

5-15-2019

# UNCOVERING THE PRIVACY PARADOX: THE INFLUENCE OF DISTRACTION ON DATA DISCLOSURE DECISIONS

Moritz Becker

*LMU Munich*, [m.becker@bwl.lmu.de](mailto:m.becker@bwl.lmu.de)

Susanne Maria Klausung

*University of Oxford*, [susanne.klausung@gtc.ox.ac.uk](mailto:susanne.klausung@gtc.ox.ac.uk)

Thomas Hess

*University of Munich (LMU)*, [thess@bwl.lmu.de](mailto:thess@bwl.lmu.de)

Follow this and additional works at: [https://aisel.aisnet.org/ecis2019\\_rip](https://aisel.aisnet.org/ecis2019_rip)

---

## Recommended Citation

Becker, Moritz; Klausung, Susanne Maria; and Hess, Thomas, (2019). "UNCOVERING THE PRIVACY PARADOX: THE INFLUENCE OF DISTRACTION ON DATA DISCLOSURE DECISIONS". In Proceedings of the 27th European Conference on Information Systems (ECIS), Stockholm & Uppsala, Sweden, June 8-14, 2019. ISBN 978-1-7336325-0-8 Research-in-Progress Papers. [https://aisel.aisnet.org/ecis2019\\_rip/69](https://aisel.aisnet.org/ecis2019_rip/69)

This material is brought to you by the ECIS 2019 Proceedings at AIS Electronic Library (AISeL). It has been accepted for inclusion in Research-in-Progress Papers by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# **UNCOVERING THE PRIVACY PARADOX: THE INFLUENCE OF DISTRACTION ON DATA DISCLOSURE DECISIONS**

*Research in Progress*

Becker, Moritz, LMU Munich, Munich, Germany, m.becker@bwl.lmu.de

Klausing, Susanne, University of Oxford, Oxford, UK, susanne.klausing@gtc.ox.ac.uk

Hess, Thomas, LMU Munich, Munich, Germany, thess@bwl.lmu.de

## **Abstract**

*The discrepancy between individuals' intention to disclose data and their actual disclosure behaviour is called the privacy paradox. Although a wide range of research has investigated the privacy paradox, it remains insufficiently understood due to mental processes' role in decision-making being mostly neglected. This research-in-progress provides a theoretical concept that examines the cognitive processes underlying data disclosure decisions to provide a better understanding of the privacy paradox. We apply the Elaboration Likelihood Model (ELM), which suggests that the mental shortcuts that individuals take when making their actual data disclosure decision, which differs from their self-reported data disclosure intention, cause the privacy paradox. We propose a two-step, mixed method approach comprising a survey and an online experiment to empirically explore the intended and actual data disclosure. The study takes theoretical and methodological issues in prior literature into account and enhances our understanding of individuals' paradoxical data disclosure behaviour from a psychological point of view.*

*Keywords: Privacy Paradox, Elaboration Likelihood Model, Dual Process Theory, Distraction.*

## 1 Introduction

Privacy concerns refer to individuals' unease about losing their information privacy. Across application fields, privacy concerns are a major obstacle to system adoption, usage and data disclosure. Nevertheless, individuals who maintain that they are concerned about their privacy and consider the risks of disclosing their data do not engage in protective behaviour when actually making data disclosure decisions (Norberg et al., 2007). The latter phenomenon is called the privacy paradox. Owing to abundant research on the privacy paradox, we know that individuals' intention to disclose data deviates from their actual data disclosure behaviour. However, very little research examines the mental processes leading to the privacy paradox and existing research lacks a theoretical and/or methodological basis.

With regard to the theoretical basis, the applied approaches either assume decision-making based on a risk-belief calculation or based on very little to no risk assessment. While these rational perspectives appear reasonable in the abstract, they are unlikely to reflect the reality of individuals' online behaviour. Given the time-sensitive nature of individuals' online decision-making, their actions are probably less deliberate and more impulsive. Psychological limitations, which are often unconscious, might bound them. Individuals' decision regarding their privacy may override their general attitude and tendencies in specific situations, thus changing it. Consequently, studies taking unconscious decisions into account have recently become popular (Buck et al., 2014; Wu et al., 2019). However, to date there is as yet no consensus regarding the mental processes on which users rely when deciding on data disclosure (Barth and de Jong, 2017).

With regard to the methodological basis, individuals' mental processes are difficult to identify with traditional tools such as surveys and interviews, which rely on self-reported behaviour and are therefore prone to a social desirability bias, which is the bias that arises because individuals tend to report behaviour they consider socially accepted (Spector, 2011). Past studies of privacy relied mainly on questionnaires to investigate individuals' privacy consciousness, which may have led to problematic results, because people are less likely to think of or mention their intuitive concern when asked to think about it. The literature therefore still lacks observations of (not questions about) how individuals' mental processes operate and relate to one another in their data disclosure decisions.

To close these two research gaps, we examine individuals' information processing related to data disclosure in a high-sensitive data environmental setting. We chose this setting, because privacy concerns have proved to be more important in the context of health information technologies (health ITs) than in that of other technological devices. We address the theoretical research issues using an Elaboration Likelihood Model (ELM) and take into account that individuals' information processing and decisions "are enacted by simple, relatively automatic cognitive heuristics processes that are derived from past experiences and associations" (Dinev, 2014, p. 100). As a dual-process model, the ELM presumes that, depending on individuals' motivation and ability, they either process information through cognitive processes via the central route (i.e. based on conscious risk-benefit calculation) or through intuitive processes in the peripheral route (i.e. based on unconscious emotional processing) when making decisions. According to Miarri and DeBono (2007), we use advertising as distraction stimuli for the peripheral route to interrupt individuals' cognitive processes and influence their data disclosure decision through their intuitive decision processes as "distraction can affect the ability of a person to process a message, and further determine the systematic and heuristic processing" (Wu et al., 2019, p. 12). Therefore, we ask:

*RQ:* How does distraction influence individuals' data disclosure?

