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A Peak Into Individuals' Perceptions of Surveillance

Dong Zhang, Sophie C. Boerman, Hanneke Hendriks, Theo Araujo and Hilde Voorveld

1 Introduction

In today's digital world, people leave countless digital traces online. Companies, governments, and other parties can use such data for different purposes. One example is online behavioral advertising (Boerman et al., 2017), the practice of monitoring people's online behavior and using the collected information to show people individually targeted advertisements. Another example can be that online platforms such as Instagram and YouTube recommend personalized content based on the user's previous online activities. When seeing such advertisements or personalized content that are clearly based on their previous online or offline behavior, consumers might feel

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that they are being followed or monitored, and might describe it as “creepy” and that they feel “watched” (Phelan et al., 2016; Segijn & van Ooijen, 2020b). These findings highlight the perception of being watched, listened to, or having one’s personal data recorded, which is distinct from other perceptions discussed in the literature, and is captured with the term “perceived surveillance” (Farman et al., 2020; Segijn & van Ooijen, 2020a).

Previous studies primarily examined the role of perceived surveillance in an advertising context (Farman et al., 2020; Segijn & van Ooijen, 2020a). It has been found that practices of ad personalization or behavioral targeting can evoke perceived surveillance, which subsequently could lead to reactance towards the ad, negative ad attitudes and lower purchase intent (Farman et al., 2020; Segijn & van Ooijen, 2020a). However, when taking a closer look at the concept of perceived surveillance, we noticed that there is a lack of quantitative description of the concept itself. For example, consumers have mentioned feelings of surveillance, but our knowledge is scarce about the perceived source (i.e., who is watching?) or purpose (i.e., why are they watching?) of the surveillance. Moreover, we do not yet know whether specific media technologies relate to heightened feelings of surveillance.

Drawing upon a nationally representative sample of the Netherlands, the current study aims to shed light on individuals’ perceptions of surveillance by identifying the perceived sources, purposes, and how it might differ in different media technologies among Dutch adults. Such knowledge could inform us which practices and contexts tend to trigger perceived surveillance. For advertising practitioners, it is imperative to gain more knowledge into how consumers perceive surveillance due to its influences on advertising effectiveness (Farman et al., 2020). The findings could also reveal the pain points of what makes people feel surveilled, which could inform policy makers when making improvements on relevant regulations.

Moreover, we investigate the extent to which certain individual traits, including privacy concerns, technology trust, conspiracy mentality, as well as socio-demographic characteristics, relate to perceived surveillance. To date, there are few studies that established the relationship of perceived surveillance with other individual traits, while this knowledge is much needed as it can help us identify individuals who are more likely to feel surveilled and inform marketers and regulators.

2 Theoretical Background

Perceived surveillance is defined as the perception of being watched, listened to, or having one’s personal data recorded (Segijn et al., 2020). Based on the definition, it is evident that surveillance involves two parties: the one who is being

surveilled and the one who is surveilling. Since this paper discusses how consumers perceive surveillance in a digital setting, the subject of surveillance is undoubtedly clear – consumers themselves. Nonetheless, the *source* of surveillance remains ambiguous. Perceived source of surveillance refers to who (or what) is perceived to be surveilling the individual. Earlier qualitative studies have mentioned commercial companies, government, employers, and peers as perceived sources of surveillance by individuals (Dencik & Cable, 2017; Lupton & Michael, 2017). While commercial companies cover a wide range of businesses, scholars have often identified advertisers and social media platforms as key sources of digital surveillance (e.g., Augusto & Simões, 2017; Zuboff, 2019). Furthermore, when talking to mobile virtual assistants, individuals perceive the technology itself to be the source of communication (Guzman, 2019). This study therefore also explores whether technologies are perceived as not only the source of communication but also the source of surveillance. Taking these potential options into consideration, we ask the research question:

RQ1. What are the most commonly perceived sources of surveillance by Dutch consumers?

