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Chilling Effects as a Result of Corporate Surveillance in Digital Communication: A Comparison Between American and Dutch Media Users

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Individual data used by companies contribute to perceptions of corporate surveillance among media users, who may respond to them by inhibition of legitimate behaviors, the so-called chilling effects. We investigated how media users respond to corporate surveillance by studying chilling effects, focusing on TV consumption and related media multitasking behaviors. A survey in the United States ($N = 148$) and the Netherlands ($N = 156$) showed two types of chilling effects, namely media use increase and decrease, and four different behavioral changes in media use, namely change in type of media activity, in mobile device settings and use, in multitasking behaviors, and in TV viewing. These chilling effects were mostly driven by privacy-related factors and psychological differences. Furthermore, cross-country differences were identified as U.S. media users showed more intention to change media behaviors, while Dutch users to increase their TV viewing and multitasking. This may suggest a certain effectiveness of current privacy regulations as they prevent Dutch media users from behavior change but can also be seen as an indication of the so-called control paradox.

Keywords: chilling effects, corporate surveillance, online privacy, individual autonomy

As more and more individual data are collected online, activities that were once private or shared with a selected group, are currently more open to potentially exploitative use by commercial organizations (Acquisti, Brandimarte, & Loewenstein, 2015). In the so-called surveillance capitalism, organizations collect and process individual data and use them to predict and modify human behavior (Zuboff, 2015). The extent of this surveillance has grown as developments in data science have created opportunities for organizations to use online and offline data for data-driven and algorithmic practices (Christl, Kopp, & Riechert, 2017; Yun

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et al., 2020). For example, individuals' offline media behavior such as TV consumption can be monitored and used to personalize communication to them (Segijn, 2019). While these practices come with benefits for individuals (e.g., more relevant communication, discounts), corporate surveillance raises ethical questions, such as chilling effects (Büchi, Festic, & Latzer, 2022).

Chilling effects relate to self-censorship practices of media users as a result of external (e.g., corporate) surveillance. Chilling effects can be described as individuals refraining from exhibiting certain legitimate behavior because of their data being collected (Solove, 2007). For example, users report changing their online behavior when they know their data are being collected (McDonald & Cranor, 2010). However, studies that have empirically assessed mechanisms driving chilling effects have primarily focused on government surveillance (e.g., Penney, 2017) or on specific groups such as writers (Williams, McMenemy, & Smith, 2018). They have not evaluated how and what type of users change their media behavior when their data are being collected by companies for advertising purposes (Büchi et al., 2019).

Therefore, the aim of the current study is to investigate the prevalence and antecedents of chilling effects in a media context by focusing on TV consumption and related media multitasking behavior. We study media-related (i.e., TV watching, mobile dependency, multitasking preference, mobile device dependency), privacy-related (i.e., privacy concerns, privacy cynicism), individual (i.e., need for self-presentation), and cultural differences (i.e., uncertainty avoidance [UA], long-term orientation [LO]) as predictors of chilling effects. These media behaviors are important when studying chilling effects because (1) information on offline media consumption is more and more commonly used for personalization (Segijn, 2019); (2) mobile devices with sensors and network connections such as smartphones are part of the current tracking and profiling ecosystems (Christl et al., 2017); and (3) mobile devices are often used simultaneously while watching TV (Nielsen, 2018), all of which allow for collection of information on users' media habits. We examine chilling effects across the United States and the Netherlands (NL), two countries that substantially differ with regard to privacy regulations (Tushnet & Goldman, 2020), as well as in media multitasking habits (Voorveld, Segijn, Ketelaar, & Smit, 2014), because such regulatory and media use differences may impact chilling effects among media users.

The proposed study is innovative as it brings together communication and legal scholarship on chilling effects to study this phenomenon in the context of surveillance for data-driven communication. This advances our understanding of the impact of modern data collection techniques on user behavior and autonomy beyond government surveillance. Moreover, the proposed research advances communication theory as it brings together literature on corporate profiling and chilling effects to study ethical aspects of data-driven communication and impacts on people's media behavior. Investigating cross-country differences allows us to advance our understanding of privacy behaviors and to what extent they are impacted by regulatory context and intercultural differences.

Practically, the findings offer insights both to organizations carrying out corporate surveillance and regulators. Change in behavior as a consequence of corporate surveillance suggests that modern communication strategies can potentially undermine personal autonomy and privacy (Büchi et al., 2022), especially if the legal context has an impact on the likelihood of such change and if certain types of users

are more susceptible to it. This is important from the viewpoint of regulators who may need to offer certain user types additional protection.

Theory

Corporate Surveillance and Chilling Effects

Surveillance can be defined as “the focused, systematic and routine attention to personal details for purposes of influence, management, protection or direction” (Lyon, 2007, p. 14). As companies across various sectors have been collecting, using, and partly also sharing information about prospects and customers for decades, they are one of the main sources of surveillance in digital society (Christl et al., 2017). In recent years, we have been observing an extension of corporate surveillance from the digital context to the offline world (Yun et al., 2020). Devices such as smartphones and wearables that are equipped with sensors and connected to the Internet make part of today’s tracking and profiling ecosystems, adding another dimension to the extent of corporate surveillance (Christl et al., 2017).