To answer this research question and address the methodological issues that prior studies raised, we apply a two-step, mixed method approach (i.e. a survey and a lab experiment) and measure actual decisions instead of relying on self-reported data. In the process we take the unconscious human decision-making into consideration and mitigate the social desirability bias. By applying the psychological ELM on data disclosure decisions, the study expands existing research in an interdisciplinary way and extends our theoretical knowledge of the privacy paradox. Furthermore, our research approach cap-

tures the actual data disclosure behaviour more realistically than most of the prior studies based on self-reported behaviour, thereby laying the foundation for future research (Kokolakis, 2017). From a practical perspective, a better understanding of individuals' cognitive processes when disclosing data could help governments establish adequate regulations to protect individuals' data privacy and could provide practical guidance on redesigning new health IT interfaces.

## **2 Theoretical Background**

### **2.1 Privacy Paradox**

In information privacy research, the privacy paradox describes the phenomenon that users' intention to disclose data often deviates from their actual data disclosure behaviour. Individuals maintain that they are concerned about their privacy and consider the risks of data disclosure, but don't engage in protective behaviour when actually making data disclosure decisions (Norberg et al., 2007).

Studies have shown that there is a discrepancy between intention and actual data disclosure in an online setting (Acquisti and Grossklags, 2005). Although users show an interest in their privacy and are concerned about potential data misuse, they nevertheless don't engage in protective online behaviour (Tsai et al., 2011). Moreover, the concepts of risk awareness and actual disclosure behaviour are not compatible, because the actual data disclosure is frequently greater than the intended disclosure (Norberg et al., 2007). Since users' privacy intentions and actual decisions do not change, this might explain the latter dichotomy. Incentives such as retail value or personalized services cause users to disclose information despite their privacy concerns (Xu et al., 2011). Investigating data disclosure in application purchases, Buck et al. (2014) show that users' find their social group's details and that of the Appstore more relevant than information about third party usage of data. Consequently, even though individuals communicate their privacy attitudes and needs, their decision to download an application is not in accordance with their stated intentions.

Individual do not consider all information equally sensitive or private. The type of information that individuals are asked to disclose has an impact on their perception, processing and behaviour, and therefore on the privacy paradox. A variety of research investigates the emergence and existence of the privacy paradox. However, a lot of the research on the privacy paradox examines general online activities, focussing specifically on e-commerce and social networking activities (e.g. Chen and Chen, 2015; Jensen et al., 2005). Our research focuses on health IT, whose data are highly sensitivity. Health ITs therefore monitor a range of biometrical data and give individuals direct access to their personal health data, which can contribute to their health, facilitate preventive care and support the management of a chronic illness. Privacy aspects have been already proved more important in the context of such health IT than in other contexts. More precisely, individuals are more willing to provide their demographic and lifestyle information to marketers than personal identifiers (i.e. name or address) or information on their health status (e.g. blood pressure, pulse or personal health records) (Milne et al., 2017).

### **2.2 Related Work**

Many studies have examined the privacy paradox by approaching it from different points of view and using different methodologies. After reviewing the existing literature, we identify four main theoretical and methodological approaches and develop a 4x4 privacy paradox matrix that illustrates the frequency with which the different combinations appear (see Table 1).

The first theoretical approach is based on calculus theory, which assumes that individuals compare the benefits and the risks when deciding on data disclosure (e.g. the risks and benefits of data disclosure, or of sharing personal information to connect to others on social media sites). The second theoretical approach uses dual-process theory to explain the privacy paradox, as it assumes there is duality in cognition. For instance, Phelan et al. (2016) research the privacy paradox by examining the duality of privacy concerns as intuitive and taking concerns into account. A third stream of literature focuses on the constraints in decision-making that influence individuals' data disclosure behaviour (e.g. structural

or psychological). These studies are based on concepts such as bounded rationality or cognitive heuristics. The fourth literature stream explains the privacy paradox by, amongst others, applying sociological theories, such as, for instance, social representation theory (Oetzel and Gonja, 2011). These four research streams use various kinds of methodological approaches, a lot of them focus on surveys and experiments. While a significant number of the surveys rely on convenience samples (raising issues of validity) and self-reported data (raising issues of a social desirability bias), existing experiments find it hard to simulate realistic contexts (Kokolakis, 2017).

Methodological Approach	Surveys	Qualitative Interviews /Focus Groups	Experiments	Mixed Methods or Others
<b>Theoretical Approach</b>				
<b>Calculus Theories</b>	Dinev and Hart (2006) Jiang et al. (2013) Debatin et al. (2009) Stutzman et al. (2012) Chen and Chen (2015) Pentina et al. (2016) Hughes-Roberts (2013) Quinn (2016)	Lee et al. (2013)	Xu et al. (2011) Motiwalla et al. (2014) (Norberg et al., 2007) Tsai et al. (2011)	Ellison et al. (2011) Poikela et al. (2015)
<b>Dual-Process Theories</b>		Phelan et al. (2016)	Sundar et al. (2013)	
<b>Constraints in Decision-making</b>	Zafeiropoulou et al. (2013) Acquisti and Grossklags (2005) Cho et al. (2010) Buck et al. (2014) Jia et al. (2015) Taddicken (2014)	Blank et al. (2014) Gambino et al. (2016) Miltgen and Peyrat-Guillard (2014)	Baek (2014) Jensen et al. (2005) Kehr et al. (2015) Wakefield (2013)	Pöttsch (2009)
<b>Others (e.g. Social Representation Theory)</b>	Lutz and Strathoff (2014) Oetzel and Gonja (2011) Dienlin and Trepte (2015) Staddon et al. (2013) Son and Kim (2008)		Mothersbaugh et al. (2012)	Shklovski et al. (2014) Young and Quan-Haase (2013)

