CONSUMERS' PRIVACY-RELATED DECISION-MAKING IN THE DIGITAL LANDSCAPE

Inauguraldissertation zur Erlangung des Doktorgrades des Fachbereichs Wirtschaftswissenschaften an der Wirtschaftswissenschaftlichen Fakultät der Universität Passau

eingereicht von

Margarita Bidler, M. Sc.

Passau, Dezember 2019

Dissertation an der

Wirtschaftswissenschaftlichen Fakultät

der Universität Passau

Erstgutachter: Prof. Dr. Jan H. Schumann

Lehrstuhl für Betriebswirtschaftslehre mit Schwerpunkt

Marketing und Innovation

Universität Passau

Zweitgutachter: Prof. Dr. Thomas Widjaja

Lehrstuhl für Wirtschaftsinformatik mit Schwerpunkt

Betriebliche Informationssysteme

Universität Passau

Acknowledgements

It is only for the support of many people that I was able to finish this dissertation. Therefore, I would like to take the opportunity and express my deepest gratitude.

First, I want to thank Prof. Dr. Jan H. Schumann, my doctoral supervisor for his continuously great guidance, his advice, his understanding, and his encouragement. I highly enjoyed working together on our research projects and I am very grateful for everything I learned from you throughout the years.

Second, I want to say thank you to Prof. Dr. Thomas Widjaja. Thank you, Thomas, for our joint research, for providing valuable feedback whenever needed and for all of those “IS-insights” you contributed to our projects. Many thanks also go to Prof. Dr. Dirk Totzek who agreed to be the chairperson of my dissertation committee.

Moreover, I want to deeply thank my colleagues and friends at our faculty. Thank you for warmly welcoming me in Passau and always supporting me. Special gratefulness goes to Janina, Eva and Sebastian for your continuous professional and emotional aid whenever needed. I am truly grateful for the fact that I could always count on you.

Finally, I want to thank all those people form my “real life” outside of academia. I would have never made it that far without the never-ending support of my family and friends. Special thanks go to Nico for unconditionally supporting me and for taking up the challenge to handle the ups and downs of my academic career, which spilled right over into our daily life. Finally, I would like to express my deepest gratitude to the most inspiring and wonderful woman: Danke, Mama!

Summary

Nowadays, consumers are often required to disclose private data in various contexts such as while surfing the internet, downloading a mobile application, or engaging in a business relationship with a firm. Privacy-related decision-making research has so far mainly investigated data disclosure as a cognitive risk-benefit trade-off analysis. While this cognitive approach might be appropriate for situations where consumers have the opportunity for cognitive evaluations, there are many situations in the modern landscape where consumers cannot or do not want to engage in cognitive processing. Decision-making under stress or data disclosure to a business network of collaborating firms, for example, constitute challenges to purely cognitive decision-making approaches, calling for an extension of the established paradigm of cognitive privacy-related decision making. This dissertation advocates for the crucial role of affective processing in many modern data disclosure situations, where consumers do not engage in purely cognitive processing due to external hindrances or a lack of personal involvement in the data disclosure situation.

In three independent essays, I investigate the overall research question of how peculiarities of the modern, digital landscape influence consumers' cognitive and affective privacy-related decision-making strategies. In the first essay, I review privacy-related decision-making literature to identify situational factors, which trigger consumers' perceptions of the disclosure situation as stressful. Drawing on the transactional model of stress and coping, I conceptualize data disclosure situations as stressful, if environmental demands exceed consumers' internal (e.g., cognitive capability) and external resources (e.g., information about data handling) for elaborate decision-making. Moreover, I delineate consumers' cognitive and affective decision-making strategies under stress. The corresponding conceptual model and derived propositions offer directions for empirical research on consumers' privacy-related decision-making under stress.

In the second essay, I provide a deep-dive into consumers' decision-making in situations, where consumers confront the need to disclose data to networks of firms engaging in business network data exchange (BNDE). Essay 2 tests a dual-processing model of privacy-related decision-making accounting for both cognitive and affective processing. Findings reveal the crucial role of consumers' affective processes when confronted with data disclosure settings characterized by uncertainty. Specifically, consumers in a BNDE disclosure situation report negative immediate affect elicited by the uncertainty of the situation, which in turn lowers disclosure intentions through the affective processing system as well as through an interference with the cognitive processing system.

The third essay, investigates how consumers' sense making of the disclosure situation and decision-making can be supported by data gathering firms to generate favorable outcomes for both consumers and firms. To address this issue, essay 3 proposes to alter data disclosure requests such, that they include a preview of a meaningfully gamified data disclosure process. Results confirm that consumers are more likely to enter the disclosure process when anticipation of meaningful engagement (elaborate, cognitive processing) and anticipation of hedonic engagement (affective, peripheral processing) are triggered with a preview of a meaningfully gamified data disclosure process. Thereby, consumers' route choice depends on their involvement levels, such that highly involved consumers are more prone to engage in cognitive processing (i.e., anticipate meaningful engagement), whereas low involvement fosters affective processing (i.e., anticipation of hedonic engagement).

Overall, these essays yield three major findings. First, consumers' privacy-related decision-making is influenced by various peculiarities of modern data disclosure situations such as time pressure or uncertainty. Second, privacy-related decision-making in modern data disclosure situations cannot be sufficiently described by purely cognitive processing approaches but needs to account for

affective processing as well. Third, consumers' decision making is prone to influences of contextual cues offering an opportunity to design disclosure situations to support consumers' privacy-related decision-making.

