crafted to trick users into doing things they might not otherwise do". Brignull [5] exemplifies several common patterns of deceptive design with *misdirection* and *sneak into basket* being the most commonly seen in cookie consent prompts [24]. *Misdirection* is when "The design purposefully focuses your attention on one thing in order to distract your attention from another" [5]. One example of misdirection is making the accept button bigger and more prominent than the reject button. *Sneak into basket* can be described as when "You attempt to purchase something, but somewhere in the purchasing journey the site sneaks an additional item into your basket, often through the use of an opt-out radio button or checkbox on a prior page" [5]. Deceptive elements in design can be considered non-transparent nudging [6, 16]. While deceptive design, for the most part, does not break any laws, in the case of cookie consent prompts, the designs are sometimes on the verge of illegality [3]. For example, it may not always be clear exactly what you are accepting, and withdrawal consent is often hard [8]. Using deceptive design in cookie consent prompts does, however, raise significant ethical concerns, as it has the potential to manipulate peoples' privacy and security preferences without their full understanding or consent (in line with e.g., GDPR). In addition,

Table 1: Selected websites for user test.

	Website	Description
1	twitch.tv	An interactive live streaming service
2	flashback.org	A Swedish Internet forum
3	skatteverket.se	The Swedish Tax Agency
4	tiktok.com	A short form video-sharing site
5	1177.se	A governmental healthcare guide

deceptive design can undermine peoples' ability to make informed decisions about their privacy and security online. The general use of deceptive design in social media has been discussed within the EU and guidelines for how to recognize and avoid them have been adopted [10].

One reason for businesses to use deceptive design elements is because they have been shown to be effective in increasing conversion rates [3]. While this may be beneficial from a business perspective, it is important to consider the potential negative impact on user perception of the company when utilising these techniques. The use of deceptive design in cookie consent prompts raises broader questions about the trustworthiness and credibility of companies and organisations that employ it. By using tactics designed to deceive or manipulate people, these organisations risk damaging their reputation and relationships with their customers, as well as undermining the broader trust in the online environment [29].

3 METHOD

This study is divided into three parts — (1) Survey of peoples attitudes and habits regarding cookie consent prompts, (2) User test of trust in organization and cookie consent, and (3) User test of cookie consent prompt design. The participants in each test were different.

3.1 Survey of attitudes towards cookie consent prompts

A survey was distributed through Facebook and WhatsApp groups to investigate users' attitudes and habits regarding cookie consent prompts and their experience of deceptive design. 32 participants (21 female, 9 male, and 2 non-binary) completed the survey.

3.2 User test of trust in organizations and cookie consent

A "think out loud" test involving five websites with different credibility. The websites were chosen among the top 50 websites from Alexa topsites ranking [2] in April 2022 to represent both governmental websites (Website 3 and 5 in Table 1) and non-governmental websites (Website 1, 2, and 4 in Table 1). Table 1 illustrates the ranking the sites had among each other. However, the order of the websites were randomized for the test. After the user test, the participants were surveyed regarding their usage of cookies. The test was performed by 10 participants (8 female and 2 male).

3.3 User test of cookie consent prompt design

The final user test was to explore how the participants respond to different types of cookie consent prompts and to investigate if the different designs matter in a real-life environment. The users were asked to enter four different websites with different cookie consent prompts and perform a simple task. While the users performed these tasks, their interaction with the cookie consent prompt was closely observed and recorded. After the tests, the user was then asked questions about their interaction. The test was performed by 10 participants (7 women and 3 men).

Website A had a fairly large banner at the bottom of the page with three options: "Only essentials", "Set preferences", and "That's OK". The first two buttons appear as hyperlinks, while the third is a big white button. The large accept button and the small hyperlinks can be seen as an example of misdirection regarding deceptive design.

Website B had a small banner at the bottom of the page with three options: "Customise my choices", "Decline all", and "Accept all". All buttons are uniform in appearance. If the user navigates to a different page without making a decision, the banner disappears and no cookies are used. No deceptive design could be noticed in this banner.

Website C had a large pop-up covering the page's content. The prompt had three options: "Cookie settings", "Decline all", and "Accept all". The first two buttons are grey in colour, while the third is beige. The text is short and clear. The different colours in buttons could be seen as a mild version of misdirection.