Table 1. 4x4 Method: Theory Privacy Paradox Matrix

### 2.3 Elaboration Likelihood Model as Theoretical Conceptualization

Research on psychology and consumer behaviour has widely adopted a dual-process view on individuals' information processing. This psychological view of the dual-process model of cognition explains the way the brain processes information and makes a decision (Kahneman, 2003). Empirical studies have found a strong relationship between affect and individual decision-making. Parallel with rule-based processing, there is also an affect-based process through which individuals make quick and unconscious decisions based on their past experiences and current emotions (Slovic et al., 2007). The ELM provides one explanation for this decision-making process. This method is often applied to explain the contradiction in decisions made under conditions of uncertainty. The ELM presumes that, depending on the deciders' motivation and ability, either the central route or the peripheral route process information when they make decisions (Figure 1). The peripheral route is a fast, automatic and intuitive process, which is generally described as a form of universal cognition that both humans and animals share (Kahneman, 2003). In contrast, the central route is slow, deliberately controlled and reasoned, making use of the cognitive working memory system. This route generates justification via logic and evidence and processes information consciously weighing risks and benefits. While the peripheral route is unconscious, the central processes are more capable of consciousness and control the quality of impressions (Lowry et al., 2012; Petty and Cacioppo, 1986).

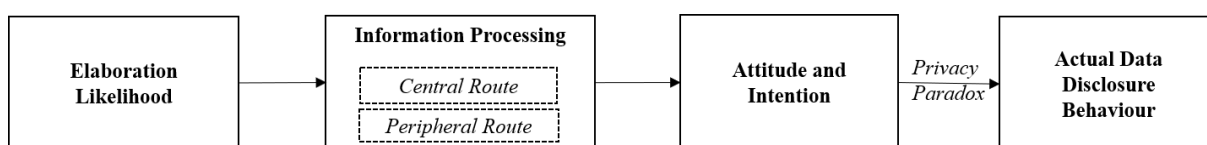


Figure 1. Theoretical Framework of Dual Privacy Information Processing

### 3 Research Model and Hypothesis Development

On the one hand, scholars have offered the situation-specific privacy calculus, in which situational factors affect judgments of risks and benefits, as a possible explanation for the privacy paradox, at least regarding the dichotomy between privacy-related concerns and actual data disclosure behaviour. In contrast, individuals usually make decisions rapidly, basing these on their intuitive concern (i.e. feeling or impression) without subsequently analysing the situation (Phelan et al., 2016). Consequently, the peripheral path of information processing already engenders a change in behaviour before an individual's relevant attitude changes (Petty and Cacioppo, 1986). Accordingly, the peripheral route leads individuals to process information unconsciously and emotionally. Thus, individuals' behaviour could be changed directly. The heuristics on which it is based exert an influence on the automatic decision, which is made regardless of the semantic content. Individuals' shortcuts when considering whether potential privacy risks are worth taking, are entirely based on their personal and intuitive assessment (Gambino et al., 2016). In this study, we attempt to explain the privacy paradox by means of psychological aspects. In accordance with other studies (Miarmi and DeBono, 2007; Petty et al., 1976; Sagarin et al., 2003; Wu et al., 2019), we assume that distraction leads to the taking of a mental shortcut (i.e. peripheral route), which can affect the discrepancy between an individual's attitude/intention and actual behaviour by directing individuals' information processing from the central route to the peripheral route (see Figure 2). Distraction inhibits individuals ability to process an information, they are likely to process the message peripherally under such conditions, meaning that they will use heuristics to simplify the information (Petty et al., 1976). Thus, interruptions in their cognitive processing (i.e. central route) affect not only individuals' decision-making ability, but the ways in which we are persuaded by incoming information as well (Miarmi and DeBono, 2007).

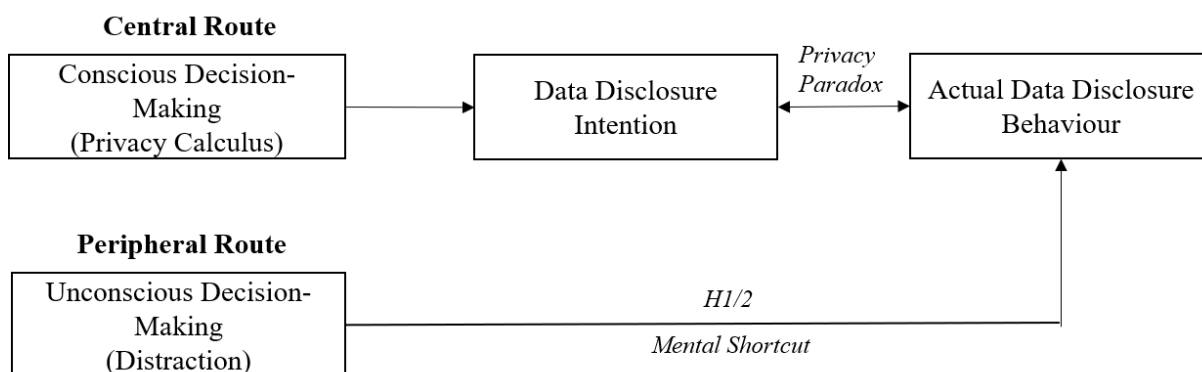


Figure 2. Detailed Research Model of Peripheral Information Processing

Rational models overlook the peripheral processing route. When following the peripheral route, attitudes form, change, and direct behaviour without extensive information processing and deliberate analysis. Instead, simple, relatively automatic cognitive heuristic processes derived from past experiences and associations enact information processing and decisions. Scholars have shown that affect, emotional state, moods and other factors tend to have an impact on the route through which a decision is processed. Furthermore small distractions from a task can disrupt the train of thoughts (Altmann et al., 2014; Speier et al., 2003). For instance, Rejer and Jankowski (2017) investigate the influence of online advertising disrupting cognitive processes and find that the disruption leads to a decrease in concentration. Furthermore, research shows that the intrusion of online advertising represents a cognitive distraction and absorbs a portion of the resources available to devote to other cognitive tasks (Miarmi and DeBono, 2007; Sagarin et al., 2003). Following this argumentation, we propose that distraction through advertisement leads to lower concentration and, therefore, higher data disclosure. We hypothesize that:

H1: Distraction during individuals' information processing increases their data disclosure.