Being under surveillance by corporations has broader consequences impacting individuals’ perceptions and behaviors (Strycharz & Segijn, 2022). From an individual’s point of view, data collection and processing by corporations may trigger one’s perception of being surveilled (i.e., perceived surveillance), which can be defined as the perceptions of personal data being watched, listened to, or recorded (Segijn et al., 2022). Such perceptions may result in a behavior change. More specifically, when their data are being collected, individuals tend to play an active role in the surveillance culture by trying to regulate what others can collect about them (Lyon, 2017). As a result, they have certain surveillance beliefs, that is, their ideas about “the extent and aim of surveillance” (Strycharz & Segijn, 2022, p. 576), which do not need to be correct: When they are based on incomplete or false information, individuals may misjudge the reality (Büchi, Fosch-Villaronga, Lutz, Tamò-Larrieux, & Velidi, 2023). Additionally, they lead to the implementation of surveillance practices, that is, disciplinary and reactance tactics developed as a consequence of feeling surveilled (Duffy & Chan, 2019). This behavior adjustment that involves explicitly avoiding certain activities is called “chilling effects” and directly stems from perceived surveillance (Finn & Wadhwa, 2014).

Chilling effects in the past have been defined as an “act of deterrence” (Schauer, 1978, p. 689). In general, they describe the phenomenon of individuals refraining from actions due to being under surveillance (Solove, 2007). This behavioral change can involve giving up or not engaging in certain behaviors or can shape one’s existing behavior in accordance with perceived social norms (Penney, 2021). For example, not looking up certain terms in a search engine can be seen as a chilling effect through inhibition of behavior (Marthews & Tucker, 2017), while using a different browser to complete the search is a sign of shaping a behavior (Rosso, Nasir, & Farhadloo, 2020).

Studies that have empirically assessed types of chilling effects and their predictors have primarily focused on government surveillance and refraining from online political participation (e.g., Penney, 2017) or on peer monitoring and refraining from self-disclosure on social media (e.g., Das & Kramer, 2013). While data collection by platforms (e.g., social media) has also played a role in these studies, in what ways

corporate surveillance specifically may constrain or change individuals' media behavior remains under-researched (Büchi et al., 2019).

Privacy Regulations and Chilling Effects

Because of substantial differences in regulations and the amount of protection offered by the law between the United States and the Netherlands (Tushnet & Goldman, 2020), we propose to study the characteristics and predictors of chilling effects in these two regulatory contexts. On May 25, 2018, the General Data Protection Regulation (GDPR) went into effect in the European Union (EU). Its aim is to set high standards for the collection and processing of personal data. The GDPR impacts how data collection on the Web is designed, what data are collected, and how users are informed about these practices (Utz, Degeling, Fahl, Schaub, & Holz, 2019). A key goal of this regulation is to strengthen individual control in the face of online data collection (Tushnet & Goldman, 2020). Past research has shown that the Dutch are aware of the GDPR and know at least some of the individual rights granted to them (Strycharz, Ausloos, & Helberger, 2020).

In contrast, privacy regulations in the United States are less specific on what data can be collected and put less requirements for informing users about these practices. Furthermore, they are more fragmented and sector-specific (e.g., Children's Online Privacy Protection Act, Health Insurance Portability and Accountability Act), lacking an overarching privacy framework. In general, the regulations focus less on individual control (except for the California Consumer Privacy Act) and give users fewer possibilities to influence how and what personal data are collected (Tushnet & Goldman, 2020).

Past research on the impact of the control given by law on individual privacy behavior suggests that salient control mechanisms (e.g., consent) actually increase the amount of data individuals share online (so-called control paradox; Brandimarte, Acquisti, & Loewenstein, 2013). Conversely, awareness of the risks of one's data being exposed leads to chilling effects (Hermstrüwer & Dickert, 2017). This could possibly mean that in a context with less control guaranteed by the law, users are more likely to take matters into their own hands and regulate data collection through chilling effects, but the impact on the national context remains understudied. Therefore, we ask the following research questions:

RQ1: To what extent do the United States and the Netherlands differ in the likelihood of chilling effects?

RQ2: To what extent do the types of chilling effects differ in the United States and the Netherlands?

Predictors of Chilling Effects

While these two research questions focus on how media users in the United States and the Netherlands change their media behavior in relation to corporate surveillance, who changes their behavior in the corporate surveillance context requires attention (Büchi et al., 2019).

Media-Related Variables

The current study investigates chilling effects, specifically focusing on media use. As the type of behavior is crucial for the decision to give it up, it is important to include individuals' ways of and preferences

for using media. Wottrich, van Reijmersdal, and Smit (2018) showed that even users worried about their privacy would not give mobile apps up when these were important to them. The current study examines chilling effects in the context of a personalized message shown on a mobile device that is synchronized with the content on TV that is simultaneously consumed. Therefore, variables related to TV, mobile, and multitasking may play a role.

First, the amount of TV watching can be seen as a reflection of the importance of the behavior. Time is considered a scarce commodity, hence individuals must choose their activities after completing their daily obligations (Hamermesh & Lee, 2007). Thus, those users who allocate a larger proportion of their time to watching television may have more difficulties giving it up as this is contrary to their preferences. Second, mobile dependency can be seen as an important factor in giving up using mobile devices. Past research on mobile dependency has shown that individuals more dependent on their devices were not able to give up using their phones while driving (Hayashi, Foreman, Friedel, & Wirth, 2018) or in a classroom situation (Hayashi & Nenstiel, 2019). Additionally, younger adults indicate that mobile device dependency is a motivation for them to not engage in media self-censorship behaviors (Strycharz, Kim, & Segijn, 2022). This suggests that being more dependent on one's phone would mean that one would not change the way they use it even if the device is used for corporate surveillance of one's media behavior. Finally, we look at media multitasking preference. Media multitasking can be defined as the usage of multiple media at the same time (Duff & Segijn, 2019). Given that when the cost of changing behavior is higher, the motivation to change it is lower (Rogers, 1975), people's preference to multitask may impact their motivation for the change.

