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## A Gender Perspective on GDPR and Information Privacy

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### Abstract

With the introduction of The General Data Protection Regulation (GDPR) in 2018, European citizens were granted stronger privacy protection. Despite privacy and GDPR being frequent topics of discussion, many consumers lack knowledge on how personal data are harvested for business purposes, and they are unaware of their rights. Drawing on a larger survey conducted in a Norwegian university college, this study investigates gender differences in privacy behaviour (n=444). We offer three insights. The results revealed that (1) respondents' concern for privacy does not differ across gender, but men claimed to experience slightly more control over their personal data compared to women. (2) Exercising privacy rights were comparable across gender as women and men reported the same inclination to act on rights granted by GDPR. (3) Willingness to share information in return for benefits depended on the information in question. Men and women agreed in their willingness to exchange name and e-mail. However, women were less willing than men to give up more sensitive information, yet more willing to give up date of birthday, TV viewing history and shopping history. Our insights bring attention to a possible link between experienced control over own data and willingness to exchange data for benefits, highlighting a potential mediating relationship that could be worthwhile pursuing.

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*Keywords:* Gender difference; General Data Protection Regulation (GDPR); concern for privacy; exercising rights; privacy measures.

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## 1. Introduction

In 2020, over two billion people worldwide purchased goods or services online [1]. For almost every transaction customers hand over personal information such as name, address, and credit card details. People generate data every time they go online, leaving behind information to systems with little transparency. Customers may also subscribe to newsletters or follow social media accounts in exchange for discounts or gifts. These exchanges would be fairly transparent in a physical environment, but the boundary between what is required information and what is optional becomes blurred in an online store. Combined with “invisible” online trackers, for example cookies or web-beacons [2] the task of maintaining control over one’s online data becomes arduous. In fact, most people lack knowledge on how online information is collected and used [3]. Online data provide unknown parties with insight excluded from the individuals concerned, and this lack of transparency goes against democratic principles [4]. If people are given reason to distrust those who handle their information it may transfer to distrust in authorities, which in turn could lead to a serious threat to freedom of speech [5]. This speaks for safe handling of personal data and increased awareness about privacy rights. Fortunately, governments have not ignored these challenges. Regulations that protect personal information and individuals’ right to privacy have been implemented in countries worldwide, like EU’s General Data Protection Regulation (GDPR) [6]. Widespread media coverage preceded the new regulation [7], yet awareness of privacy rights does not equal an understanding of how to make use of it. Nor does it imply behavioural change. If people cannot trust that information about them is being handled properly, it may limit their willingness to share information – for example with their doctor, or on social media. Privacy is a fuzzy concept, to researchers [8] and laypeople alike [3]. Although many users worry about their online privacy, they do not always take measures to protect it [9]. Moreover, recent studies suggest that women are generally more concerned with privacy and information protection, compared to men [10, 11]. Still, women may be more inclined to divulge personal information on social media [11] and in exchange for customer benefits [12].

In the present paper, we set out to further the exploration of gender differences in concern for information privacy. We also take a novel look at women and men’s actions aligning with rights manifested in GDPR. We will test three hypotheses: *Women are more concerned with privacy and experience less control over their personal data, compared to men* (H1), *Women are more likely than men to exercise rights granted through GDPR and take measures to control their privacy and personal data* (H2), and *Women and men differ in their willingness to disclose personal data to gain benefits, women are less likely to share contact information, location data and sensitive information* (H3).

## 2. Related Work

This section presents three clusters of related research: privacy behaviour and gender differences, the GDPR, and information and benefits. Each cluster targets one of the hypotheses presented in the Introduction.