Aside from understanding who or what consumers perceive to be the sources of surveillance, it is also important to understand *why* they think these sources are surveilling them. In previous research, individuals have identified commercial, research, and managerial use of their personal data by surveillance sources (Lupton & Michael, 2017). Specifically, consumers might be more familiar with terms that are commonly used by online data collectors, such as “to provide advertising and research services” (Google, 2021), or “to provide and continually improve our products and services” (Amazon, 2021). On the other hand, scholars have pointed out that surveillance is for the purposes of influence, management, or manipulation (Lyon, 2009; Susser et al., 2019), while it is unclear whether individuals are aware of these purposes. Based on our current understanding of the perceived purposes of surveillance, we seek a more quantitative description in a European context:

RQ2. What are the most commonly perceived purposes of surveillance by Dutch consumers?

Consumer nowadays engage in digital activities through a variety of digital technologies. Many activities can lead to the perception of being surveilled, while we do not know on which device or service this tends to happen the most. We

investigate perceived surveillance in both devices and services. Devices differ in their physical capabilities of collecting personal data through different hardware such as cameras, microphones, GPS receivers, and other sensors, therefore might trigger people's feeling of being watched, listened to, or recorded to different degrees. For example, since smart speakers are “always listening” (Fedewa, 2021) and research has revealed that when technology “listens” to individuals, they feel the most surveilled (Segijn & van Ooijen, 2020a), it is possible that devices with microphones are perceived to be more surveilling than those without microphones. Digital services on the other hand use these collected data for different functionalities, such as personalized advertising or content, which could make people aware of the practice of surveillance, thus attribute to different levels of perceived surveillance. For instance, consumers might see retargeted ads multiple times a day on their web browsers, which triggers their perception of surveillance, while almost never through a virtual assistant. Therefore, we wonder whether and how the levels of perceived surveillance differ between different technologies. Specifically, we focus on four types of devices and four types of services that are commonly used by consumers. For devices, we include smart phone, smart watch/wristband, smart speakers, and other smart home devices. For services, we include web browser, social media, navigation app, and virtual assistant. We ask the following research question:

RQ3. What are the levels of perceived surveillance of different devices and services?

Furthermore, we hope to gain more insights into whether and how different types of consumers perceive different levels of surveillance by exploring the relationships between privacy concerns, technology trust, conspiracy mentality, as well as socio-demographic characteristics and perceived surveillance. First, *privacy concerns* are defined as the degree to which a consumer is worried about the potential invasion of the right to prevent the disclosure of personal information to others (Baek & Morimoto, 2012). A person who is worried about their privacy may also perceive that they are being surveilled, as the surveillance source can be considered invading their privacy. Phelan et al. (2016) pointed out that the perception of being watched often cooccurred with intuitive privacy concerns. A previous study has shown that privacy concerns are correlated with perceived surveillance (Segijn & van Ooijen, 2020a), which we also expect to observe in the current study. Second, people who have higher *trust towards technologies* might perceive lower surveillance, as they tend to believe that positive outcomes will result from relying on technology and be less critical (Mcknight et al., 2011). This might

suggest a relation between technology trust and perceived surveillance. Third, we expect that perceived surveillance might relate to *conspiracy mentality*, an individual's general tendency to believe in conspiracy theories (Bruder et al., 2013). Research has shown that people with high conspiracy mentality are more aware of data-driven advertising techniques (Boerman & Segijn, 2022), therefore, they may also be more aware of the practice of surveillance and feel surveilled. Fourth, certain socio-demographic variables, including age, gender, and education level, may also influence perceived surveillance. According to Segijn and van Ooijen (2020a), young people feel less surveilled than older generations. People of different *gender* might also have different levels of perceived surveillance, as research has shown that females tend to be more concerned about their privacy, which means they might also differ in perceived surveillance (Smit et al., 2014). Lastly, people with higher levels of *education* are less concerned about their privacy and have higher acceptance towards personalization technique (Segijn & van Ooijen, 2020a; Smit et al., 2014), therefore we also expect a relationship between level of education and perceived surveillance. We ask:

RQ4. How do privacy concerns, technology trust, conspiracy mentality, age, gender, and education relate to perceived surveillance of media technologies?