Recent studies have found that two different decision-making systems seem to affect people (Evans, 2008). For instance, online advertisements produce distracting effects during online tasks by competing for the limited resources available in working memory to attend to and process task-relevant information (Sagarin et al., 2003). Furthermore, their research indicated that these distractions might impede an individual’s ability to successfully complete an otherwise routine mental task, as less cognitive resources are available to attend to the decision-making or judgment task at hand. There is fairly general agreement that attention is necessary for consciousness. Dehaene et al. (2006) state that considerable evidence indicates that conscious perception cannot occur without attention. According to the ELM, arguments are thoroughly considered via the central route during information processing and the ultimate decision is based on the quality of the arguments. However, a distraction leading to information processing via the peripheral route can interrupt the process of central decision-making. The distraction thus leads to little or no critical reflection on the arguments and stimuli (e.g. design) influence the decision. We claim that the distraction through the advertisement causes information processing via the peripheral instead of the central route, leading to the higher data disclosure (Tye-Williams, 2018). We hypothesize that:

H2: Distraction causes the information in a decision process to be peripherally (instead of centrally) processed.

## 4 Methodology

Lots of the prior literature has methodological difficulties. First, the intention to disclose data is often used as the dependent variable, as the authors assume that disclosure intention captures the actual data disclosure. Second, these studies mainly rely on self-reported data instead of actual behaviour, thus potentially causing a social desirability bias. Furthermore, the majority of the experiments investigating the privacy paradox test for different aspects than the cognitive processes in decision-making, which means that there is a research gap in respect of the various explanations that experiments provide of the mental processes in data disclosure decisions (Baek, 2014; Lee et al., 2013; Xu et al., 2011). We address these shortcomings and develop a two-step, mixed-method approach (online survey and experiment) that applies a more realistic disclosure decision and captures the actual data disclosure instead of using self-reported data (see Figure 3).

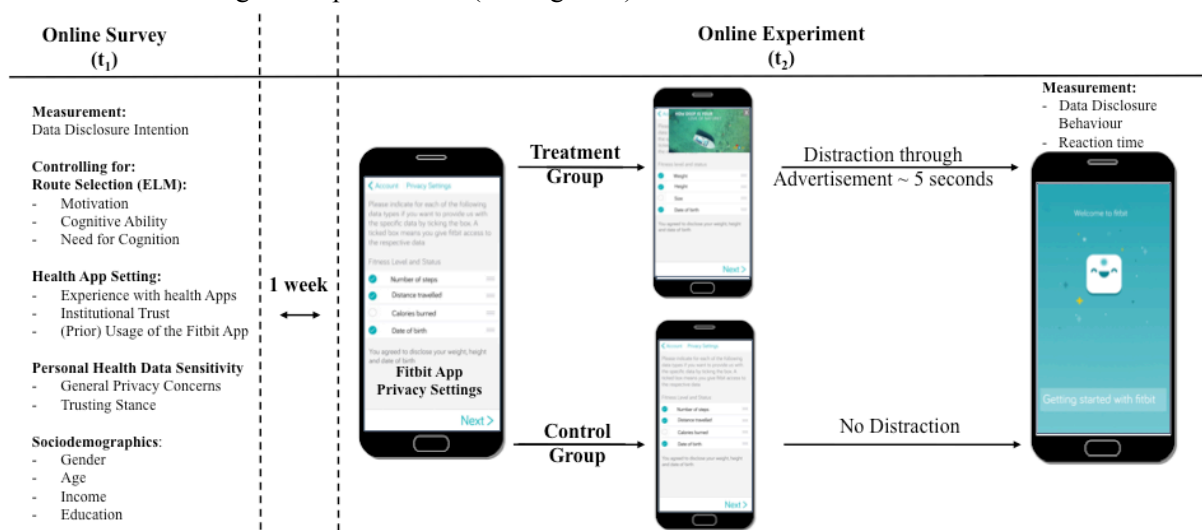


Figure 3. Two-step, Mixed Method Research Design

Survey (t<sub>1</sub>): In the first study, we conduct an online survey to evaluate individuals’ attitudes and feelings about privacy and data disclosure to health ITs (i.e. health applications). The participants are

asked questions about their general attitude towards data disclosure and their concerns and awareness of data misuse in healthcare settings. In terms of the ELM approach, we use established variables, such motivation (Guay et al., 2000), cognitive ability (Flynn and Goldsmith, 1999) and deed for cognition (Cacioppo et al., 1984) as controls. Owing to our study being based on the *Fitbit* app, we asked whether the participants had prior experience with the app, and controlled their institutional trust (Malhotra et al., 2004) and general health status (Lorig et al., 1996). To measure their data intention disclosure, we asked the participants whether they were willing to disclose different types of data to a general fitness application, which they have to do by ticking the a box related to each data type.