### 2.1. Privacy Behaviour and Gender Differences

Privacy is arguably a right bestowed upon each individual, encompassing the right to be left alone and to be in charge of the communication of private matters [13]. The distinction is far from clear in the intermix between private and social presence online; moreover, there is little transparency in what remains private and what does not [4]. This makes it difficult for individuals to foresee the scope of their actions and safeguard their personal information in online interactions [3]. Consequently, the interest in privacy and online technology has long since been sparked [14, 15]. This interest is no longer restricted to select groups, Internet users worldwide express worries about their personal data [9]. Nevertheless, thoughts and actions are not always consistent. The very individuals that report experiencing a lack of control over their personal data and concern over its use, may be the same individuals that carry on with their online activities without any precautionary measures [9]. Some label it “the privacy paradox” [9], suggesting that people’s reflections and behaviour towards privacy matters are in contradiction. Others argue that these do not necessarily contradict. Instead, it is the complexity of data analysis that affects how people perceive risk and make context-dependent judgements [8]. Solove adds that the lack of control over who has what kind of data, can lead to resignation as the only rational behaviour. Be it a paradox or merely an underestimation of risk, this type of contradictory behaviour may vary depending on subjective and external factors. Examples in privacy research include

experience and lack of knowledge, social influence, perception of risk, trust and cognitive biases [9], as well as education, age and gender [13]. A few and dispersed studies have reported different approaches to privacy among men and women. For instance, women appear more concerned about the invasion of privacy in advertising [12, 16]. The same applies to digital technology and internet usage in general [17], and to e-health services specifically [12]. Women are also found to be more concerned with privacy matters related to social media [10, 11, 17, 18]. Still, women spend more time on social media than men [10, 19] and they are more inclined to share personal information in return for some reward [11, 12]. When it comes to which gender is more likely to act on privacy matters, results are discrepant. An early study reported that men are more inclined to actually take measures if they have concerns about privacy and advertising [16], while a more recent meta-analysis found that men are less likely to activate privacy settings and more likely to disclose personal information on social media [10]. A possible explanation for the discrepancy may lie in heightened awareness both on risks and on measures, which leads the more concerned female gender to act more frequently. In support of this suggested explanation are findings that privacy awareness is not associated with social media usage, going back to the privacy paradox [9], but it is associated with active privacy behaviour [20]. Further support comes from the finding that privacy concern is a stronger mediator for women's inclination to disclose personal information, compared to men's [21].

*H1: Women are more concerned with privacy and experience less control over their personal data, compared to men.*

## 2.2. The General Data Protection Regulation (GDPR)

In 2018, GDPR replaced several national laws in Europe with one unified regulation that defines basic rights in a digital society, enforcing limitations on how data originating from European citizens can be collected, stored, and analysed [6]. Because GDPR influences every company worldwide that has European customers, and because fines can be substantial, its introduction was met with mixed reactions [22] and we still see mixed results in adaptations to it [23]. Not to mention, there is still some way to go before individuals fully grasp and make use of their rights. The lack of transparency in how businesses can still use data, in full compliance with GDPR, leads to information asymmetry [3]. Simply said, we do not always realize that we are giving away data and we do not understand how it is used. The rights manifested in GDPR are outlined in specific articles, here we address four that have direct relevance to consumers: *Article 7 and conditions for consent*, *Article 15 and the rights of access by the data subject*, *Article 17 and the right to erasure*, and *Article 20 and the right to data portability*. These articles have in common that they specify individuals' rights to access and manage their data, and they enable the individual to exercise their rights.

*H2: Women are more likely than men to exercise rights granted through GDPR and take measures to control their privacy and personal data.*

## 2.3. Information Disclosure and Benefits

When exposed to different scenarios that involve the use of personal data, reactions differ across age, gender, culture, and nationality, as well as contexts [24]. On one end, movie suggestions and job matches are deemed as helpful use of data, on the other end are ads reflecting browser history or location, which is considered "creepy" or "so wrong" [24]. This suggests that people may make informed decisions when trading personal data for benefits, such as discounted merchandise or approval on social media [25]. Access to online news is another example of a benefit; most participants in one study had no problem sharing their gender, name, e-mail, date of birth, interests or job status for free, wider access [26]. The type of information also matters. An early study in this area discovered that 30-50% of customers would provide marketers with demographic and lifestyle information, whereas 16% or less would do the same for personal identifiers and financial information [27]. More recently, a survey explored what online users are willing to share for a more personalised online experience. At the top of the list was gender, followed by ethnicity, marital status, and employment status, all above 80% [28]. Conversely, only 10% would give up their social security number, 20% would share financial information, and 26% would provide medical information.