Privacy-Related Variables

Research has shown that whether people take action to protect their privacy and prevent companies from collecting data online depends among others on their privacy concerns (e.g., Baruh, Secinti, & Cemalcilar, 2017). This applies not only to privacy protective behaviors (Acquisti, Brandimarte, & Loewenstein, 2020) but also to giving up using certain services, for example, deleting surveilling apps from one's mobile device (Wottrich et al., 2018). At the same time, using available privacy protective measures, such as cookie rejection online, seems to be negatively influenced by one's level of privacy cynicism (Lutz, Hoffmann, & Ranzini, 2020; van Ooijen, Segijn, & Oprea, 2022). It can be defined as feelings of uselessness, powerlessness, and mistrust toward the handling of personal data by data collectors, rendering privacy protective behaviors subjectively ineffective, causing emotional exhaustion and, as a consequence, disengagement and resignation (Choi, Park, & Jung, 2018; Lutz et al., 2020). More specifically, past research has shown that individuals who are more cynical put less effort into making privacy decisions (Choi et al., 2018). Scholars have argued that surveillance has become widely normalized in both government and corporate contexts, and individuals take this state for granted (Denick & Cable, 2017). This could increase one's chilling effects—a more radical privacy protection measure that does not depend on corporations that collect data but is entirely in the hands of the user, though it could also lead to a lack of change or even an increase in the behavior as privacy-apathetic or cynical individuals turn to disengagement (Choi et al., 2018).

Psychological Differences

Regarding psychological characteristics, self-presentation has been researched as an important factor related to behavior self-regulation (Strycharz & Segijn, 2023). It can be defined as the need of users to intentionally regulate their personal image in the eyes of others (Wang, Duong, & Chen, 2016). In the online context, users can manage their own information for self-presentation such as online personal brands (Labrecque, Markos, & Milne, 2011) and maintain their public self-image. For example, on social media, users with high self-presentation needs can provide other people with information that allows others to match what they say with what they do. Chilling effects can also be used as a behavior self-regulation tactic to construct and maintain one's public self-image.

Furthermore, two cross-cultural factors, namely UA and LO, are investigated. Overall, their levels differ between the Netherlands and the United States (Hofstede, Hofstede, & Minkov, 2010) as the Dutch culture is more long-term oriented (NL score: 67, U.S. score: 26) and focused on avoiding uncertainties (NL score: 53, U.S. score: 46) than the U.S. culture. As cultures high on UA are risk averse, past research has shown that individuals with high UA would be less concerned about their privacy (Cho, Rivera-Sánchez, & Lim, 2009) and less likely to protect their information on social media (Liang, Shen, & Fu, 2017). Second, LO affects the perseverance with which desired ends are pursued and the sacrifices one is ready to make when pursuing their aims (Hofstede et al., 2010) and has been linked to multitasking with TV and smartphone (Segijn & Kononova, 2018). Giving up a potentially valuable behavior can be seen as a decision related to more LO as it involves a sacrifice (giving up TV viewing or phone use) for future gain (protection from corporate surveillance).

Overall, past research indicates that media- and privacy-related factors, and psychological characteristics may be important predictors of chilling effects in the media context, but their exact role is unknown. As we cannot hypothesize to what extent the past findings from privacy behavior and the social media context translate to chilling effects, we pose an open research question. Furthermore, as the national and regulatory context may play a role in the extent to which users change their media behavior, we also investigate the role of this context in predictors of chilling effects by posing the following research question:

RQ3: What factors are related to chilling effects and to what extent do they differ between the United States and the Netherlands?

Method

The method of this study was preregistered before data collection, and we followed the procedures as outlined in the preregistration². To answer the research questions, a survey was distributed around the same time (April 2021) in the United States and the Netherlands. We chose the Netherlands for data collection because of the relatively high number of households with Internet access (97%) and mobile access (91%) in the EU (European Commission, 2018). Respondents in both countries filled in the survey in English

² https://osf.io/n4xu2/?view_only=38f918782fbf4b10bc85e2624d94ea28; the current study focuses on research questions regarding chilling effects in the media context and cross-national differences.

to avoid translation effects (the Netherlands ranks the highest in English as a second language proficiency worldwide; EF English Proficiency Index, 2022).

To gain a quota sample based on gender, age, and education level, we made use of Prolific in the United States and PanelClix in the Netherlands. All people registered on those panels and who were 18 years or older could participate in the study. In total, 334 respondents completed the surveys; of these, one U.S. respondent and 38 Dutch respondents were excluded as they failed the attention check (i.e., a question asking respondents to choose a specific answer). The final sample consisted of 148 U.S. respondents ($M_{\text{age}} = 34.08$, $SD_{\text{age}} = 13.13$, 47.6% female) and 156 Dutch respondents ($M_{\text{age}} = 46.94$, $SD_{\text{age}} = 15.96$, 50.6 % female).

Measures

Descriptive statistics for all items used can be found in Appendix 1.³

Chilling Effects

We measured two types of chilling effects, namely chilling effects in (1) frequency of media use and (2) change in specific media behaviors. To measure chilling effects, we first presented the respondents with a personalized communication scenario as an example of corporate surveillance in which data on offline media behavior were used for personalizing ads on mobile devices:

An advertising strategy that is sometimes used is simultaneously advertising for the same brand on someone's mobile device and on TV. For example, when watching a program about cars and an ad for the same car brand appears in the browser on your phone.

Chilling Effects in Frequency of Media Use

To measure whether respondents would change the frequency of their media use due to corporate surveillance, we asked, "Now that you know ads appear simultaneously on TV and mobile devices on purpose, how likely are you to—": followed by five items presented in Table 1. The answer options ranged from "extremely unlikely" to "extremely likely" on a 7-point Likert scale.