As such, this dissertation makes substantial contributions to research on consumers' privacy-related decision-making and the acceptance of direct marketing approaches based on consumers' data disclosure. In addition, my dissertation provides actionable recommendations for managers, which seek to successfully employ business models based on consumer data and outlines promising avenues for further research.

Short Table of Contents

List of Figures XII
List of Tables XIII
List of Appendices XIV
List of Abbreviations XV
1. Introduction 1
2. Essay 1: Privacy-related Decision-making under Stress: A Conceptualization ... 14
3. Essay 2: Privacy-related Decision-making in Business Network Data Exchange Settings: The Role of Consumers' Affective Reactions 49
4. Essay 3: Previewing a Meaningfully Gamified Data Disclosure Process to Increase Consumers' Willingness to Engage in Data Disclosure Processes 112
5. General Discussion 158
6. Conclusion 169

Table of Contents

List of Figures ..... **XII**
List of Tables ..... **XIII**
List of Appendices ..... **XIV**
List of Abbreviations ..... **XV**
1. Introduction **1**
1.1 Digital Landscape: New Challenges for Privacy-related Decision-making 1
1.2 Research Objectives and Scope 3
1.2.1 Essay 1: Privacy-related Decision-making under Stress: A Comprehensive Review and Conceptualization 4
1.2.2 Essay 2: Privacy-related Decision-making in Business Network Data Exchange Settings: The Role of Consumers' Affective Reactions 5
1.2.3 Essay 3: Previewing a Meaningfully Gamified Data Disclosure Process to Increase Consumers' Willingness to Engage in Data Disclosure Processes 6
1.3 Dissertation Structure 7
1.4 References 8
2. Essay 1: Privacy-related Decision-making under Stress: A Conceptualization **14**
2.1 Introduction 15
2.2 Conceptualizing Stress 18
2.2.1 Transactional model of stress. 18
2.2.2 Data disclosure situations through the lens of the transactional model of stress. 19
2.2.2.1 Primary appraisal 20
2.2.2.2 Secondary appraisal 22
2.2.3 Dual-processing. 25
2.3 Conceptual Framework 25
2.3.1 Cognitive processing – The privacy calculus. 25
2.3.2 Affective processing. 27
2.3.2.1 Affective reactions influencing the cognitive system. 28
2.3.2.2 Direct effects of affective processing on disclosure intentions under stress. 30
2.4 General Discussion 32
2.4.1 Theoretical contributions. 32
2.4.2 Managerial implications. 33
2.4.3 Limitations. 34

2.5 Conclusion 35
2.6 References 36
3. Essay 2: Privacy-related Decision-making in Business Network Data Exchange Settings: The Role of Consumers' Affective Reactions 49
3.1 Introduction 50
3.2 Conceptual Model and Hypotheses 55
3.2.1 Privacy calculus research 56
3.2.2 Business network data exchange 61
3.2.3 Data disclosure decisions in BNDE settings though the lens of the privacy calculus: A cognitive base model 63
3.2.4 Extending the base model: The role of immediate affective reactions in decision-making 64
3.2.4.1 Integrating cognitive privacy-related decision-making in a dual-processing framework. 64
3.2.4.2 Immediate affective reactions to BNDE settings. 65
3.2.4.3 Interaction of the affective and cognitive system. 66
3.3 Research Methodology 68
3.3.1 Pre-study: Consumer intentions and behaviors in BNDE data disclosure settings. 68
3.3.1.1 Design, participants, and procedure. 68
3.3.1.2 Results of pre-study. 69
3.3.1.3 Discussion of pre-study. 69
3.3.2 Study 1: Introducing a dual-processing model. 69
3.3.2.1 Design, participants, and procedure. 69
3.3.2.2 Results of study 1. 71
3.3.2.3 Discussion of study 1. 75
3.3.3 Study 2a: Ruling out alternative explanations: Complexity. 76
3.3.3.1 Design, participants, and procedure. 76
3.3.3.2 Results of study 2a. 77
3.3.3.3 Discussion of study 2a. 78
3.3.4 Study 2b: Ruling out alternative explanations: Network size. 78
3.3.4.1 Design, participants, and procedure. 78
3.3.4.2 Results of study 2b. 79
3.3.4.3 Discussion of study 2b. 79
3.3.5 Study 3a: Deep-dive into the mechanism: Need for cognition. 80
3.3.5.1 Design, participants, and procedure. 81
3.3.5.2 Results of study 3a. 82

3.3.5.3 Discussion of study 3a. 83
3.3.6 Study 3b: Deep-dive into the mechanism: Cognitive blocking. 84
3.3.6.1 Design, participants, and procedure. 84
3.3.6.2 Results of study 3b. 85
3.3.6.3 Discussion of study 3b. 86
3.3.7 Study 4: Spillover effects through the affective system. 86
3.3.7.1 Design, participants, and procedure. 87
3.3.7.2 Results of study 4. 88
3.3.7.3 Discussion of study 4. 88
3.3.8 Meta-analysis: Testing the robustness of the focal effects across studies 89
3.4 General Discussion 89
3.4.1 Theoretical contributions. 90
3.4.2 Managerial implications. 92
3.4.3 Limitations and further research. 93
3.4.4 Conclusion. 94
3.5 References 96
3.6 Appendices 107
4. Essay 3: Previewing a Meaningfully Gamified Data Disclosure Process to Increase Consumers' Willingness to Engage in Data Disclosure Processes 112
4.1 Introduction 113
4.2 Theoretical Background and Hypotheses Development 117
4.2.1 Privacy calculus perspective 117
4.2.2 Increasing consumers' willingness to engage through a meaningfully gamified data disclosure processes 119
4.2.3 Anticipated engagement in a gamified process 120
4.2.3.1 Route 1: The mediating role of anticipated meaningful engagement 121
4.2.3.2 Route 2: The mediating role of anticipated hedonic engagement 123
4.2.3.3 Route 3: The mediating role of anticipated process effort 124
4.3 Study 1: The Base Effect of a Data Request Featuring a Meaningfully Gamified Data Disclosure process on Intention to Enter the Disclosure Process 125
4.3.1 Design, participants, and procedure. 125
4.3.2 Results of study 1. 127
4.3.3 Discussion of study 1. 128