The distinction between women and men when it comes to privacy concerns and exercising rights is likely to also affect their decisions to share information. For example, on Facebook, where women and men only agree when it comes to sharing date of birth and e-mail [17]. What separated men and women the most was contact information:

women were less inclined to disclose their mobile phone number, address, username, and website address. Men, on the other hand, were more inclined to share political views and work status. Similarly, Solove uncovered that men are three times more likely than women to give up their phone number, which he attributes to women's wish to avoid unwanted attention [8]. As for location, a larger share of women than men believe that the location of a mobile phone should be treated as private information, and they express more concern about the use of location data and purchase history [12]. Possibly, women and men share the same concerns and reluctance to share information related to identity, location, finances and points of contact [17, 27, 28] and the same willingness to give away information revealing gender, religion, date of birth, name, e-mail, marital status and employment status [17, 26, 27, 28]. However, overall, women may experience greater concern and reluctance in sharing contact information and location data [8, 12, 17]. Considering that women also express greater concern for e-health services [12], it may be that they are more restricted in sharing sensitive information, such as health data, biometrics, and unique identifiers.

H3: *Women and men differ in their willingness to disclose personal data to gain benefits, women are less likely to share contact information, location data and sensitive information.*

### 3. Method

The present study builds on an online survey questionnaire and the data were collected during spring 2020. The questions address consumer's concern for privacy, experience of control, information for trade, and four questions about exercising rights grounded in GDPR articles 7, 15, 17 and 20. All questions were presented with four-point Likert response scales, except for the question on experience of control with its five-point scale, as well as the question on information type presented with a list of alternatives. Background questions included age, gender, completed education and student status. The questionnaire ran on SurveyMonkey®, easily accessible through a web browser. We completed several pilot tests with participants outside the research team. The pilots resulted in a few modifications and changes to the questionnaire. Some questions were reworded for clarity, and some questions and additional response alternatives were added.

#### 3.1. The Respondents

The number of respondents who started the survey was 444, with a completion rate of 90 percent (the share of respondents that completed the entire survey). It was voluntary to answer each question, therefore, the number of respondents varies somewhat. The respondents comprised 62% women and 38% men, aged 18 to 60, all recruited from a Norwegian university college. Four respondents did not disclose their gender and are therefore excluded from the analyses. The main body of the respondents was in the age group 21–30 years. Consequently, younger students in Norwegian higher education dominate the sample; moreover, more women than men volunteered. According to the survey tool, the typical time to complete the entire questionnaire was 5 minutes and 6 seconds. The survey was conducted in a quiet environment in a classroom setting, following a brief introduction. Adhering to national ethical regulations, respondents were given information about the purpose of the study, what the data would be used for, and how the data would be handled and stored. The respondents were told that it was voluntary to participate, and that they could withdraw at any time without giving any reason.

#### 3.2. Data Analysis

The data set was first exported from the survey tool and imported to Microsoft Excel for pre-processing, it was thereafter restructured and imported to the statistical analysis software SPSS. Concern for privacy and experience of control were analysed as ordinal opinion scores with two separate non-parametric Mann-Whitney tests; similarly, the ordinal scores for measures to exercise GDPR rights were analysed with the non-parametric Kruskal-Wallis test. Willingness to trade information were treated as binary responses to each listed question, with the order analysed with the Friedman rank test and gender differences analysed with the Mann-Whitney test. Mann-Whitney tests are reported with the  $U$ -statistic and Kruskal-Wallis with the  $H$ -statistic,  $Z$ -scores are provided as standardised test scores. Friedman rank tests use the  $\chi^2$  statistic. Significance of results is indicated either as non-significant ( $ns$ ) or with the probability level ( $p$ ). Further details about group trends are specified with percentages and median scores.