Online experiment ( $t_2$ ): After one week, the participants joined the second study ( $t_2$ ), the online experiment. The length of the interim period was chosen to ensure that the survey would not influence the participants’ decision-making in the experiment. The participants were randomly assigned to a control and a treatment group, thus ensuring that there was no systematic difference within and between the two groups. First, we controlled for a potential change in the participants’ privacy attitude during the interim period by asking what, if any, information they had gained about privacy-related topics during that week. Afterwards, all the participants were introduced to the *Fitbit* app, which tracks and shares fitness data. To avoid variance within the data and to create a realistic situation, the *Fitbit* privacy setting and design were changed for the experiment interface (Fitbit, 2018). To measure the actual data disclosure behaviour, we introduced the application to the participants, who were asked to adapt the privacy settings by ticking the data types they were willing to disclose. To ensure comparability between the data disclosure intention and actual data disclosure, the data types in the experiment and the survey were the same.

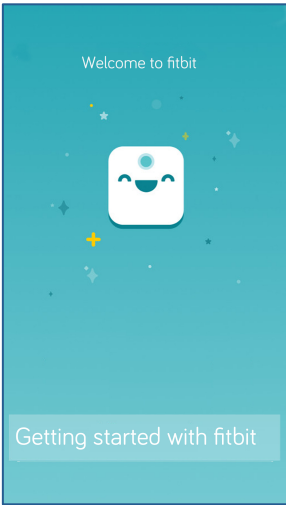
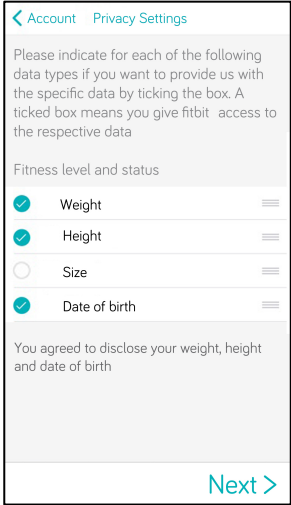
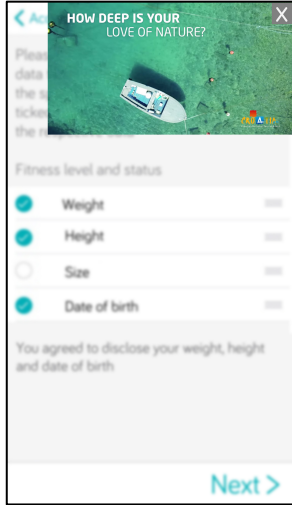
First Screen of the <i>Fitbit</i> App for both Groups	Second Screen for Control Group (without Advertisement)	Second Screen for Treatment Group (Advertisement after 5 Seconds)
		

Figure 4. Screenshot of the Treatment Setting in the Online Experiment.

Treatment in the Online Experiment: While the control group was just asked to read through the statements and adapt them, an advertisement which appeared for around five seconds distracted the treatment group (see Figure 4). The advertisement caused a distraction, decreasing the treatment group’s concentration on the decision-making process, which we require to test H1 and H2 (Altmann et al., 2014; Rejer and Jankowski, 2017). We confronted the treatment group with the advertisement about 2-3 seconds after the privacy setting screen had opened, because if the distraction caused a break in the content, the interruption would be greater (Edwards et al., 2002). Regarding the type of advertisement, research shows that the presented content should be gender neutral to influence all the participants equally. Since the appearance of a brand and people in an advertisement affects genders differently, we chose a state-promoted holiday advertisement rather than a company-promoted one and one



showing a landscape rather than people (Cramphorn, 2011). Furthermore, holiday promotions are not related to our study's topic and contain little information that could cause greater distraction (Edwards et al., 2002). However, the participants had to actively close the advertisement to continue adapting the privacy settings, which led to even more distraction, as they were required to undertake an action.

## **5 Expected Contribution**

First, the existing literature relies heavily on users' rationality in decision-making, since studies taking unconscious decision making into account have only recently become popular (Kokolakis, 2017; Wu et al., 2019). As yet, there is no consensus regarding the mental processes on which users rely upon when deciding on data disclosure (Adjerid et al., 2013; Adjerid et al., 2014; Barth and de Jong, 2017). This study is aimed at gaining a better understanding of the privacy paradox from a psychological perspective by arguing that the discrepancy between attitude and behaviour is inherent in instinct (peripheral route). By using a dual-process model (i.e. ELM), we address previous studies' theoretical issues and take into account that individuals process information automatically and by means of basic heuristic processes which depend on past experiences (Dinev, 2014). By applying the psychological ELM to data disclosure decisions and testing decision-making by means of a mixed method approach, the study provides insights into the mental shortcuts users take for their data disclosure decisions, which cause the privacy paradox. Consequently, we answer the call that Barth and de Jong (2017) made for research to take unconscious human decision-making into account.

Second, to our best knowledge, this study is the first to investigate distraction as an influencing factor on information processing in data disclosure decisions. By applying distraction's effect to the privacy paradox, we enhance our theoretical understanding and support the findings of Angst and Agarwal (2009) as well as Dinev et al. (2015), who highlight the importance of dual-process models in privacy research and health contexts. Furthermore, while most of the existing privacy research focuses on e-commerce and social network sites, we examine how individuals' information processing affects their data disclosure in the context of health IT, which is considered a highly sensitive data environment (Becker et al., 2017; Milne et al., 2017). Privacy concerns have proven to be especially important in the context of health IT. By focusing on health data, the study builds on existing findings on the data disclosure related to health information by means of a dual-process theory.