4.4 Study 2: Mechanisms Underlying the Effect of a Data Disclosure Request Featuring a Preview of a Meaningfully Gamified Data Disclosure Process on Consumers' Intentions to Enter the Process 128
4.4.1 Design, participants, and procedure. 128
4.4.2 Results of study 2. 129
4.4.3 Discussion of study 2. 131
4.5 Study 3: Involvement as a Contingency Factor Determining Route Choice 132
4.5.1 Design, participants, and procedure. 133
4.5.2 Results of study 3. 134
4.5.3 Discussion of study 3. 136
4.6 General Discussion 137
4.6.1 Theoretical contributions. 137
4.6.2 Managerial implications. 140
4.6.3 Limitations and further research. 141
4.7 Conclusion 142
4.8 References 143
4.9 Appendices 150
5. General Discussion 158
5.1 Theoretical Contributions 158
5.1.1 Peculiarities in modern data disclosure settings. 158
5.1.2 Consumers' privacy-related decision-making through two systems. 159
5.1.3 The role of contextual cues in privacy-related decision-making. 160
5.2 Managerial Implications 161
5.2.1 Understanding the challenges of consumers' decision-making in the digital landscape. 161
5.2.2 Managing consumers' affective reactions. 162
5.2.3 Providing resources to foster cognitive processing. 163
5.3 Limitations and Further Research 163
5.4 References 165
6. Conclusion 169

List of Figures

Figure 1.1. Structure of the dissertation. 7

Figure 2.1. The formation of stress in data disclosure situations. 20

Figure 2.2. Conceptual framework for privacy-related decision-making under stress. 28

Figure 3.1. Dyadic vs. BNDE data disclosure settings. 61

Figure 3.2. Conceptual model—Dual-processing model. 67

Figure 3.3. Cognitive base model results. 73

Figure 3.4. Dual-processing model results. 74

Figure 3.5. Effect of BNDE with varying network sizes. 80

Figure 3.6. Effect of BNDE on cognitive and affective processing at low vs. high levels of need for cognition. 83

Figure 3.7. Effects of a hindrance of the cognitive system on immediate affective reactions. 86

Figure 4.1. Conceptual framework. 121

Figure 4.2. Mediation model results. 131

Figure 4.3. Moderation model. …..133

List of Tables

Table 2.1. Prior work on stressors in privacy-related decision-making literature. 17

Table 3.1. Prior work on privacy-related decision-making in BNDE or similar network settings or on affective reactions 58

List of Appendices

Appendix A: Essay 2 – Scenario 107

Appendix B: Essay 2 – Measure of central constructs 108

Appendix C: Essay 2 – Model overview 111

Appendix D: Essay 3 – Scenarios study 1–3 150

Appendix E: Essay 3 – Measure of central constructs 153

Appendix F: Essay 3 – Overview empirical results 155

List of Abbreviations

ANOVA	Analysis of variance
BNDE	Business Network Data Exchange
CI	Confidence interval
LLCI	Lower levels for confidence interval
M	Mean
n.s.	Non-significant
SD	Standard deviation
SE	Standard error
ULCI	Upper levels for confidence interval

1. Introduction

1.1 Digital Landscape: New Challenges for Privacy-related Decision-making

I share data every time I leave the house, whether I want to or not . . . The data is there, and it's being used, and there isn't a . . . thing most of us can do about it, . . . It's too late to put that genie back in the bottle. (Rainie & Duggan, 2016, p. 2).

With the advancement of information and communication technology, consumers face the need to decide whether or not to disclose private data on a daily basis (Rust & Huang, 2014). Engaging in loyalty card programs, downloading a mobile application, or simply surfing the internet are everyday activities, which all come at a cost (Bélanger & Crossler, 2011; Hennig-Thurau et al., 2010; Keith, Thompson, Hale, Lowry, & Greer, 2013; Xu, Teo, & Tan, 2005): In such situations, consumers need to disclose private data. Firms' opportunities to collect and utilize consumer data are manifold (Agarwal & Dhar, 2014). A sophisticated exploit of consumer data allows for product and service personalization (Chellappa & Sin, 2005), enables access to free services (Chen, 2008; Schumann, von Wangenheim, & Groene, 2014), and fosters more relevant marketing communication (Tsang, Ho, & Liang, 2004; Tucker, 2012). These benefits come with the downside for consumers of disclosing private data (Chellappa & Sin, 2005). Associated risks range from unwanted marketing communication (Tucker, 2012) to fraud (Miyazaki & Fernandez, 2001).