### 3.3. Validity and Reliability

Regarding validity, pilot testing of the questionnaires was carried out before we launched the survey. The aim was for a common understanding and comprehension of the questions and the response alternatives. Since we chose an online survey as our method, there was no opportunity for the respondents to ask questions or request clarifications while completing the questionnaire. Adjustments of wording was therefore of particular importance when carrying out pilot tests. Moreover, the questionnaire is anchored in specific rights manifested by the GDPR. The questions are built on the wording of the regulations themselves, ensuring their precision. Regarding the reliability, we provided a consistent data collection among all the respondents with unambiguous questions. We strived that the questions meant the same to every respondent and that the answer alternatives constituted an appropriate response to all of them.

## 4. Findings

The findings from our study are presented according to the three hypotheses presented above.

### 4.1. Women are more concerned with privacy and experience less control over their personal data, compared to men (H1)

Concern for privacy reflects an individual's awareness of their privacy rights, whereas experience of control indicates the extent to which an individual experience lack control over personal data. The first Mann-Whitney test showed that respondents' concern for privacy does not differ across gender,  $U(N_{\text{women}}=268, N_{\text{men}}=159)=20157.50$ ,  $Z=-1.04$ , *ns*; median scores were 3 for both genders. Findings from the second Mann-Whitney test did reveal a significant gender difference for the experience of control,  $U(N_{\text{women}}=274, N_{\text{men}}=166)=20364$ ,  $Z=-2.01$ ,  $p<.05$ ; median scores were 2 for women and 3 for men. Figure 1 presents the distribution of men and women's opinion scores from the single question about perceived control over personal data; these results hint at a small tendency for women to experience greater lack of control over personal data compared to men.

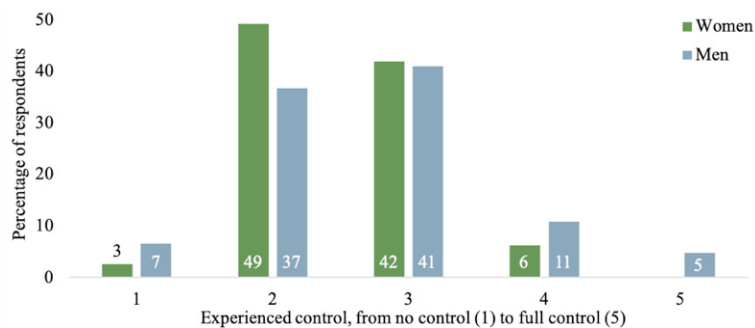


Fig. 1. Experienced privacy control, women versus men.

### 4.2. Women are more likely than men to exercise rights granted through GDPR and take measures to control their privacy and personal data (H2)

Respondents' inclinations to exercise rights granted by GDPR were assessed through four questions, addressing GDPR articles 7, 15, 17 and 20. The Kruskal-Wallis test uncovered no effect of gender on any of the four items, median scores were in fact 3 across both genders and all items ( $H(1)=0.08$ , *ns*, for non-consent;  $H(1)=0.27$ , *ns*, for data portability;  $H(1)=0.02$ , *ns*, for data erasure;  $H(1)=2.31$ , *ns*, for access to data).

### 4.3. Women and men differ in their willingness to disclose personal data to gain benefits, women are less likely to share contact information, location data and sensitive information (H3)

Overall, men and women seem to have the same propensity to share personal data to gain benefits. A Mann-Whitney test comparing the total number of data items that respondents are willing to share reveal no difference

between the genders,  $U(N_{\text{women}}=274, N_{\text{men}}=166) = 21063, Z = -1.30, ns$ . However, a Friedman rank test shows that not all types of information are treated the same,  $\chi^2(23) = 3047.12, p < .001$ . Figure 2 shows ranked information for men and women combined and illustrates that more than half of the respondents are willing to give away first name, e-mail and surname if it promises some return. Least volunteered are biological markers and unique identifiers.