Website D had a pop-up that covered the content of the page. The pop-up had two options: "Cookie settings" and "Accept all". The first option is a black hyperlink, while the second is a green button. The large green button and the absence of a decline button make this a design of misdirection.

4 RESULTS AND DISCUSSION

The results from the studies are presented and discussed below.

4.1 Attitudes towards cookie consent prompts

Many of the respondents in the survey reported having a fairly high level of understanding about cookies (Figure 1). This is particularly notable considering that the majority of the respondents were students in a technological field, who may be expected to have more knowledge about the topic than the general public.

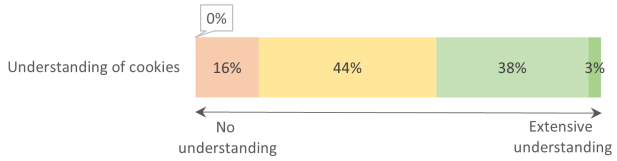

Figure 1: Understanding of cookies.

The self-reported results in the survey show that the respondents care about cookies to a high extent while not bother to read the information provided in the cookie consent dialogue (Figure 2). Furthermore, the results show that the respondents had a self-image that they did decline cookies fairly often (Figure 3).

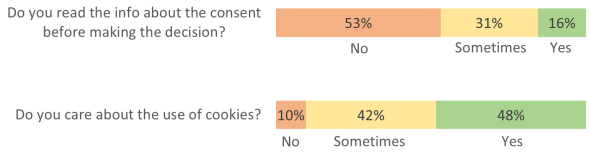

Figure 2: Attitude towards cookies and the information in the cookie consent.

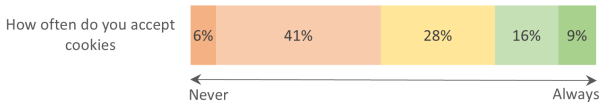

Figure 3: Self-reported acceptance rate of cookies.

Table 2: Respondents handling cookies.

	Total	Gov websites	Non-gov. websites
Accept all	75.5%	70.0%	79.3%
Approve necessary	6.1%	15.0%	-
Manage	4.1%	-	6.9%
Decline	10.2%	10.0%	10.3%
Nothing	4.1%	5.0%	3.4%

4.2 Trust in organizations and cookie consent

In total the acceptance rate of cookies were 75.5% (Table 2). In 6.1% of the cases, the participants only approved the necessary cookies whilst they chose to manage cookies 4.1% of the time. The participants declined 10.2% of the time and in 4.1% of the cases nothing was done. In Table 2 the data have been split between governmental websites and non-governmental websites. Since the acceptance rate of the non-governmental sites were higher than for the governmental site the actual trust in the sites do not have any major impact on the cookie consent but rather the design of the cookie consent prompt. In both governmental websites, there were an easy way to "Manage cookies" which encourage the participants to do so instead of accepting cookies. On the non-governmental websites there was one website with only two options, accept or decline.

When the participants were asked about the reason for why they accepted cookies, they expressed that they felt like they had to accept since the prompts were somewhat of an annoyance and that they generally saves time if they accept. Other reasons for accepting was that they believed that the web site would work better it they did not decline cookies.

The survey also explored what makes the participants decline cookies or manage the pre-selected settings of the cookies. The answers showed that a majority of participants argued that they would not accept cookies on websites that felt untrustworthy, or if the process of deselecting cookie settings is too long, they simply chose to accept all of the cookies. Even though the actual test results (Table 2) show no particular difference regarding accepting or declining cookies of the websites with different organizations, a majority of the participants still answered that the attitude towards cookies is affected by the organization behind a website. However the results still indicate that the design, and more specifically the use of deceptive design, still has far more impact on the acceptance rate of cookies than trust in the organization. This was explored in Section 4.3.

4.3 Behavior when encountering different cookie consent prompt designs

Website A had none of the respondents declined cookies (Figure 4). However, 20% of the respondents did not to make a decision, which meant that no cookies were executed and, in practice, had the same effect as declining. The fact that no respondents declined cookies, in combination with the fact that the majority of the respondents could not recall whether or not they accepted the cookies, may suggest that the design of the banner influenced the acceptance rates.