While academic research has long ago acknowledged the importance of consumer privacy, its research efforts have been outpaced by data gathering practice during the last decades (Martin & Murphy, 2017). One example for this outpacing is literatures' paradigm of cognitive processing, which seems incompatible with many modern data disclosure situations. Literature on consumer privacy is often based on the implicit assumption that consumers engage in a risk-benefit

trade-off analysis when confronted with a data disclosure request (Culnan & Armstrong, 1999; Dinev & Hart, 2006). For example, consumers who confront the choice to join a loyalty card program would assess the potential risks of having their purchase behavior tracked and weigh them against the potential for monetary savings. Consumers would join the program, if the benefits outweigh the risks. In line with this assumption of fully informed, cognitive elaboration, technological advancements such as electronic health care systems or mobile applications have been investigated as merely new contexts employing the established paradigm (Angst & Agarwal, 2009; Xu et al., 2005). However, today's digital landscape poses a challenge for this assumption. Specifically, consumers in reality often need to make decision under various peculiarities of modern data disclosure situations, such as time pressure, incomplete information, and complex business constellations (Acquisti, Brandimarte, & Loewenstein, 2015). Following up on the previous example, consumers, who are confronted with the choice to join a loyalty program at checkout lack sufficient information about the business partners within the loyalty program and lack time to acquire the missing information to make well informed data-disclosure decisions. Against this background, despite considerable knowledge about consumers' cognitive privacy-related decision-making (for literature review see Smith et al., 2011), more insights pertaining to alternative decision-making strategies suited for the peculiarities of modern disclosure situations are needed (Dinev et al., 2015). Such investigations are important for two reasons. First, consumers' privacy-related decision-making is strongly influenced by the context (Culnan & Bies, 2003; Li, Sarathy, & Xu, 2010). Accordingly, it is of high managerial relevance to investigate modern data gathering practices and corresponding business models as disclosure contexts distinct from widely investigated traditional disclosure situations (e.g., dyadic disclosure situations). In order to successfully engage in business models based on consumer data, firms need to understand how and why consumers react in certain ways. These insights could help address

consumers' negative attitudes and increasing reluctance to disclose data (Culnan & Armstrong, 1999), in turn helping firms establish a crucial competitive advantage (Agarwal & Dhar, 2014; Sorescu, 2017; Bradlow, Gangwar, Kopalle, & Voleti, 2017).

Second, while a wide range of privacy research is based on the assumption of cognitive processing (Smith et al., 2011), decision-making research has long since acknowledged the fact that consumers do not make decisions in a purely cognitive way (Epstein, 1994; Kahneman, 2003). Rather, decision-making literature proposes that consumers often rely on automatic affective reactions when confronted with a stimulus (Slovic, Finucane, Peters, & MacGregor, 2007; Zajonc, 1984). Consumers' reliance on these affective reactions is especially likely for modern data disclosure situations where elaborated, risk–benefit assessment are hampered (Finucane, Alhakami, Slovic, & Johnson, 2000) by incomplete information (Acquisti & Grossklags, 2005) or time constraints (Svenson & Maule, 1993). While this theoretical assumption has already been adopted by some studies investigating specific data disclosure situations (Alashoor, Al-Maidani, & Al-Jabri, 2018; Dinev et al., 2015; Gerlach, Buxmann, & Dinev, 2019; Kehr, Kowatsch, Wentzel, & Fleisch, 2015; Li, Sarathy, & Xu, 2011; Wakefield, 2013), further research is needed to better understand nuanced peculiarities of modern disclosure situations.

Against this background, this dissertation addresses challenges arising from modern data disclosure situations and consumers' resulting decision-making strategies. It comprises three independent essays which seek to answer the following overarching research question:

> How do peculiarities of the modern digital landscape influence consumers' cognitive and affective privacy-related decision-making?

1.2 Research Objectives and Scope

In three independent essays, I address the overarching research question pertaining to the role of peculiarities of the digital landscape on consumers' privacy-related decision-making. As a first step, I conduct a literature review in essay 1,

identifying consumers' internal limitations and external peculiarities of modern decision-making situations, which lead to perceptions of stress, thereby influencing privacy-related decision-making. The second essay focuses on business network data exchange (BNDE)—one such potentially stressful disclosure-situation. Finally, with the third essay, I investigate whether including a meaningfully gamified data disclosure process into a data disclosure request could inform consumers' decision-making by fostering their appreciation of benefits resulting from data disclosure.

1.2.1 Essay 1: Privacy-related Decision-making under Stress: A Conceptualization.

Essay 1 of this dissertation conceptualizes everyday data disclosure situations as potentially stressful. Digital advancements such as location-based mobile applications or collaborating business networks constitute critical situational factors for consumers' privacy-related decision-making. Previous research has identified various situational factors that impact privacy-related decision-making (Bansal & Gefen, 2010; Dinev & Hart, 2006; John, Acquisti, & Loewenstein, 2011; Kehr et al., 2015). While those studies acknowledge the fact that privacy decision-making situations become increasingly demanding (Walker, 2016), thus far no study offers an integrated perspective of situational factors as potential stressors and investigates consumers' corresponding decision-making strategies. To address this gap, essay 1 provides an integrated literature review. Drawing on the transactional model of stress and coping (Lazarus & Folkman, 1984), I conceptualize data disclosure situations as stressful, if environmental demands exceed consumers' resources. Resources include both internal resources such as cognitive capability and external resources such as firms' communication of data handling practices. Further, essay 1 delineates consumers' decision-making strategies under stress according to dual-processing models of decision-making, accounting for both cognitive and affective processing styles (Epstein, 1994; Evans & Stanovich, 2013). As such, essay 1 addresses the following research questions:

> How do environmental demands and (lack of) internal and external resources lead to stress in data disclosure situations?

> Which privacy-related decision-making strategies—both cognitive and affective—do consumers employ under stress?

1.2.2 Essay 2: Privacy-related Decision-making in Business Network Data Exchange Settings: The Role of Consumers' Affective Reactions.