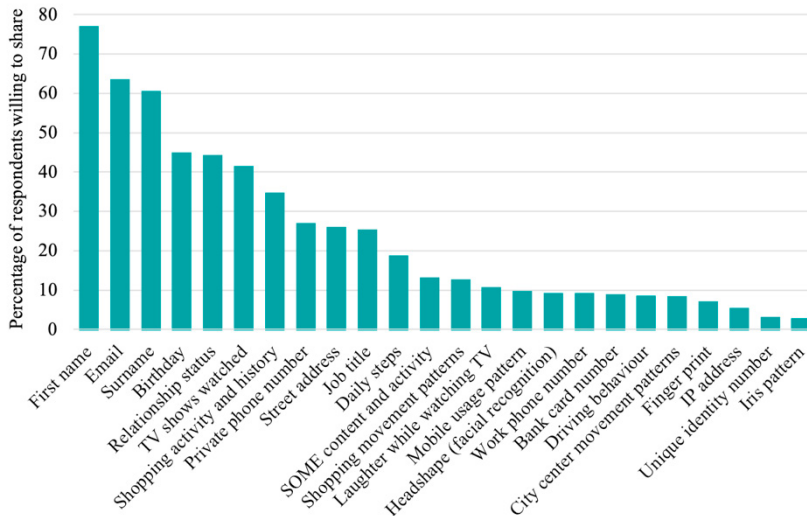


Fig. 2. Willingness to give away personal information, averaged across genders.

Arguably, the three highest ranked information categories, first name, e-mail and surname, correspond to the minimum required to access a service. We therefore took the liberty to explore what lies beyond the top three for both genders. A new Mann-Whitney test comparing the total number of data items that respondents are willing to share, minus first name, e-mail and surname, reveals that gender differences do occur,  $U(N_{\text{women}}=274, N_{\text{men}}=166) = 19213, Z = -2.75, p < .01$ . Following up with additional Mann-Whitney tests, we discovered significant differences for several types of information; these are presented in Figure 3. The stars depict the level of significance of the differences between the share of male and female respondents, one star corresponds to  $p < .05$ , two stars correspond to  $p < .01$ .

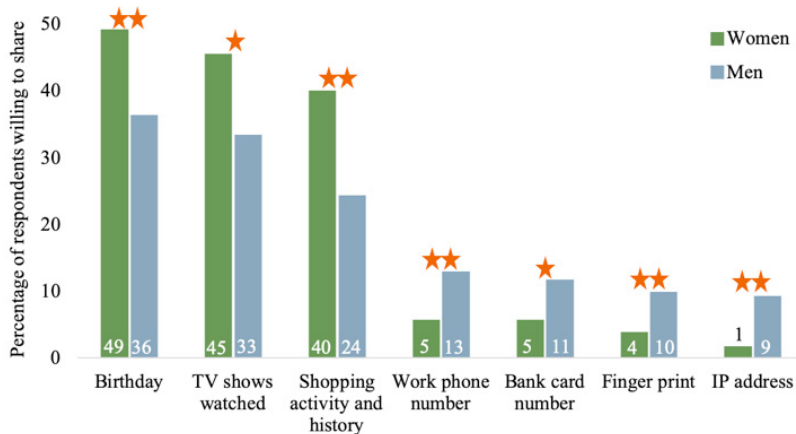


Fig. 3. Differences between gender in sharing information to gain benefits.

As seen in Figure 3, more women are willing to exchange their birthday, TV viewing history and shopping habits for a customer benefit, compared to men. At the other end, women and men seem to agree that unique identity numbers and iris patterns should not be shared. Here again are some notable differences, but the roles have reversed. While most men are not willing to share their work phone number, bank card number, fingerprint or IP address, there is still a larger male than female share that would give up this information to gain benefits.