Chilling Effects in Specific Media Behaviors

To measure chilling effects in specific media behaviors, we provided a list of 17 items with specific examples of how people could change their media behavior due to corporate surveillance (Table 1). This list was created based on the results of a content analysis examining chilling effects in everyday life (Strycharz et al., 2022). We asked, "Knowing that ads may appear simultaneously on TV and a mobile device on purpose, how would you change your TV viewing or mobile use behavior?" The answer options ranged from "very unlikely" to "very likely" on a 5-point Likert scale and also included a "not

³ https://osf.io/mxjc7/?view_only=2f8b685252a146d59ff61ed0410a5e56

applicable" option. The statements were presented on the same page in random order in blocks of six statements to increase readability.

Media-Related Variables

The amount of watching TV was measured by asking how many hours and minutes one spent watching TV on an average day. The average day was used as a reference frame as past research shows that it leads to less overreporting of use than using a reference frame (Araujo, Wonneberger, Neijens, & de Vreese, 2017). Following Molina, Campaña, and Ortega (2016), the number of daily TV hours was calculated based on this question ($M = 1.50$, $SD = 1.18$). All other predictors were measured on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Mobile device dependency was measured with nine items from the Extended Mind Questionnaire (e.g., "I am very dependent on my smartphone, tablet, or computer"; Nijssen, Schaap, & Verheijen, 2018; Cronbach's $\alpha = .88$, $M = 4.84$, $SD = 1.08$). Multitasking preference was measured with four items (e.g., "I multitask whenever possible"; Wang et al., 2012) and averaged on a scale (Cronbach's $\alpha = .88$, $M = 4.77$, $SD = 1.39$).

Privacy-Related Variables

Privacy concerns were measured with five items (e.g., "I am concerned about misuse of my personal information"; Baek & Morimoto, 2012; Dolnicar & Jordaan, 2007) and averaged on a scale (Cronbach's $\alpha = .86$, $M = 5.30$, $SD = 1.06$). Privacy cynicism was measured with six items (e.g., "I have become less interested in online privacy issues") by Choi and colleagues (2018) and averaged on a scale (Cronbach's $\alpha = .76$, $M = 4.16$, $SD = 1.02$).

Psychological Differences

The need for self-presentation was measured with eight items (e.g., "I express opinions that other people will like"; ingratiation scale by Lee, Quigley, Nesler, Corbett, & Tedeschi, 1999) and averaged on a scale (Cronbach's $\alpha = .89$, $M = 3.59$, $SD = 1.21$). Finally, the two cultural dimensions, UA (example item: "It is important to closely follow instructions and procedures") and LO (example item: "giving up today's fun for success in the future"), were measured (Yoo, Donthu, & Lenartowicz, 2011) and averaged on a scale each (UA: Cronbach's $\alpha = .86$, $M = 5.41$, $SD = 0.91$; LO: Cronbach's $\alpha = .82$, $M = 5.06$, $SD = 0.99$).

Results

Chilling Effects and Cross-Country Differences

To identify types of chilling effects, two exploratory maximum-likelihood factor analyses were conducted. Looking at the operationalization of frequency in media use, two factors can be identified (Table 1): (1) positive change (increase of TV consumption and multitasking, proportion of variance explained 32%); (2) negative change (decrease of TV consumption, multitasking, and adjusting settings, proportion of variance explained 28%). Regarding differences (RQ1), Dutch respondents were slightly more likely to increase their media consumption ($M = 3.40$, $SD = 1.19$) than U.S. respondents ($M = 2.99$, $SD = 1.25$;

$t(305) = 2.95, p = .003$), while there were no differences between the participants of the two countries when it came to negative change (the Netherlands: $M = 4.05, SD = 1.06$; United States: $M = 4.24, SD = 1.31$; $t(288) = -1.40, p = .163$).

Looking at the different types of chilling effects, four different forms can be distinguished: (1) change in type of media activity (e.g., watching streaming services or reading instead, proportion of variance explained 16%); (2) changes related to the mobile device (e.g., apps used or settings, proportion of variance explained 15%), (3) changes related to multitasking behavior (proportion of variance explained 15%); (4) changes related to TV viewing (proportion of variance explained 8%). One item was dropped as it had factor loading below .4; Table 1 shows an overview of all items and their loadings.

Table 1. Factor Analysis Results for the Chilling Effect Measures.

Items	Loadings	Cronbach's α
Change in frequency of media use		
<i>Increase in TV consumption and multitasking</i>	.78	
Increase TV viewing	1	
Increase mobile use while watching TV content	.63	
<i>Decrease in TV consumption, multitasking, and adjusting settings</i>		.75
Decrease TV viewing	.83	
Decrease mobile use while watching TV	.76	
Change privacy settings on any device	.55	
Change in media behaviors		
<i>Change in type of media activity</i>		.79
I would watch streaming services	.57	
I would watch TV with headphones or earphones	.55	
I would read (e.g., book, newspaper, magazine) instead	.58	
I would listen to radio/podcast/music instead	.79	
I would do something else other than watching TV	.70	
<i>Changes related to the mobile device</i>		.76
I would change settings on my phone (e.g., data sharing)	.70	
I would uninstall apps that have access to the microphone of my phone	.63	
I would use ad blockers on my phone	.68	
I would disable apps from having access to the microphone of my phone	.50	
I would use an incognito browser on my phone	.46	
<i>Changes related to multitasking behavior</i>		.83
I would not use my phone while watching TV	.78	
I would turn off my phone while watching TV	.65	
I would put away my phone while watching TV	.77	
I would turn off the WiFi of my phone while watching TV	.54	

<i>Changes related to TV viewing</i>		.74
I would watch less TV	.79	
I would avoid watching certain TV shows	.50	

Regarding which chilling effects were more likely in which national context (RQ2), some differences were observed. First, on average, U.S. respondents were slightly more likely to change the type of media activity ($M = 3.39, SD = 0.76$) compared with Dutch respondents ($M = 3.11, SD = 0.71; t(157) = -2.40, p = .017$). Second, on average, U.S. respondents were slightly more likely to make changes to the mobile device ($M = 3.90, SD = 0.71$) compared with Dutch respondents ($M = 3.66, SD = 0.76; t(230) = -2.52, p = .012$). On the other hand, there was no difference between the countries when it came to change in multitasking behavior (the Netherlands: $M = 3.34, SD = 0.92$; the United States: $M = 3.37, SD = 0.90; t(169) = -0.25, p = .803$), nor when it came to change in TV viewing behavior (the Netherlands: $M = 3.04, SD = 0.95$; the United States: $M = 3.27, SD = 0.96; t(204) = -1.72, p = .087$).