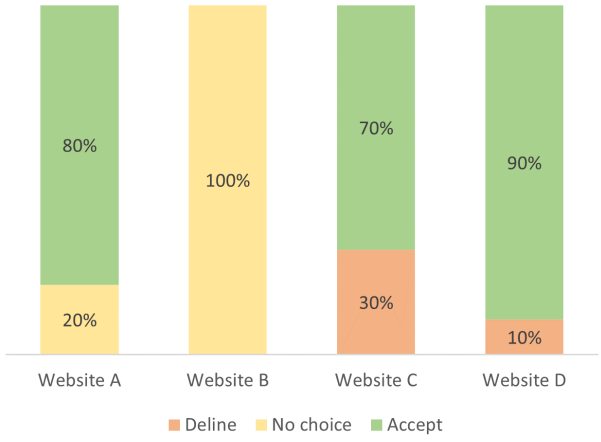

Figure 4: Acceptance rate of cookies on Website A-D.

Website B had none of the respondents click either button (Figure 4). This banner did not have any eye-catching buttons, which could explain the initial lack of action from the users. When the users navigated to a different page on the site, the banner disappeared. This banner allowed users to ignore the cookie consent prompt, and when ignored, the website did not run any non-essential cookies. Being forced to make a decision was mentioned as a point of irritation in the survey, with some respondents stating that they preferred to have the choice to not accept or decline cookies on a website that they only accessed once. The option to ignore the banner could reduce the cognitive load on the user. This also requires websites to have a true opt-in policy for cookies and not accept implied consent.

Website C had the highest number of users declining cookies (Figure 4). This banner covered the content of the page and had both an accept all and a decline all button. The user was forced to make a decision to enter the page. 30% of the respondents made the choice to decline, and since this button was not highlighted and was in the middle of the buttons, this could imply that this was an active decision. One of the users who accepted cookies stated that "this is okay" as they pressed the button, indicating that the decision to accept was conscious.

Website D had the highest number of users accepting the cookies (Figure 4). This website also had a banner that covered the contents of the page and forced the users to make a decision. However, there was no option to decline all cookies available on the banner. There were two users that clicked the cookie settings hyperlink that took them to another pop-up where they could decline. One user followed through and declined, while the other user changed their mind and accepted.

These results imply that if the goal is for the users to make a conscious decision, the large prompts that force the user to have complete focus on the decision at hand is the best one. These prompts move (or rather force) the users from a automatic behaviour to a reflective behavior. From the results of the survey it is, however, clear that reflective decision-making is not the goal of every user. Answers like "I just press what makes the pop-up go away as fast as possible" and "It depends on how easy it is to deny them [the cookies] and how fast I want to view the website" imply that the choice is seen more as a necessary evil och a hurdle to get through before being allowed to access the site. Hence, even though the banners can be seen as nudging to invoke a reflective behavior, the user regard the banners as friction in the interaction [cf. 25]. Since the goal of the users is minimal effort, a banner like the one on website B seems to be the most efficient. Nevertheless, this type of banner does result in far less gathered data for the controlling organization behind the website, since many users might ignore the banner. It may be beneficial to further explore ways to balance the need for informed consent with the desire to reduce cognitive load for users and the need to gather personal data.

In the survey (Figure 3), the respondents reported not accepting cookies often, while the users in the user study accepted a majority of cookies (Figure 4). These conflicting results suggest that self-reported data on cookie acceptance habits may not always accurately reflect actual behaviour. This is further strengthened by the fact that a large part of the respondents in the user study did not know whether or not they had accepted or declined the cookies.

5 CONCLUSIONS

The results from this pilot study indicate that the design rather than the trust in the organization behind a website is crucial for the choice whether to accept, decline or manage cookies. Hence, the importance of honest design must be stated and the dangers of deceptive design in cookie consent prompts. Prompts that cover the content of the page and require full attention from the user were more likely to result in reflective and active decisions. However, the presents of e.g., design friction to force users to make a reflective choice caused irritation among the users when e.g., a banner covered a significant portion of the screen.

The results also illustrate a discrepancy between the self-reported and the observed behaviour regarding cookie acceptance. Users do accept more cookies then they think, or at least say, that they do.

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