Third, our research design addresses two methodological issues in privacy research. The use of the intention to disclose information as a dependent variable and the assumption that this is related to the actual data disclosure is a methodological concern in prior literature. However, the meta-analysis by Baruh et al. (2017) comes to the conclusion that such a connection is only conditionally valid. The present study analyses actual data disclosure as the dependent variable, which provides more realistic results. Another methodological concern in prior literature relates to the analysis of self-reported behavioural data. Self-reported data are prone to a social desirability bias. Our study's mixed method setting captures actual disclosure behaviour more realistically (Kokolakis, 2017). By using a two-step, mixed method approach (i.e. survey and experiment), this study is the only one in the thematic field that has produced quantitative results that have been tried and tested in practice in respect of both the intended and actual disclosure of data. In contrast to previous literature, our study tests for actual behaviour rather than relying on self-reported data. By measuring the reaction time in the experiment, we can improve our understanding of the peripheral route and further uncover the privacy paradox from an information processing perspective.

Fourth, legislative privacy regulation has been justified in terms of users' privacy concerns, but the discrepancy between these concerns and their actual disclosure undermines this justification. Understanding users' cognitive processes during information disclosure better could help governments establish adequate regulations for users' data security and could provide guidance on redesigning health IT interfaces.

## References

- Acquisti, A. and J. Grossklags (2005). "Privacy and Rationality in Individual Decision Making." *IEEE Security & Privacy* 3 (1), 26-33.
- Adjerid, I., A. Acquisti, L. Brandimarte and G. Loewenstein (2013). "Sleights of Privacy: Framing, Disclosures, and the Limits of Transparency." ACM, Newcastle, UK, 9.
- Adjerid, I., A. Acquisti and G. Loewenstein (2014). "Framing and the Malleability of Privacy Choices." Pennsylvania, USA, 1-39.
- Altmann, E. M., J. G. Trafton and D. Z. Hambrick (2014). "Momentary Interruptions Can Derail the Train of Thought." *Journal of Experimental Psychology* 143 (1), 215–226.
- Angst, C. M. and R. Agarwal (2009). "Adoption of Electronic Health Records in the Presence of Privacy Concerns: The Elaboration Likelihood Model and Individual Persuasion." *MIS Quarterly* 33 (2), 339-370.
- Baek, Y. M. (2014). "Solving the Privacy Paradox: A Counter-Argument Experimental Approach." *Computers in Human Behavior* 38 33–42.
- Barth, S. and M. de Jong (2017). "The Privacy Paradox – Investigating Discrepancies between Expressed Privacy Concerns and Actual Online Behavior: A Systematic Literature Review." *Telematics and Informatics* 34 (1), 1038–1058.
- Baruh, L., E. Secinti and Z. Cemalcilar (2017). "Online Privacy Concerns and Privacy Management: A Meta-Analytical Review." *Journal of Communication* 67 (1), 26-53.
- Becker, M., C. Matt, T. Widjaja and T. Hess (2017). "Understanding Privacy Risk Perceptions of Consumer Health Wearables—an Empirical Taxonomy." In: *Proceedings of the 38th International Conference on Information Systems (ICIS)* Seoul, South Korea, 1-22.
- Blank, G., G. Bolsover and E. Dubois (2014). A New Privacy Paradox: Young People and Privacy on Social Network Sites, Annual Meeting of the American Sociological Association San Francisco, California.
- Buck, C., C. Horbel and C. C. Germelmann (2014). The Unconscious App Consumer: Discovering and Comparing the Information-Seeking Patterns among Mobile Application Consumers, Proceedings of the 22nd European Conference on Information Systems (ECIS) Isreal, Tel Aviv.
- Cacioppo, J. T., R. E. Petty and C. Feng Kao (1984). "The Efficient Assessment of Need for Cognition." *Journal of Personality Assessment* 48 (3), 306-307.
- Chen, H.-T. and W. Chen (2015). "Couldn't or Wouldn't? The Influence of Privacy Concerns and Self-Efficacy in Privacy Management on Privacy Protection." *Cyberpsychology, Behavior, and Social Networking* 18 (1), 13-19.
- Cho, H., J.-S. Lee and S. Chung (2010). "Optimistic Bias About Online Privacy Risks: Testing the Moderating Effects of Perceived Controllability and Prior Experience." *Computers in Human Behavior* 26 (5), 987-995.
- Cramphorn, M. F. (2011). "Gender Effects in Advertising." *International Journal of Market Research* 53 (2), 147-170.
- Debatin, B., A.-K. Horn and B. N. Hughes (2009). "Facebook and Online Privacy: Attitudes, Behaviors, and Unintended Consequences." *Journal of Computer-Mediated Communication* 15 83-108.