Essay 2 constitutes a deep dive into one of the identified, potentially stressful data disclosure situations—namely, disclosure situations, where consumers confront the need to disclose data to not only one single firm but to a network of data exchanging firms. Essay 2 introduces these business network data exchange (BNDE) situations and argues that they are distinct from dyadic disclosure settings, which have been the main concern of previous privacy literature (Smith et al., 2011). BNDE networks comprise a data-gathering firm which asks consumers to disclose data and give consent to exchanging the data across the BNDE network. As such, BNDE disclosure settings are characterized by a high degree of uncertainty regarding future consequences of data disclosure (i.e., Who are the network partners? Which risks and benefits can be expected from them?). Because of this peculiarity of BNDE, literature's widely accepted assumption of a purely cognitive risk-benefit trade-off analysis (Bansal & Gefen, 2010; Dinev & Hart, 2006; Li et al., 2010; Xu et al., 2005) cannot be transferred to BNDE disclosure situations (Acquisti & Grossklags, 2005). Thus, essay 2 proposes and tests a complementary extension of the established cognitive approach in form of a dual-processing model, arguing that affective reactions play a crucial role in BNDE data disclosure situations. Specifically, the main research question underlying essay 2 is:

> How does BNDE influence consumers' privacy-related decision-making?

1.2.3 Essay 3: Previewing a Meaningfully Gamified Data Disclosure Process to Increase Consumers' Willingness to Engage in Data Disclosure Processes.

With essay 3, I investigate the possibility of informing consumers' privacy-related decision-making by employing gamification elements. While essay 1 and 2 focus on consumers' decision-making processes forming their willingness to *disclose* data, essay 3 investigates decision-making processes pertaining to consumers' willingness to *enter* a data disclosure process. Because of today's proliferation of data collection efforts, consumers are increasingly reluctant to comply with disclosure requests (Culnan & Armstrong, 1999; Schumann et al., 2014). Essay 3 argues that in order to overcome this reluctance, retailers should integrate a preview of a meaningfully gamified data disclosure process into the data request. Such an approach leverages theory about meaningful and hedonic engagement with a gamified task (Eisingerich, Marchand, Fritze, & Dong, 2019; Liu, Santhanam, & Webster, 2017; Suh, Cheung, Ahuja, & Wagner, 2017). Specifically, consumers, who are confronted with a data request featuring a preview of a meaningfully gamified data disclosure process can more easily envision how the collected data might lead to positive personalization outcomes. Moreover, they perceive the disclosure request to have a higher hedonic value. Thus, consumers should be encouraged to enter the disclosure process. While both data disclosure (for literature review see Smith et al., 2011) and gamification (for literature review see Koivisto & Hamari, 2019) literature offer extensive insights, thus far no study integrated these research streams to predict consumers' intentions to comply with data disclosure requests. To fill this void, essay 3 addresses the following major research question:

> Can consumers be encouraged to enter a data disclosure request by including a preview of a meaningfully gamified data disclosure process into the data request?

1.3 Dissertation Structure

The remainder of this dissertation is structured as follows. Chapter 2 comprises essay 1. Within this chapter, I conceptualize the formation of stress in data disclosure situations and propose a conceptual framework of corresponding decision-making strategies. Chapter 3 features essay 2, which investigates the impact of BNDE on consumers' affective and cognitive decision-making processes. Chapter 4 examines the effectiveness of previewing a meaningfully gamified data disclosure process to leverage consumers' willingness to comply with data disclosure requests (essay 3). Taking a broader perspective, in chapter 5, I provide theoretical and managerial implications as well as limitations and suggestions for further research based on insights derived from all three essays. Chapter 6 comprises a short conclusion. Figure 1.1 features the structure of my dissertation.