3 Method

3.1 Participants and Procedure

This study draws on a nationally representative sample of 1,994 adults in the Netherlands. The data belong to a larger cross-sectional survey project Communication in the Digital Society Survey in the Netherlands (Araujo et al., 2020). Participants were recruited through a large panel company Ipsos. The online survey was distributed from 19 November 2020 to 7 December 2020 and was administered on Qualtrics. The survey applied quota sampling on age, gender, education, and region to achieve a representative sample of the population aged 18 years or older in the Netherlands. The average age of the sample was 46.5 years ($SD = 14.8$). 49.4% of the participants were female (50.4% male, 0.3% other). 40.7% of participants have finished medium level of education; 39.7% of the sample received higher education and the rest (19.6%) received lower education. Most respondents had used smart phone (96.2%), web browser (94.9%), social media (93.4%), and navigation app (92.2%) in the previous month before participating in the survey.

A substantial number of participants had used virtual assistant (35.7%), smart home device (32.1%), smart watch (24.0%), and smart speaker (22.6%).

The survey started with demographic questions and measures of individuals characteristics, including technology trust, privacy concerns, and conspiracy mentality. Then they were asked about the perceived level surveillance of each device and service, perceived sources, and perceived purposes. As the survey was a large collaboration between a number of researchers, other survey questions were asked between the individual characteristic measures and perceived surveillance measures. These questions were sufficiently different from our topic of interest, therefore we do not expect them to induce biases in responses to our measures.

3.2 Measures

Perceived source of surveillance was measured by asking participants to indicate who or what were monitoring them when they were using their digital devices and services among a list of six choices: 1) the device itself; 2) artificial intelligence; 3) the company that provides the device/service; 4) advertisers; 5) the government; 6) social media platforms. This list was compiled based on the relevant literature (e.g., Augusto & Simões, 2017; Guzman, 2019; Lupton & Michael, 2017; Zuboff, 2019). Participants could select none or multiple options. They were also given the chance to specify other perceived sources.

Participants were asked to select their *perceived purpose of surveillance* from eight choices: 1) to track their activity; 2) to provide personalized content; 3) for advertising purpose; 4) for research purpose; 5) to improve product/service; 6) to sell their data to other parties; 7) to control/manipulate their opinions; 8) to control/manipulate their behaviors. These were taken from privacy statements of large technology companies and relevant literature on surveillance and online manipulation (e.g., Amazon, 2021; Google, 2021; Lupton & Michael, 2017; Susser et al., 2019). Participants were given the options to choose none or multiple answers, or to provide other perceived purposes.

Perceived surveillance was measured separately for each digital device or service the participant has used in the past month with one item “When you are using the following devices/services, to what extent do you feel that you are being monitored?” on a 7-point scale (1 = *not at all*, 7 = *very much*). The devices included smart phone, smart watch/wristband, smart speakers, and other smart home devices. The services included virtual assistants, social media, web browser, and navigation app.

The measurement scale of *privacy concerns* was derived from Kruike-meier et al. (2020), which was adapted from Baek and Morimoto (2012). The scale contained five items rated on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*; $\alpha=0.93$; $M=4.6$, $SD=1.3$). A sample item was “when I am online, I am worried that my personal data is being misused”.

Technology trust was measured with three items on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*) based on Lankton et al. (2015). A sample item was “I usually trust in information technology until it gives me a reason not to” ($\alpha=0.84$; $M=4.5$, $SD=1.2$).

Conspiracy mentality was measured using the Conspiracy Mentality Questionnaire developed by Bruder et al. (2013) including five items rated on a scale from 0 (*certainly not*) to 100 (*certain*). A sample item was “many very important things happen in the world, which the public is never informed about” ($\alpha=0.86$, $M=52$, $SD=22$).

4 Results

4.1 Perceived Source

In response to RQ1, commercial actors were the most frequently perceived sources of surveillance. Specifically, 60.1% of the participants perceived *advertisers* as a common source of surveillance, whereas *companies* in general and *social media platforms* were seen as the sources of surveillance by approximately half of the population (50.5% and 48.3% respectively). Interestingly, the technology itself was often perceived as a surveillance source, with 40.0% of the participants selecting *artificial intelligence* (AI; the fourth most perceived source), and *devices* were selected by 21.0% of the participants. *Government* was only perceived as a surveillance source by 24.3% of the participants. Fig. 1 provides an overview of the perceived sources of surveillance.