- Dehaene, S., J.-P. Changeux, L. Naccache, J. Sackur and C. Sergent (2006). "Conscious, Preconscious, and Subliminal Processing: A Testable Taxonomy." *Trends in cognitive sciences* 10 (5), 204-211.
- Dienlin, T. and S. Trepte (2015). "Is the Privacy Paradox a Relic of the Past? An in-Depth Analysis of Privacy Attitudes and Privacy Behaviors." *European Journal of Social Psychology* 45 (3), 285-297.
- Dinev, T. (2014). "Why Would We Care About Privacy?" *European Journal of Information Systems* 23 97-102.
- Dinev, T. and P. Hart (2006). "An Extended Privacy Calculus Model for E-Commerce Transactions." *Information Systems Research* 17 (1), 61-80.
- Dinev, T., A. R. McConnell and H. J. Smith (2015). "Research Commentary—Informing Privacy Research through Information Systems, Psychology, and Behavioral Economics: Thinking Outside the "Apco" Box." *Information Systems Research* 26 (4), 639-655.
- Edwards, S. M., H. Li and J.-H. Lee (2002). "Forced Exposure and Psychological Reactance: Antecedents and Consequences of the Perceived Intrusiveness of Pop-up Ads." *Journal of Advertising* 31 (3), 83-95.
- Ellison, N. B., J. Vitak, C. Steinfield, R. Gray and C. Lampe (2011). Negotiating Privacy Concerns and Social Capital Needs in a Social Media Environment. In *Privacy Online: Perspectives on Privacy and Self-Disclosure in the Social Web* (Trepte, S. and L. Reinecke Ed.), 19-32, Springer-Verlag, Berlin, Heidelberg.
- Evans, J. S. B. (2008). "Dual-Processing Accounts of Reasoning, Judgment, and Social Cognition." *Annu. Rev. Psychol.* 59 255-278.
- Fitbit (2018). *Fitbit Privacy Policy: Information We Collect*. [https://www.fitbit.com/legal/privacy-policy - info-we-collect](https://www.fitbit.com/legal/privacy-policy-info-we-collect) (visited on 25.11.2018).
- Flynn, L. R. and R. E. Goldsmith (1999). "A Short, Reliable Measure of Subjective Knowledge." *Journal of Business Research* 46 57-66.
- Gambino, A., J. Kim, S. Sundar, J. Ge and M. B. Rosson (2016). User Disbelief in Privacy Paradox: Heuristics That Determine Disclosure, Proceedings of the 2016 CHI Conference, 2837-2843.
- Guay, F., R. J. Vallerand and C. Blanchard (2000). "On the Assessment of Situational Intrinsic and Extrinsic Motivation: The Situational Motivation Scale (Sims)." *Motivation and Emotion* 24 (3), 175-213.
- Hughes-Roberts, T. (2013). Privacy and Social Networks: Is Concern a Valid Indicator of Intention and Behaviour?, International Conference on Social Computing, 909-912.
- Jensen, C., C. Potts and C. Jensen (2005). "Privacypractices of Internet Users: Self-Reports Versus Observed Behavior." *International Journal for Human-Computer Studies* 63 (1), 203-227.
- Jia, H., P. Wisniewski, H. Xu, M. B. Rosson and J. Carroll (2015). Risk-Taking as a Learning Process for Shaping Teen's Online Information Privacy Behaviors, Proceedings of the 18th ACM Conference on computer supported cooperative work & social computing, 583-599.
- Jiang, Z. J., C. Heng and B. Choi (2013). "Privacy Concerns and Privacy-Protective Behavior in Synchronous Online Social Interactions." *Information Systems Research* 24 (3), 579-595.
- Kahneman, D. (2003). "Maps of Bounded Rationality: Psychology for Behavioral Economics." *American economic review* 93 (5), 1449-1475.
- Kehr, F., T. Kowatsch, D. Wentzel and E. Fleisch (2015). "Blissfully Ignorant: The Effects of General Privacy Concerns, General Institutional Trust, and Affect in the Privacy Calculus." *Information Systems Journal* 25 (6), 607-635.

- Kokolakis, S. (2017). "Privacy Attitudes and Privacy Behaviour: A Review of Current Research on the Privacy Paradox Phenomenon." *Computers and Security* 64 122-134.
- Lee, H., H. Park and J. Kim (2013). "Why Do People Share Their Context Information on Social Network Services? A Qualitative Study and an Experimental Study on Users' Behavior of Balancing Perceived Benefit and Risk." *International Journal of Human-Computer Studies* 71 862-877.
- Lorig, K., A. Stewart, P. Ritter, V. M. Gonzalez, D. Laurent and J. Lynch (1996). *Outcome Measures for Health Education and Other Health Care Interventions* Thousand Oaks: SAGE Publications.
- Lowry, P. B., G. Moody, A. Vance, M. Jensen, J. Jenkins and T. Wells (2012). "Using an Elaboration Likelihood Approach to Better Understand the Persuasiveness of Website Privacy Assurance Cues for Online Consumers." *Journal of the American Society for Information Science and Technology* 63 (4), 755-776.
- Lutz, C. and P. Strathoff (2014). *Privacy Concerns and Online Behavior – Not So Paradoxical after All? Viewing the Privacy Paradox through Different Theoretical Lenses.* [https://www.alexandria.unisg.ch/228096/1/Lutz\\_Strathoff.pdf](https://www.alexandria.unisg.ch/228096/1/Lutz_Strathoff.pdf) (visited on 24.11.2018).
- Malhotra, N. K., S. S. Kim and J. Agarwal (2004). "Internet Users' Information Privacy Concerns (Iuipc): The Construct, the Scale, and a Causal Model." *Information Systems Research* 15 (4), 336-355.
- Miarmi, L. and K. G. DeBono (2007). "The Impact of Distractions on Heuristic Processing: Internet Advertisements and Stereotype Use 1." *Journal of Applied Social Psychology* 37 (3), 539-548.
- Milne, G. R., G. Pettinico, F. M. Hajjat and E. Markos (2017). "Information Sensitivity Typology: Mapping the Degree and Type of Risk Consumers Perceive in Personal Data Sharing." *Journal of Consumer Affairs* 51 (1), 133-161.
- Miltgen, C. L. and D. Peyrat-Guillard (2014). "Cultural and Generational Influences on Privacy Concerns: A Qualitative Study in Seven European Countries." *European Journal of Information Systems* 23 103-125.
- Mothersbaugh, D. L., W. K. Foxx, S. E. Beatty and S. Wang (2012). "Disclosure Antecedents in an Online Service Context: The Role of Sensitivity of Information." *Journal of Service Research* 15 (1), 76-98.
- Motiwalla, L. F., X. Li and X. Liu (2014). Privacy Paradox: Does Stated Privacy Concerns Translate into the Valuation of Personal Information?, Proceedings of the 14th Pacific Asia Conference on Information Systems (PACIS) Chengdu, China.
- Norberg, P., D. Horne and D. Horne (2007). "The Privacy Paradox: Personal Information Disclosure Intentions Versus Behaviors." *The Journal of Consumer Affairs* 41 (100-126).
- Oetzel, M. C. and T. Gonja (2011). The Online Privacy Paradox: A Social Representations Perspective, CHI 2011 Vancouver, BC, Canada.
- Pentina, I., L. Zhang, H. Bata and Y. Chen (2016). "Exploring Privacy Paradox in Information-Sensitive Mobile App Adoption: A Cross-Cultural Comparison." *Computers in Human Behavior* 65 409-419.
- Petty, R. E. and J. T. Cacioppo (1986). *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. New York, London: Springer-Verlag.
- Petty, R. E., G. L. Wells and T. C. Brock (1976). "Distraction Can Enhance or Reduce Yielding to Propaganda: Thought Disruption Versus Effort Justification." *Journal of Personality and Social Psychology* 34 (5), 874-884.