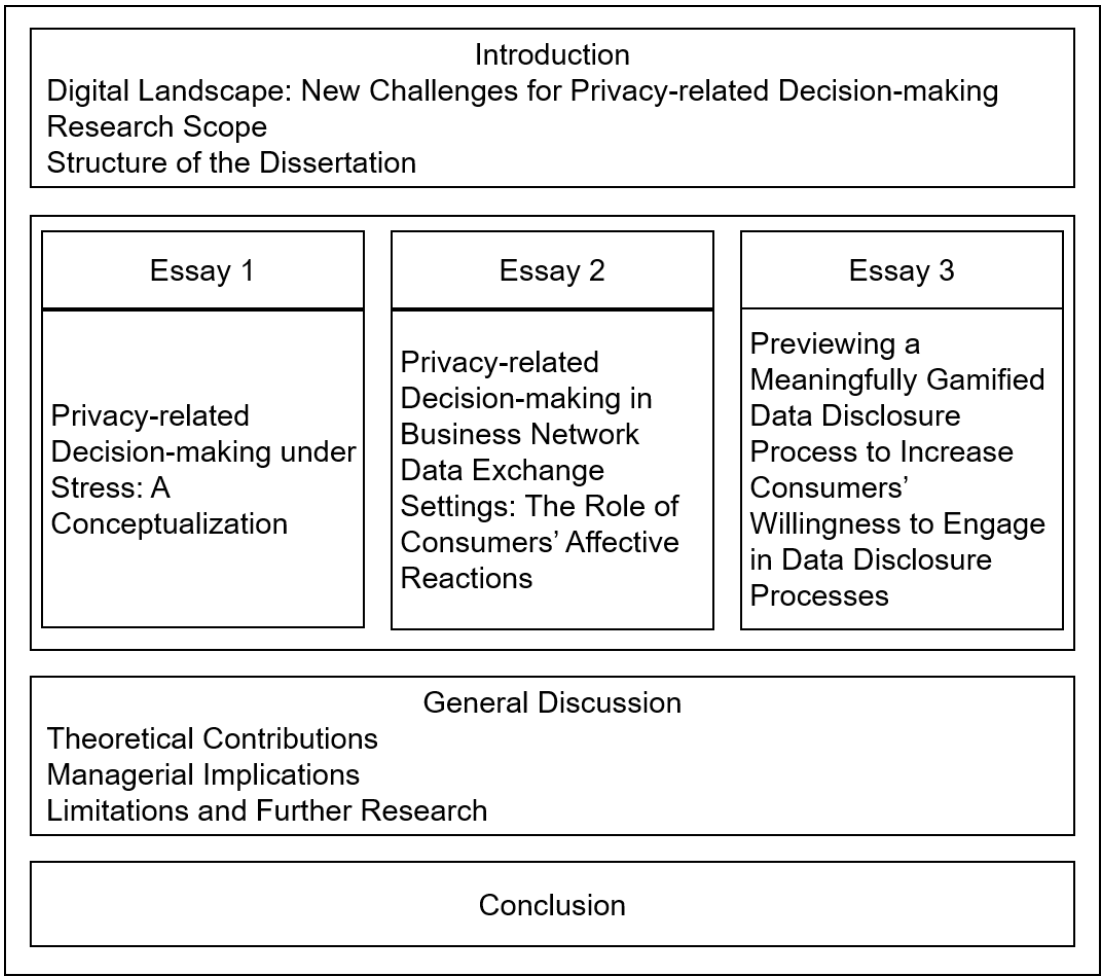


Figure 1.1. Structure of the dissertation.

1.4 References

Acquisti, A., & Grossklags, J. (2005). Privacy and Rationality in Individual Decision Making. *IEEE Security & Privacy*, *3*(1), 26–33. https://doi.org/10.1109/MSP.2005.22

Acquisti, A., Brandimarte, L., & Loewenstein, G. (2015). Privacy and Human Behavior in the Age of Information. *Science*, *347*(6221), 509–514. https://doi.org/10.1126/science.aaa1465

Agarwal, R., & Dhar, V. (2014). Big Data, Data Science, and Analytics: The Opportunity and Challenge for IS Research. *Information Systems Research, 25*(3), 443–448. https://doi.org/10.1287/isre.2014.0546

Alashoor, T., Al–Maidani, N., & Al–Jabri, I. (2018). The Privacy Calculus under Positive and Negative Mood States. *Proceedings of the 39th International Conference on Information Systems*, San Francisco, CA, USA.

Angst, C. M., & Agarwal, R. (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. https://doi.org/10.2307/20650295

Bansal, G., & Gefen, D. (2010). The Impact of Personal Dispositions on Information Sensitivity, Privacy Concern and Trust in Disclosing Health Information Online. *Decision Support Systems*, *49*(2), 138–150. https://doi.org/10.1016/j.dss.2010.01.010

Bélanger, F., & Crossler, R. E. (2011). Privacy in the Digital Age: A Review of Information Privacy Research in Information Systems. *MIS Quarterly*, *35*(4), 1017–1042. https://doi.org/10.2307/41409971

Bradlow, E. T., Gangwar, M., Kopalle, P., & Voleti, S. (2017). The Role of Big Data and Predictive Analytics in Retailing. *Journal of Retailing*, *93*(1), 79–95. https://doi.org/10.1016/j.jretai.2016.12.004

Chellappa, R. K., & Sin, R. G. (2005). Personalization versus Privacy: An Empirical Examination of the Online Consumer's dilemma. *Information Technology and Management*, *6*(2–3), 181–202. https://doi.org/10.1007/s10799–005–5879–y

Chen, L. D. (2008). A Model of Consumer Acceptance of Mobile Payment. *International Journal of Mobile Communications*, *6*(1), 32–52. https://doi.org/10.1504/IJMC.2008.015997

Culnan, M. J., & Armstrong, P. K. (1999). Information Privacy Concerns, Procedural Fairness, and Impersonal Trust: An Empirical Investigation. *Organization Science*, *10*(1), 104–115. https://doi.org/10.1287/orsc.10.1.104

Culnan, M. J., & Bies, R. J. (2003). Consumer Privacy: Balancing Economic and Justice Considerations. *Journal of Social Issues*, *59*(2), 323–342. https://doi.org/10.1111/1540–4560.00067

Dinev, T., & Hart, P. (2006). An Extended Privacy Calculus Model for e–Commerce Transactions. *Information Systems Research*, *17*(1), 61–80. https://doi.org/10.1287/isre.1060.0080

Dinev, T., McConnell, A. R., & Smith, H. J. (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. http://dx.doi.org/10.1287/isre.2015.0600

Eisingerich, A. B., Marchand, A., Fritze, M. P., & Dong, L. (2019). Hook vs. Hope: How to Enhance Customer Engagement through Gamification. *International Journal of Research in Marketing*. https://doi.org/10.1016/j.ijresmar.2019.02.003

Epstein, S. (1994). Integration of the Cognitive and the Psychodynamic Unconscious. *American Psychologist*, *49*(8), 709. https://doi.org/10.1037//0003–066x.49.8.709

Evans, J. S. B., & Stanovich, K. E. (2013). Dual–Process Theories of Higher Cognition: Advancing the Debate. *Perspectives on Psychological Science*, *8*(3), 223–241. https://doi.org/10.1177/1745691612460685

Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The Affect Heuristic in Judgments of Risks and Benefits. *Journal of Behavioral Decision Making*, *13*(1), 1–17. https://doi.org/10.1002/(SICI)1099–0771(200001/03)13:1<1::AID–BDM333>3.0.CO;2–S

Gerlach, J., Buxmann, P., & Dinev, T. (2019). "They're All the Same!" Stereotypical Thinking and Systematic Errors in Users' Privacy–Related Judgments About Online Services. *Journal of the Association for Information Systems*, *20*(6), 787–823. https://doi.org/10.17705/1.jais.00551