4.2 Perceived Purpose

Regarding RQ2, generating profit was the most perceived purpose of surveillance: 70.3% of the participants believed that they were being surveilled for advertising and 51.6% believed the purpose was to sell personal data. The other widely perceived surveillance purposes were related to the functionality of the digital products, including providing personalized content (68.4%) and product

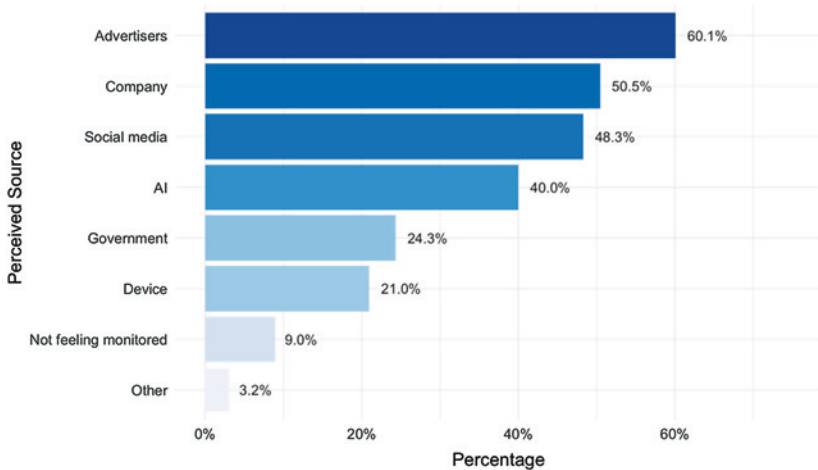


Fig. 1 Overview of perceived sources of surveillance

improvement (39.4%). As for the fourth most perceived purpose, 39.8% of the participants perceived the purpose to be simply tracking their activities. Only a third (33.4%) of the population believed research was part of the purposes of surveillance. Online manipulation was the least perceived purpose, with 24.6% of the participants perceived the purpose to be manipulating their behaviors and 18.3% perceived the purpose to be manipulating their opinions. See Fig. 2 for an overview of the perceived purposes of surveillance.

4.3 Perceived Surveillance

RQ3 asked about the perceived level of surveillance for each digital device or service. In general, more people perceived surveillance level above the mid-point of the scale when using digital services than devices. The majority of social media users (66.4%) and web browser users (57.8%) felt surveilled when they were using these services (see Fig. 3). Approximately half of the users of virtual assistant (50.3%) and navigation apps (49.6%) perceived certain extent of surveillance when using these services. Among the digital devices, most people (47.2%) perceived surveillance to certain degrees when using smart phones. Less users