- Phelan, C., C. Lampe and P. Resnick (2016). It's Creepy, but It Doesn't Bother Me, CHI 2016 San Jose, CA, USA.
- Poikela, M., R. Schmidt, I. Wechsung and S. Möller (2015). Flashpolling Privacy: The Discrepancy of Intention and Action in Location-Based Poll Participation, Adjunct Proceedings of the 2015 ACM International Joint Conference on pervasive and ubiquitous computing and proceedings of the 2015 acm international symposium on wearable computers, 813-818.
- Pötzsch, S. (2009). "Privacy Awareness: A Means to Solve the Privacy Paradox?" Springer Berlin Heidelberg, Berlin, Heidelberg, 226-236.
- Quinn, K. (2016). "Why We Share: A Uses and Gratifications Approach to Privacy Regulation in Social Media Use." *Journal of Broadcasting & Electronic Media* 60 (1), 61-86.
- Rejer, I. and J. Jankowski (2017). "Brain Activity Patterns Induced by Interrupting the Cognitive Processes with Online Advertising" *Cognitive Processing* 18 (4), 419-430
- Sagarin, B. J., M. A. Britt, J. D. Heider, S. E. Wood and J. E. Lynch (2003). "Bartering Our Attention: The Distraction and Persuasion Effects of on-Line Advertisements." *Cognitive Technology* 8 (1), 4-17.
- Shklovski, I., S. Mainwaring, H. Skúladóttir and H. Borgthorsson (2014). Leakiness and Creepiness in App Space: Perceptions of Privacy and Mobile App Use, Proceedings of the 32nd Conference on human factors in computing systems (SIGCHI) Toronto, Canada, 2347-2356.
- Slovic, P., M. L. Finucane, E. Peters and D. G. MacGregor (2007). "The Affect Heuristic." *European Journal of Operational Research* 177 (3), 1333-1352.
- Son, J.-Y. and S. S. Kim (2008). "Internet Users' Information Privacy - Protective Responses: A Taxonomy and a Nomological Model." *MIS Quarterly* 32 (3), 503-529.
- Spector, P. E. (2011). Social Desirability Bias. In *The Sage Encyclopedia of Social Science Research Methods* (Lewis-Beck, M. S., A. Bryman and T. F. Liao Ed.), SAGE, Thousand Oaks.
- Speier, C., I. Vessey and J. S. Valacich (2003). "The Effects of Interruptions, Task Complexity, and Information Presentation on Computer-Supported Decision-Making Performance." *Decision Sciences* 34 (4), 771-797.
- Staddon, J., A. Acquisti and K. Lefevre (2013). Self-Reported Social Network Behavior: Accuracy Predictors and Implications for the Privacy Paradox, International Conference on Social Computing, 295-302.
- Stutzman, F., J. Vitak, N. B. Ellison, R. Gray and C. Lampe (2012). Privacy in Interaction: Exploring Disclosure and Social Capital in Facebook, Proceedings of the Sixth International AAAI Conference on Weblogs and Social Media, 330-337.
- Sundar, S., H. Kang, M. Wu, E. Go and B. Zhang (2013). Unlocking the Privacy Paradox: Do Cognitive Heuristics Hold the Key?, Extended Abstracts of the CHI13 on Human Factors in Computing Systems Paris, France, 811-816.
- Taddicken, M. (2014). "The 'Privacy Paradox' in the Social Web: The Impact of Privacy Concerns, Individual Characteristics, and the Perceived Social Relevance on Different Forms of Self-Disclosure." *Journal of Computer-Mediated Communication* 19 (2), 248-273.
- Tsai, J. Y., S. Egelman, L. Cranor and A. Acquisti (2011). "The Effect of Online Privacy Information on Purchasing Behavior: An Experimental Study." *Information Systems Research* 22 (2), 254-268.
- Tye-Williams, S. (2018). Manipulation Check, *The SAGE Encyclopedia of Communication Research Methods* (Ed, Allen, M.) SAGE, Thousand Oaks, CA.

- Wakefield, R. (2013). "The Influence of User Affect in Online Information Disclosure." *Journal of Strategic Information Systems* 22 (2), 157-174.
- Wu, D., H. Huang, N. Liu and D. Miao (2019). "Information Processing under High and Low Distractions Using Eye Tracking." *Cognitive processing* 20 (1), 11-18.
- Xu, H., X. Luo, J. M. Carroll and M. B. Rosson (2011). "The Personalization Privacy Paradox: An Exploratory Study of Decision Making Process for Location-Aware Marketing." *Decision Support Systems* 51 (1), 42-52.
- Young, A. L. and A. Quan-Haase (2013). "Privacy Protection Strategies on Facebook: The Internet Privacy Paradox Revisited." *Information, Communication & Society* 16 (4), 479-500.
- Zafeiropoulou, A., D. Millard, C. Webber and K. O'Hara (2013). "Unpicking the Privacy Paradox: Can Structuration Theory Help to Explain Location-Based Privacy Decisions?", 463-472.