Hennig–Thurau, T., Malthouse, E. C., Friege, C., Gensler, S., Lobschat, L., Rangaswamy, A., & Skiera, B. (2010). The Impact of New Media on Customer Relationships. *Journal of Service Research, 13*(3), 311–33. https://doi.org/10.1177/1094670510375460

John, L. K., Acquisti, A., & Loewenstein, G. (2011). Strangers on a Plane: Context–Dependent Willingness to Divulge Sensitive Information. *Journal of Consumer Research*, *37*(5), 858–873. https://doi.org/10.1086/65642

Kahneman, D. (2003). A Perspective on Judgment and Choice: Mapping Bounded Rationality. *American Psychologist*, *58*(9), 697. https://doi.org/10.1037/0003–066X.58.9.697

Kehr, F., Kowatsch, T., Wentzel, D., & Fleisch, E. (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. https://doi.org/10.1111/isj.12062

Keith, M. J., Thompson, S. C., Hale, J., Lowry, P. B., & Greer, C. (2013). Information Disclosure on Mobile Devices: Re–Examining Privacy Calculus with Actual

User Behavior. *International Journal of Human–Computer Studies, 71*(12), 1163–1173. https://doi.org/10.1016/j.ijhcs.2013.08.016

Koivisto, J., & Hamari, J. (2019). The Rise of Motivational Information Systems: A Review of Gamification Research. *International Journal of Information Management*, *45*, 191–210. https://doi.org/10.1016/j.ijinfomgt.2018.10.013

Lazarus, R. S., & Folkman, S. (1984). *Stress, Appraisal, and Coping*. New York: Springer Publishing Company.

Li, H., Sarathy, R., & Xu, H. (2010). Understanding Situational Online Information Disclosure as a Privacy Calculus. *Journal of Computer Information Systems*, *51*(1), 62–71. https://doi.org/10.1080/08874417.2010.11645450

Li, H., Sarathy, R., & Xu, H. (2011). The Role of Affect and Cognition on Online Consumers' Decision to Disclose Personal Information to Unfamiliar Online Vendors. *Decision Support Systems*, *51*(3), 434–445. https://doi.org/10.1016/j.dss.2011.01.017

Liu, D., Santhanam, R., & Webster, J. (2017). Toward Meaningful Engagement: A Framework for Design and Research of Gamified Information Systems. *MIS Quarterly*, *41*(4). 1011–1034. https://doi.org/10.25300/MISQ/2017/41.4.01

Martin, K. D., & Murphy, P. E. (2017). The Role of Data Privacy in Marketing. *Journal of the Academy of Marketing Science*, *45*(2), 135–155. https://doi.org/10.1007/s11747–016–0495–4

Miyazaki, A. D., & Fernandez, A. (2001). Consumer Perceptions of Privacy and Security Risks for Online Shopping. *Journal of Consumer Affairs*, *35*(1), 27–44. https://doi.org/10.1111/j.1745–6606.2001.tb00101.x

Rainie, L., & Duggan, M. (2016). Privacy and Information Sharing. Retrieved 26.11.2019 from https://www.pewResearch.org/internet/2016/01/14/Privacy–and–Information–sharing

Rust, R. T., & Huang, M. H. (2014). The Service Revolution and the Transformation of Marketing Science. *Marketing Science*, *33*(2), 206–221. https://doi.org/10.1287/mksc.2013.0836

Schumann, J. H., von Wangenheim, F., & Groene, N. (2014). Targeted Online Advertising: Using Reciprocity Appeals to Increase Acceptance Among Users of Free Web Services. *Journal of Marketing*, *78*(1), 59–75. https://doi.org/10.1509/jm.11.0316

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2007). The Affect Heuristic. *European Journal of Operational Research*, *177*(3), 1333–1352. https://doi.org/10.1016/j.ejor.2005.04.006

Smith, H. J., Dinev, T., & Xu, H. (2011). Information Privacy Research: An Interdisciplinary Review. *MIS Quarterly*, *35*(4), 989–1016. https://doi.org/10.2307/41409970

Sorescu, A. (2017). Data-driven Business Model Innovation. *Journal of Product Innovation Management*, *34*(5), 691–696. https://doi.org/10.1111/jpim.12398

Suh, A., Cheung, C. M., Ahuja, M., & Wagner, C. (2017). Gamification in the Workplace: The Central Role of the Aesthetic Experience. *Journal of Management Information Systems*, *34*(1), 268–305. https://doi.org/10.1080/07421222.2017.1297642

Svenson, O., & Maule, A. J. (1993). *Time Pressure and Stress in Human Judgment and Decision Making*. New York: Plenum Press.

Tsang, M. M., Ho, S. C., & Liang, T. P. (2004). Consumer Attitudes Toward Mobile Advertising: An Empirical Study. *International Journal of Electronic Commerce*, *8*(3), 65–78. https://doi.org/10.1080/10864415.2004.11044301

Tucker, C. E. (2012). The Economics of Advertising and Privacy. *International Journal of Industrial Organization*, *30*(3), 326–329. https://doi.org/10.1016/j.ijindorg.2011.11.004

Wakefield, R. (2013). The Influence of User Affect in Online Information Disclosure. *The Journal of Strategic Information Systems*, *22*(2), 157–174. https://doi.org/10.1016/j.jsis.2013.01.003

Walker, K. L. (2016). Surrendering Information Through the Looking Glass: Transparency, Trust, and Protection. *Journal of Public Policy & Marketing*, *35*(1), 144–158. https://doi.org/10.1509/jppm.15.020

Xu, H., Teo, H. H., & Tan, B. (2005). Predicting the Adoption of Location–based Services: The Role of Trust and Perceived Privacy Risk. *Proceedings of the 26th International Conference on Information Systems*, Las Vegas, NV, USA.