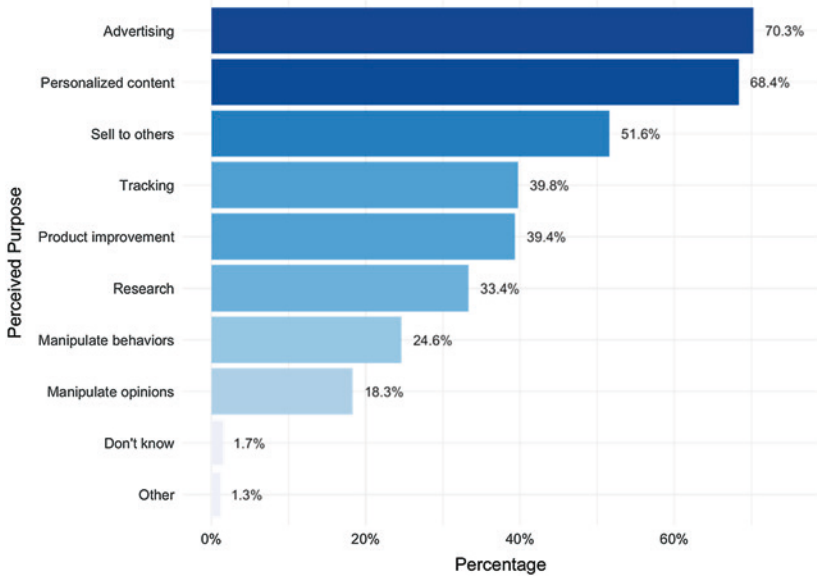


Fig. 2 Overview of perceived purposes of surveillance

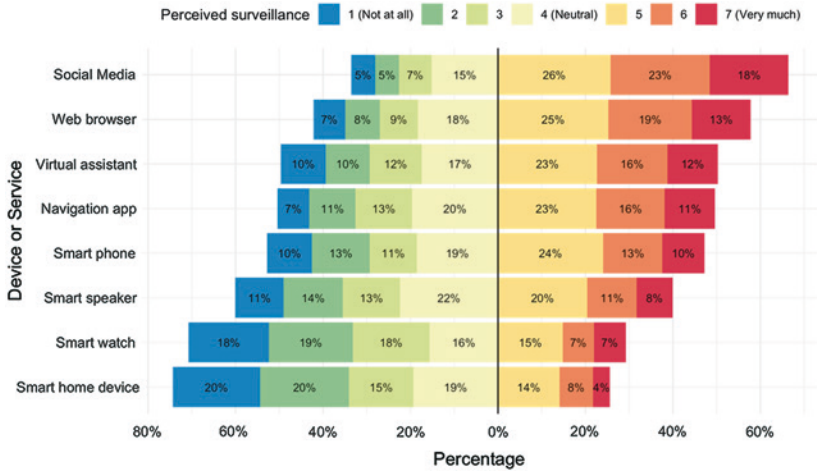
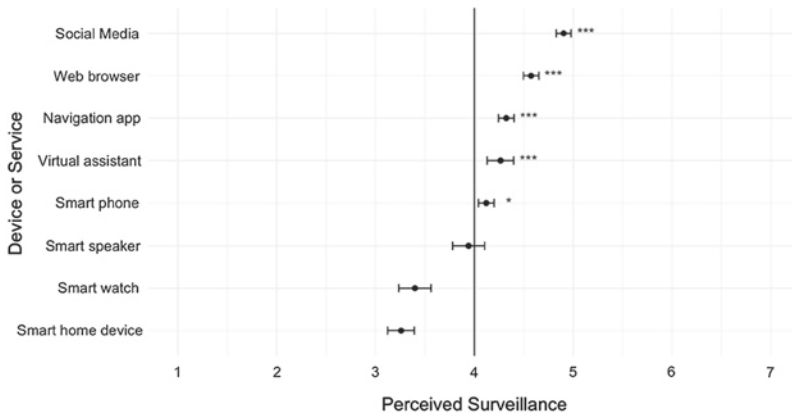


Fig. 3 Distribution of perceived surveillance of each technology

felt that they were being surveilled when using smart speakers (39.9%), smart watches (29.2%), and smart home devices (25.6%).

To investigate which devices and/or services were perceived as surveilling, we compared the means of perceived surveillance of each device and service with the midpoint of the scale (neutral) using one-sample t-tests with Bonferroni corrections. Fig. 4 shows the means and 95% confidence intervals of the perceived surveillance level of each device or service. The tests showed that people's levels of perceived surveillance when using social media, web browser, navigation app, virtual assistant, and smart phone were significantly above the midpoint of the scale (neutral), indicating that people perceive some extent of surveillance when using these devices or services. The rest, smart speaker, smart watch, and smart home device did not significantly score above the midpoint.

Furthermore, to examine whether perceived surveillance differed significantly across different devices and services, we tested whether there were within-person differences between the perceived level of surveillance of technologies (see Fig. 4). Pairwise comparisons with Bonferroni adjustment revealed that social media were perceived to be the most surveilling. This was followed by web



* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$. The p -values are the significance values of one-sample t-tests comparing perceived surveillance of each device or service to the midpoint of the scale

Fig. 4 Interval plot of perceived surveillance with 95% confidence intervals. *Note.* * $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$. The p -values are the significance values of one-sample t-tests comparing perceived surveillance of each device or service to the midpoint of the scale.

browser, which was perceived significantly more surveilling than the rest. The scores of navigation app and virtual assistant were rather comparable, while navigation app did score significantly higher than smart phone and the rest, and virtual assistant scored significantly higher than smart speaker and the rest. Comparing to other devices and services, smart watch and smart home device were perceived to be less surveilling by participants.