Predictors of Chilling Effects

To identify predictors of chilling effects in each country, a series of hierarchical linear regressions were conducted. For all variables, their distribution was examined; skewness values for all variables fell between -0.5 and 0.5 . None of the correlations between independent variables exceeded $.8$ (highest correlation between UA and LO: $.52$). In the analysis steps, first, only media-related variables were included in the regression. In the second step, privacy-related variables were added. In the final step, individual characteristics were added. Model fits were compared using analyses of variance. To investigate cross-country differences, correlations with the country of residence of respondents were introduced in the analyses. As control variables should be included when theoretically relevant, and age and gender were identified as important factors in privacy behaviors in past research (e.g., Dienlin & Metzger, 2016), they were included in the analysis as control variables. Tables 2 to 4 show the results of the hierarchical linear regressions for all types of chilling effects.

Table 2. Results for Hierarchical Regression Analysis for the Frequency of Media Use.

Step and Predictor	Step 1		Step 2		Step 3	
	Increase of TV and Multitasking	Decrease of TV and Multitasking	Increase of TV and Multitasking	Decrease of TV and Multitasking	Increase of TV and Multitasking	Decrease of TV and Multitasking
1. Amount of TV	.17	-.10	.14	-.08	.16	-.07
Mobile device dependency	.08	.14	.13	.11	.02	-.003
Multitasking preference	.13	.13	.12	.12	.06	.08
Country	-.14	.64*	-.36	-.14	.02	.33
Amount of TV × country	-.24	.15	-.20	.11	-.22	.10
Dependency × country	-.04	-.62*	-.21	-.48	-.002	-.28
Multitasking × country	.14	-.13	.22	-.19	.30	-.16
Age	-.002	.03	.04	-.01	.07	.001
Gender	-.07	.07	-.09	.06	-.03	.10
2. Privacy concerns			-.29**	.15	-.27**	.14
Privacy cynicism			.06	.09	-.04	.06
Privacy concerns × country			.56	.88**	.40	.82*
Privacy cynicism × country			-.18	-.18	-.02	-.10
3. Need for self-presentation					.37***	.13
UA					-.03	.09
LO					.18	.28**
Self-presentation × country					-.44*	-.10
UA × country					.03	-.26
LO × country					-.28	-.39
	$F(9, 218) = 2.21,$	$F(9, 286) = 1.42,$	$F(13, 214) = 2.41,$	$F(13, 282) = 3.71,$	$F(19, 208) = 1.16,$	$F(19, 276) = 3.76,$
	$p = .023$	$p = .18$	$p = .005$	$p < .001$	$p < .001$	$p < .001$
R^2	.08	.04	.13	.15	.20	.21
Adj. R^2	.05	.01	.07	.11	.13	.15
ΔR^2			.05*	.11***	.07**	.06**

Note. The table presents standardized regression coefficients (β). * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3. Results for Hierarchical Regression Analysis for Change in Type of Media Activity and Changes Related to the Mobile Device.

Step and Predictor	Step 1		Step 2		Step 3	
	Media Activity	Mobile Device	Media Activity	Mobile Device	Media Activity	Mobile Device
1. Amount of TV	-.05	-.01	-.04	.03	-.02	.06
Mobile device dependency	.14	-.03	.12	-.11	.003	-.16
Multitasking preference	.19	.12	.19	.14	.11	.09
Country	.78	.66	.001	-.36	.53	-.16
Amount of TV × country	.39**	.15	.35*	.05	.30*	.02
Dependency × country	-.81	-.43	-.69	.06	-.27	.12
Multitasking × country	-.26	-.20	.33	-.43	-.25	-.33
Age	-.13	.01	-.14	-.05	-.09	-.04
Gender	-.09	-.10	-.14	-.08	-.09	-.06
2. Privacy concerns			-.07	.38***	-.07	.37***
Privacy cynicism			.20	-.09	.11	-.09
Privacy concerns × country			.31*	.60	.27*	.54
Privacy cynicism × country			-.39	.14	-.25	.15
3. Need for self-presentation					.17	-.09
UA					-.09	-.12
LO					.39**	-.36***
Self-presentation × country					-.03	.16
UA × country					-.35	-.99
LO × country					-.61	.54*
	$F(9, 146) = 3.04,$	$F(9, 218) = 1.83,$	$F(13, 142) = 3.14,$	$F(13, 214) = 5.97,$	$F(19, 136) = 3.25,$	$F(19, 208) 4.92,$
	$p = .002$	$p = .065$	$p < .001$	$p < .001$	$p < .001$	$p < .001$
R^2	.16	.07	.22	.27	.31	.31
Adj. R^2	.11	.03	.15	.22	.22	.25
ΔR^2			.06***	.20***	.09*	.09*

Note. The table presents standardized regression coefficients (β). * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 4. Results for Hierarchical Regression Analysis for the Changes Related to Multitasking Behavior and TV Viewing.