## 5. Discussion

An ongoing privacy debate concerns the vast amount of personal data available online, used for insight by unknown parties [3, 4, 14, 15]. GDPR grants European citizens new privacy rights [17], and this makes individuals key players in protecting their own privacy. Still, many remain unaware of where their data end up [10]. Or, even with awareness of privacy risks, many continue to use online services. Interestingly, men and women differ in their online habits [9, 10, 19], and how they think and act on privacy matters [10, 11, 16, 17]. We set out to further explore gender differences in matters of information privacy and GDPR. Our first hypothesis (H1) was that women would be more concerned with privacy than men, and that they would feel less in control over their personal data. Our findings indicate that concern for privacy does not vary significantly across gender, but they lend support to men experiencing somewhat more control than women. Although the null result pertaining to concern goes against earlier studies [10, 11, 16], it could be that the question phrasing taps into a slightly different risk evaluation process. Concern for privacy was formulated in a general manner, which could diminish perceived risk. In contrast, experienced control over personal data was phrased with more specific details, perhaps making potential consequences clearer. To speculate, it may be that women's previously noted tendencies to worry [10, 11, 16], and men's tendencies to not act on privacy affairs [10], reflect not just experience of control, but actual control. Alternatively, the notion of not being in control could be more prominent among women, or even, men could simply be more inclined to resign due to lack of control [8]. However, these are speculations based on a fairly small difference in ordinal responses and they should not be indulged further without additional support. Our second hypothesis (H2) was that women would be more likely than men to take measures and exercise rights to control their personal data, but results revealed no significant gender difference. Earlier studies indicate that women have changed from being the least active to the most active gender, with respect to exercising online privacy [10, 16]. This could be attributed to later years' increased awareness of threats to privacy, which might carry larger impact on the more concerned gender [21]. If the relationship between concern and taking measures is this straight-forward, then the similarity in concern for privacy between our male and female respondents might transfer to similar inclinations to exercise privacy rights. Our final hypothesis (H3) concerned men and women's willingness to share information to gain benefits. We surmised that women would be less likely than men to share contact information, location data and sensitive information. We found partial support for this hypothesis. Women are less likely than men to exchange certain types of sensitive information and unique identifiers, specifically bank card number, fingerprint, and IP address. Earlier studies do not mention gender differences for these specific information types, there are only indications that women could be less inclined to part with biometric data [12]. However, these indications make a leap from health-related data. Nevertheless, the types of information that women are unwilling to part with are distinct from the ones they would exchange for a benefit. We found that women are more likely than men to share their date of birth, TV viewing history and shopping habits. These are neither sensitive nor unique pieces of information, but they are examples of data that can be traded for gifts, suggestions, or discounts. This finding is consistent with a female inclination to share personal information in return for some reward [12]. The results also shed light on common patterns for men and women. Most respondents are willing to trade first name, e-mail and surname for some benefit, consistent with earlier studies [16, 17, 27, 28]. Conversely, very few would hand over sensitive information and unique identifiers, also consistent with earlier studies [17, 27, 28].

There are limitations worth mentioning, particularly pertaining to the methodology. Our survey respondents were recruited through convenience sampling, and lack of randomness in survey sampling is a well-known challenge that may lead to skewed results. Relatedly, the sample represents a fairly homogeneous group of students in higher education, this limits the generalisability of the current findings. Nevertheless, the sample does represent a student population from a country that has adopted GDPR, thus the presented insights are useful pointers for future research.

## 6. Conclusion

Our findings suggest that men and women do not differ much in their concern for privacy or their inclinations to exercise rights stipulated in the GDPR. Although it is tempting to conclude that there is little support for treating male and female approaches to information privacy separately, we did uncover gender differences in the experience of control and in the willingness to part with certain types of information. Combined with the body of work that points to gender-specific experiences with personal data, we would rather highlight the need for more research in this area. Of particular interest is the potential link between experienced control and the exchange of personal data for benefits. Qualitative interviews may build on our survey and reveal explanations for the findings presented in this paper.

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