To answer RQ4, we ran eight linear regression models with privacy concerns, technology trust, conspiracy mentality, age, gender, and level of education as independent variables, and perceived surveillance of each type of technology as the dependent variable respectively. The results (see Table 1) showed that both privacy concerns and conspiracy mentality were positively related to perceived surveillance of all types of technologies. Technology trust did not have any relationship with perceived surveillance. Older adults tended to perceive lower levels of surveillance when using social media, web browser, and smart phone than

Table 1 Results of linear regression analyses

	Social media	Web browser	Naviga- tion app	Virtual assis- tant	Smart phone	Smart speaker	Smart watch	Smart home
PC	0.26***	0.27***	0.26***	0.24***	0.25***	0.26***	0.21***	0.14***
TT	0.01	0.03	0	0	-0.01	0.03	0.05	0
CM	0.28***	0.28***	0.28***	0.28***	0.32***	0.21***	0.33***	0.34***
Age	-0.08***	-0.07**	-0.01	-0.03	-0.16***	-0.02	-0.07	0.01
Gender (female)	-0.02	0	-0.03	-0.02	-0.02	-0.06	-0.09*	-0.04
Edu (low)	-0.08**	-0.05*	-0.04	-0.04	-0.02	-0.04	0.04	-0.04
Edu (med)	-0.08***	-0.02	-0.05	-0.04	-0.04	-0.02	0	-0.06
Adj. R^2	0.17	0.17	0.17	0.15	0.21	0.12	0.18	0.14
F	54.08	57.62	53.85	19.16	73.02	9.73	16.18	16.31
df	7, 1849	7, 1881	7, 1826	7, 702	7, 1906	7, 443	7, 469	7, 629
p	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Observa- tions	1,857	1,889	1,834	710	1,914	451	477	637

Note. Coefficients are standardized (β). PC=Privacy Concerns, TT=Technology Trust, CM=Conspiracy Mentality, Edu=Education level. Gender “other” was treated as missing due to limited number of observations ($n=5$). * $p<0.05$. ** $p<0.01$. *** $p<0.001$.

young adults. People of different gender did not differ in perceived surveillance of most devices or services, except smart watch, where females perceived slightly less surveilled when using smart watch than males. Compared to highly educated individuals, people who received low or medium level of education tended to perceive lower levels of surveillance of social media. Individuals with lower education also had lower perceived surveillance in web browser comparing to individuals who received higher education.

5 Discussion

This study aimed to provide insight into individuals' perceptions of surveillance by identifying the perceived sources, purposes, and its differences in different digital devices and services among Dutch adults. Furthermore, it investigated the relationship between perceived surveillance and privacy concerns, technology trust, conspiracy mentality, as well as socio-demographic traits. Our findings show that advertisers are the most common perceived source of surveillance and advertising is also the most common perceived purpose of surveillance, which illustrates that online behavioral advertising practices play a major role in people's perceptions of surveillance. This confirms the finding of Segijn and van Ooijen (2020a) that advertising personalization techniques evoke perceived surveillance. Commercial actors, including advertisers, companies in general, and social media platforms, are widely perceived to be the ones surveilling consumers' online activities. Corporate surveillance has been a major focus of surveillance source by scholars (e.g., Fuchs et al., 2012; Lyon, 2019; Zuboff, 2019), while the current study shows that the general public who do not necessarily have extensive knowledge about surveillance perceive the same sources to be the ones surveilling them. On the contrary, while state surveillance is also extensively discussed in the literature (e.g., Bolin & Jerslev, 2018; Fuchs et al., 2012), there are relatively less Dutch citizens who feel surveilled by the government. Last but not least, we found that a substantial share of individuals feel that they are surveilled by technologies such as artificial intelligence and the digital device, which enriches our knowledge that technologies can not only be seen as the sources of communication (Guzman, 2019; Guzman & Lewis, 2020), but also the sources of surveillance.