Step and predictor	Step 1		Step 2		Step 3	
	Multitasking	TV Viewing	Multitasking	TV Viewing	Multitasking	TV Viewing
1. Amount of TV	.07	.10	.09	.14	.09	.16
Mobile device dependency	.15	.09	.05	.05	.04	-.04
Multitasking preference	-.03	.05	.01	.05	.01	.01
Country	.41	.39	-.28	-.28	-.47	.13
Amount of TV × country	.05	-.004	-.05	-.06	-.04	-.08
Dependency × country	-.45	.02	-.03	-.19	-.13	-.04
Multitasking × country	.09	-.32	-.14	-.11	-.21	-.11
Age	.22*	-.03	.19*	-.06	.20*	-.04
Gender	-.07	-.07	-.05	-.09	-.04	-.05
2. Privacy concerns			.30**	.13	.30**	.12
Privacy cynicism			-.10	.09	-.09	.06
Privacy concerns × country			.42	.57	.31	.41
Privacy cynicism × country			.08	.11	.02	.05
3. Need for self-presentation					-.03	.12
UA					-.004	-.06
LO					.03	.18
Self-presentation × country					.22	.10
UA × country					.02	-.45
LO × country					.33	.001
	$F(9, 160) = 1.22,$	$F(9, 192) = 1.02,$	$F(13, 15) = 2.79,$	$F(13, 188) = 1.65,$	$F(19, 150) = 1.97,$	$F(19, 182) = 1.71,$
	$p = .289$	$p = .427$	$p = .001$	$p = .075$	$p = .013$	$p = .038$
R^2	.06	.05	.19	.10	.20	.15
Adj. R^2	.01	.001	.12	.04	.10	.06
ΔR^2			.13*	.05***	.01	.05

Note. The table presents standardized regression coefficients (β). * $p < .05$. ** $p < .01$. *** $p < .001$.

Regarding the media-related predictors of chilling effects per country (RQ3), we observed a strong positive relation between the number of hours watching TV and intention to change media behavior, but only in the United States ($\beta = .30$; Figure 1).

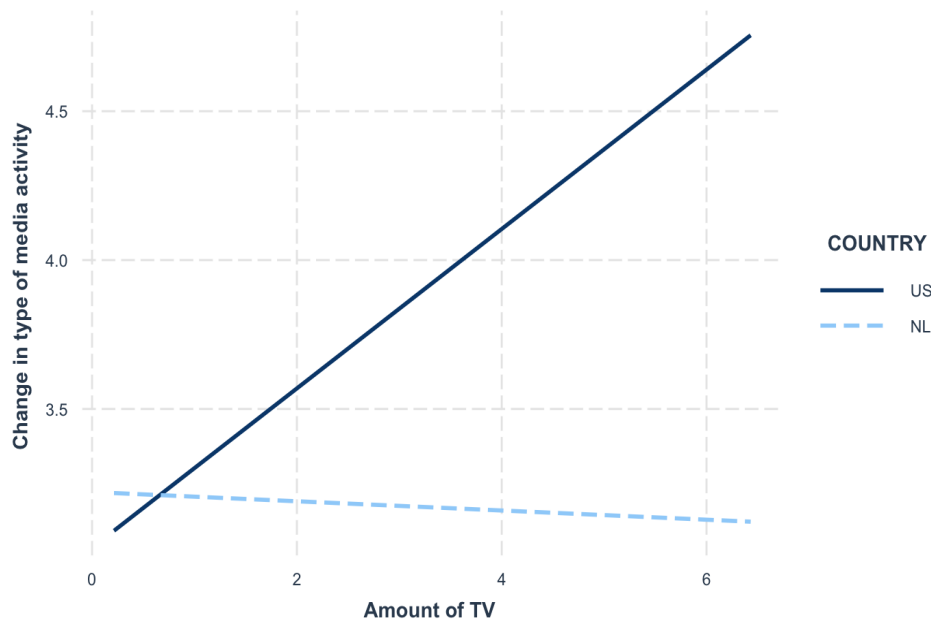


Figure 1. Interaction effect of the amount of TV consumption per day and country on change in type of media activity.

Regarding privacy-related variables, including them in the analysis significantly improved the regression models for all kinds of chilling effects with the largest difference in R^2 for intention to adjust their mobile phone settings and use ($\Delta R^2 = .20$; Table 3). We observed that respondents more concerned about their privacy had lower intention to watch more television once aware of corporate surveillance ($\beta = -.27$). Moreover, the more concerned one was about their privacy, the higher their intention to reduce their TV viewing and multitasking, and this relationship was stronger for U.S respondents than Dutch respondents ($\beta = .27$; Figure 2). Additionally, we observed that U.S. respondents concerned about their privacy had higher intention to change TV viewing to another media activity, while this was not the case for Dutch respondents ($\beta = .82$; Figure 3). Also, we observed that respondents more concerned about their privacy reported more intention to adjust their mobile phone settings and use independent of the country ($\beta = .37$).