Corresponding with the most common perceived sources, most Dutch consumers believe that they are being surveilled for commercial-related purposes such as advertising and selling personal data, which resonates with the notion of surveillance capitalism raised by Zuboff (2019), that personal data are being commodified and used as a new form of capital for generating profits. Manipulating

behaviors and opinions were the least selected perceived purposes. This forms an interesting contrast with critical discussions from scholars, as they have pointed out that the ultimate goal of digital surveillance is to influence and manipulate (Lyon, 2009; Susser et al., 2019). What perhaps provides an explanation to this low recognition of manipulation as the surveillance purpose among consumers is that online manipulation is usually hidden and covert, and individuals might be influenced by the surveillance sources without being aware of it (Susser et al., 2019). For example, Uber prompts its drivers who are trying to quit the app with a reminder about their progress to covertly persuade them work for longer hours (Scheiber, 2017). Or that in the popular mobile game Pokémon Go, players are attracted to key locations in game without knowing that companies pay for being shown on the map of the game to generate traffic (Zuboff, 2019). In fact, showing advertisements, personalized content, and improving products are just pathways to manipulation—companies try to influence consumers' purchase behavior through highly personalized advertisements, attract users to engage with their products by providing personalized content and novel functionalities. Our finding showed that individuals are able to recognize the purposes on the surface, yet most of them do not associate these purposes with the deeper goal of surveillance—to influence and manipulate them.

When comparing perceived surveillance across digital devices and services, our results showed that the level of perceived surveillance is the highest when people are using social media and web browsers. Linking back to the findings of perceived sources and purposes, this result seems plausible, as social media and web browsers are the media in which people get targeted advertisements and personalized content the most. Interestingly, while smart phone as a device is able to carry out all the services investigated in this research, it is deemed to be less surveilling than any of the services alone. In fact, we found that people generally feel more surveilled when thinking about their experiences of using services than devices. Based on this finding, we theorize that it is rather the attempts of influence that makes people feel surveilled, than the practice of data collection itself. When people were asked to think about their experiences of using digital services, it might be easier to recall situations in which they noticed the attempts of influence, for example when they saw a targeted ad on Instagram, or when they noticed Google Maps highlighting their frequently visited locations on the map. On the other hand, when thinking about devices, it might be harder to recall specific attempts of influence, which makes the devices seem less surveilling.

In terms of the relationship of perceived surveillance and individual traits, we found that perceived surveillance is positively related to privacy concerns and conspiracy mentality. This corroborates with our expectations that people who are

more worried about their privacy and who believe there are ill intentions behind social phenomena are more likely to feel surveilled when using digital devices and services (Boerman & Segijn, 2022; Bruder et al., 2013; Segijn & van Ooijen, 2020a). Surprisingly, technology trust did not show any relationship with perceived surveillance, meaning that people with low or high trust towards technologies perceive equally surveilled. This is contrary to our understanding that people who have less trust in technologies would be more critical and feel more surveilled (Mcknight et al., 2011). Future research is needed to disentangle why this is not the case. Furthermore, our results show that people who are younger and more highly educated perceived more surveillance when using social media, and younger people also feel more surveilled when using web browser. This could be due to that young and highly educated people are more competent in their internet skills (van Deursen et al., 2016), therefore they are also more aware and knowledgeable of the existence of surveillance, and have a stronger or more sensitive sense of surveillance.

The findings of the current study are insightful for advertising practitioners, as it showed that online behavioral advertising is indeed the main trigger of perceived surveillance to consumers. Advertisers and marketers should be extra cautious with collecting consumers' personal data and using them for advertising because this could backfire and result in negative perceptions (Boerman et al., 2021). Our results also suggest that people who are younger, highly educated, with high privacy concerns and conspiracy mentality might perceive targeted advertising to be more surveilling, which could be taken into consideration when developing marketing strategies or digital literacy interventions.

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