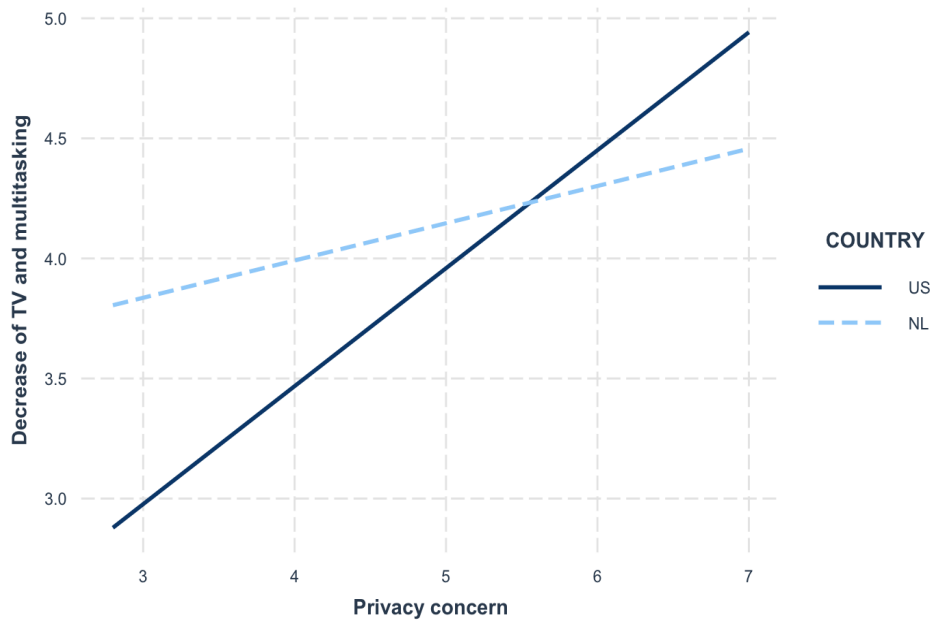


Figure 2. Interaction effect of privacy concerns and country on the decrease of TV consumption, multitasking, and adjusting settings.

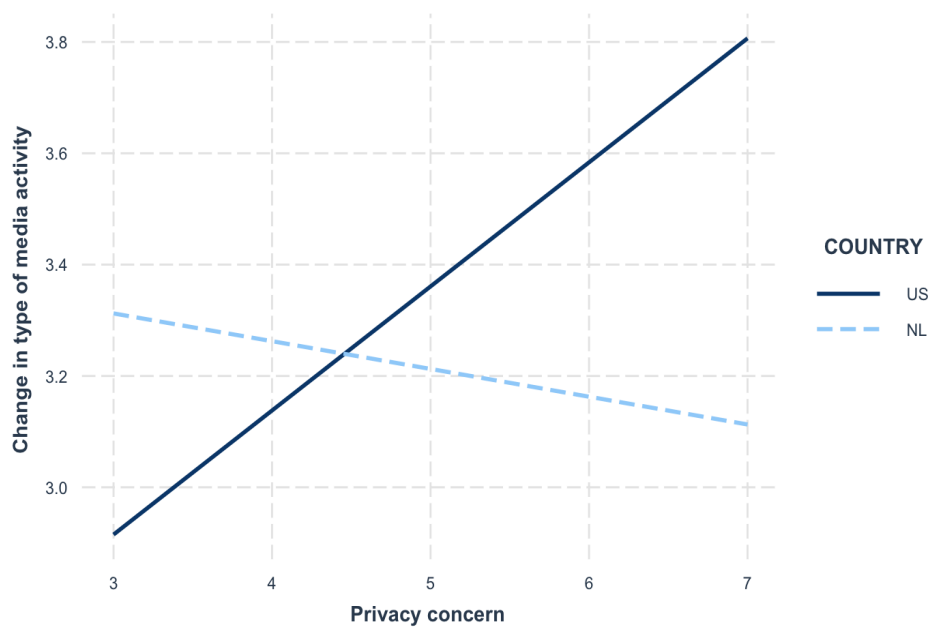


Figure 3. Interaction effect of privacy concerns and country on change in the type of media activity.

Regarding psychological differences, including them in the analysis significantly improved the regression models for the frequency of media use (Table 2) and for change in the type of media activity and changes related to the mobile device (Table 3) but not for changes related to multitasking behavior and TV viewing (Table 4). We observed that respondents with higher need for self-presentation reported more intention to increase TV viewing and multitasking behaviors ($\beta = .37$). This relationship was slightly stronger for Dutch respondents than U.S. respondents. Regarding using media less, LO was positively related to it in both countries, meaning that respondents oriented more toward the future would intend to lower their frequency of TV viewing and multitasking because of corporate surveillance ($\beta = .28$). Also, respondents oriented more toward long-term future reported more intention to change mobile phone settings and use because of corporate surveillance ($\beta = .39$). However, this relationship was found only for the Dutch respondents.

Next to the media-related, privacy-related, and individual factors, age was significantly related to intention to lower multitasking frequency as older individuals were more prone to do so. Age or gender were not related to other forms of chilling effects.

Discussion and Conclusion

The aim of this research was to examine types and predictors of chilling effects in the media context in response to corporate surveillance, focusing on cross-country differences. A cross-sectional survey conducted in the United States and the Netherlands identified two types of chilling effects, namely its increase and decrease, and four different behavioral changes, namely change in type of media activity, in mobile device settings and use, in multitasking behaviors, and finally in TV viewing. The prevalence of chilling effects differs between the United States and the Netherlands such that U.S. media users show more intention to change certain media behaviors, while Dutch users would rather increase their TV viewing and multitasking. In general, chilling effects are mostly driven by privacy-related factors and psychological differences rather than media-related factors.

The higher intention to change one's phone use and media-related activities in the United States than in the Netherlands can be potentially explained by the different privacy regulations in both countries: The stricter regulations and more privacy control options available in the EU prevent users from diverting to more drastic measures such as giving up TV viewing for other activities. At the same time, the higher intention of the Dutch to watch more TV when aware of the surveillance can also be explained by the regulations. In the context of online disclosure, Brandimarte and colleagues (2013) introduced the notion of a control paradox: Having more control over sharing personal information increases the willingness to disclose information. This could apply here as well: More control given by the law increases willingness to watch TV and multitask. Future research needs to further investigate the impact of control on informed decision making regarding corporate surveillance.

Surprisingly, even though previous research found a difference between the United States and the Netherlands in terms of multitasking prevalence (Segijn & Kononova, 2018; Voorveld et al., 2014), we did not find any difference regarding the intention to change this behavior. In general, while the cross-country differences suggest an effect of stricter regulations in the EU, this finding needs to be taken with caution. While significant, the differences are rather small. In fact, in both countries, media users are rather not

inclined to change their behavior to protect themselves from corporate surveillance (the means for all chilling effect measures are below or around the midpoint of the scales).

Looking at predictors of chilling effects in the media context, the current study shows the centrality of privacy-related factors and psychological differences. In line with past research, privacy concerns increase the intention to change mobile phone settings and adjust one's multitasking behavior. As these types of chilling effects directly relate to how phone settings and usage can limit data collection, this finding confirms the central role of privacy concerns in data disclosure and privacy protection decisions shown in the past (e.g., Baruh et al., 2017). Interestingly, when it comes to changes in TV viewing, privacy concerns are more central in predicting them in the United States than in the Netherlands. This could possibly be explained by the regulatory differences described above. On the other hand, privacy cynicism did not relate to one's intention to change their behavior. As individuals who are more fatigued or cynical put less effort into making privacy decisions, which leads to them not taking protective measures (Choi et al., 2018; van Ooijen et al., 2022), one could expect that fatigue and cynicism may instead increase one's chilling effects as an alternative protection method. The findings show, however, that chilling effects can be seen as similar to other measures investigated in the past. For example, van Ooijen and colleagues (2022) found that for moderately to highly cynical people, it does not matter to what extent they believe a privacy protection measure will be effective in protecting their privacy; either way, it will not impact their protection behaviors. Future research needs to further examine the role of privacy cynicism, using multidimensional scales (Lutz et al., 2020) that take into account different facets of it such as powerlessness and resignation.

The findings also offer insights into psychological differences and their relationship to chilling effects. In particular, LO is related to the intention to change one's media behavior. The findings suggest that watching less TV or giving up TV viewing for other media-related activities is driven by LO as it involves a direct sacrifice for a future gain, namely protection from corporate surveillance. Interestingly, for changes related to the mobile device, LO only matters in the Netherlands. This potentially can be explained by overall differences in LO between the United States and the Netherlands: The Dutch culture is generally more oriented toward long-term goals (Hofstede et al., 2010).

Another cross-cultural factor, namely UA, was not related to chilling effects. Uncertainty avoidance conveys the extent to which one feels threatened by unknown situations (Hofstede et al., 2010). As corporate surveillance is not a new phenomenon and individuals are highly aware that they are susceptible to data collection by companies (Boerman, Kruijemeier, & Zuiderveen Borgesius, 2021), uncertainty does not seem to be the driving factor of reactions to surveillance. Finally, need for self-presentation is shown to not drive behavioral change in the context of the current study. This is contrary to past findings, which have shown that need for self-presentation moderates chilling effects depending on surveillance technique (Strycharz & Segijn, 2023), and individuals high in need for self-presentation are more likely to adjust their behavior for example, on social networks to maintain a good self-presentation (Abramova, Wagner, Krasnova, & Buxmann, 2017). Further research is needed to conclude what type of media behaviors are seen as constituting one's image and thus susceptible to chilling effects.

Besides the factors examined here, other factors may also relate to why an individual would give up or change their media use. For example, past research has shown that not only corporate but also so-called

social surveillance—the perception of having one’s behavior monitored by peers—drives changes in social media use (Duffy & Chan, 2019). This idea that individuals attend to their social environment and aim to meet social norms is also reflected in the spiral of silence theory that prescribes that an individual’s willingness to express their opinion is a function of how they perceive public opinion (Noelle-Neumann, 1974). When one expects a mismatch, they may chill their behavior. The effect of social surveillance on chilling effects in the media context offers a promising avenue for future research. Furthermore, the current study focuses on intentions to change media use. While this is a valuable first indication of the impact of surveillance on media behavior, future research of actual media behaviors, for example, through the analysis of digital trace data collected through data donations (Boeschoten, Ausloos, Möller, Araujo, & Oberski, 2022), is needed.

The current study carries several implications for studying chilling effects in the media context for organizations that collect data, as well as for regulators. Theoretically, this study is the first to study the predictors of chilling effects in the context of corporate surveillance and digital communication. As personal data are now central to personalized communication practices (Yun et al., 2020), understanding unintended side effects, such as chilling effects, becomes crucial. Therefore, understanding the predictors and which users are more prone to engage in such behaviors contributes to our knowledge of the ethical side effects of corporate surveillance. Moreover, examining cross-country differences contributes to our understanding of the extent to which these differences and behaviors such as chilling effects are contextual. However, future research with other countries is needed to get a more comprehensive understanding of these contextual effects.

Practically, the findings can help organizations that collect and process data of media users to improve the quality of data-driven communication. Because the quality of data that represent the actual preferences of users is a crucial element of effective data-driven strategies, the change in media behavior in response to corporate surveillance leads to lower quality of communication messages (Yun et al., 2020). This also impacts, for example, media metrics collected by companies such as Nielsen. Hence, it is crucial for organizations to understand why data collection causes changes in people’s media behaviors.

Finally, a change in behavior because of corporate surveillance suggests that modern communication strategies can potentially undermine personal autonomy (Büchi et al., 2020). In fact, modifications of behavior due to external influences negatively impact identity construction as individuals restrain themselves from creativity and undertaking social identity experiments. Chilling effects in media behavior can be seen as an extreme form of social conformity and a threat to intellectual privacy as individuals limit their own access to information by not being able to consume media freely from the gaze of governments and corporations, which forms a danger to free and healthy democratic systems (Penney, 2021).

The current study also shows that the prevalence of chilling effects partially differs depending on the national and regulatory context. Lower chilling effect intentions in the Netherlands suggest to some extent the effectiveness of current privacy regulations that may prevent EU nationals from taking extreme protective measures. While this can be seen as good news for the regulators, who are able to protect the autonomy of individuals, at the same time, they need to consider to what extent the protection offered to citizens results in a feeling of safety that may put individual vigilance to sleep and lead to more data sharing.

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