Zajonc, R. B. (1984). On the Primacy of Affect. *American Psychologist, 39*(2), 117–123. https://doi.org/10.1037/0003–066X.39.2.117

2. Essay 1: Privacy-related Decision-making under Stress: A Conceptualization

Margarita Bidler

In many everyday situations, consumers confront data disclose settings which they perceive as stressful. While prior literature has identified multiple situational factors influencing consumers' privacy-related decision-making, literature pertaining to the role of consumers' decision-making under stress remains fragmented. Drawing on stress, decision-making, and privacy literature, this article introduces a systematic conceptualization of data disclosure situations under stress and delineates consumers' resulting decision strategies. The conceptual model uncovers potential for empirical research on consumers' privacy-related decision-making under stress. From a managerial perspective, identifying potential stressors and corresponding decision strategies can help to design data disclosure requests to facilitate consumers decision-making under stress.

Keywords: Privacy-related decision-making, stress, dual processing, heuristics

2.1 Introduction

Data disclosure situations are omnipresent in today's digital landscape (Agarwal & Dhar, 2014). In times of mobile applications, online retailing, and loyalty card programs, consumers are required to make privacy-related decisions in increasingly complex environments (John, Acquisti, & Loewenstein, 2011; Keith, Babb, Furner, Abdullat, & Lowry, 2016). In such situations, consumers' decision-making is affected by multiple factors. Specifically, environmental demands and consumers' lack of internal and external resources constitute a potential source for perceptions of stress (Lazarus & Folkman, 1984; March, 1994). Such perceptions of stress might arise from consumers' simultaneous engagement in different tasks (Kirsh, 2000; Klingberg, 2009; March, 1994; Veltri & Ivchenko, 2017), time pressure (Dinev et al., 2015), and various other internal and external factors (Johnson, 1974; Kelley, 1967; Pavlou, Liang, & Xue, 2007). Stress perceptions in turn constitute a severe challenge for privacy-related decision-making (Dinev, McConnell, & Smith, 2015).

While consumer privacy has received extensive attention in both the information systems (Smith, Dinev, & Xu, 2011) and the marketing literature (Martin & Murphy, 2017), privacy-related disclosure processes have not yet been investigated in an integrated manner as (potentially) stressful situations. Rather, literature discusses situational factors and consumers' privacy-related decision-making strategies in a fragmented way. For example, there has been a very active body of research on contextual factors such as sensitivity of data (Bansal, & Gefen, 2010; John et al., 2011), dispositional trust (Dinev & Hart, 2006), or design aspects (Kehr, Kowatsch, Wentzel, & Fleisch, 2015) which all impact consumers' willingness to disclose private data (John et al., 2011). While those studies address single, situational aspects, accounting for the fact that decision-making situations become increasingly complex (Walker, 2016), thus far no study offers an integrated perspective of situational factors as potential stressors and consumers'

corresponding decision-making strategies. Table 2.1 provides an overview of literature focusing on individual and environmental factors from which stress might arise and compares it with this work.

The fragmented nature of privacy literature pertaining to the role of stress is especially surprising, as literature from the field of decision-making has long ago acknowledged the fact that decision-making under stress is subject to various peculiarities (Johnson, 1974; Keinan, 1987; Svenson & Maule, 1993).

To fill this void, the current study draws on the transactional model of stress and coping (Lazarus & Folkman, 1984) to conceptualize consumers' privacy-related decision-making under stress and to identify corresponding decision-making strategies, which will be delineated according to dual-processing models of decision-making (Chaiken & Trope, 1999; Epstein, 1994; Evans & Stanovich, 2013). As such, this paper contributes to privacy-related decision-making literature by offering a comprehensive perspective on privacy-related decision-making situations as potentially stressful. Moreover, by systematically investigating individual and environmental resources to cope with stressful privacy situations, this article advances literature on situational and individual factors impacting disclosure behavior. Finally, this paper addresses a call for more research pertaining to low-effort processing (Dinev et al., 2015) by uncovering the crucial role of affective processing in consumers' decision-making under stress.

The remainder of this paper is organized as follows: First, I will discuss the transactional model of stress and coping (Lazarus & Folkman, 1984) in order to conceptualize privacy-related decision-making as (potentially) stressful. Next, I will draw on theories of dual processing in decision-making (Epstein, 1994; Evans & Stanovich, 2013) to derive propositions regarding psychological processes underlying consumers' privacy-related decision-making under stress. The paper concludes with a discussion of theoretical and managerial implications and provides avenues for future empirical research.

Table 2.1.

Prior work on potential stressors in privacy-related decision-making and comparison with this paper

Authors (Year)	Research focus	Potential stressors	Conceptualized as stress?	Decision-making strategy	Main findings
Acquisti & Grossklags, 2005	Investigate decision-making accounting for the influence of incomplete information, bounded rationality, and psychological deviations from rationality.	Incomplete information, bounded rationality	No	–	Consumers often lack information to make privacy decisions and, even with sufficient information, are likely to engage in irrational behavior.
Dinev et al. (2015)	Conceptual model accounting for high-effort and low-effort processing in privacy decision-making.	Cognitive resources, time constraints	No	High and low-effort processing	Situational factors affect consumers' level of cognitive effort, which in turn moderates relations between privacy-related constructs.
Gerlach et al. (2019)	Investigate how stereotypical thinking can cause systematic judgment errors in privacy-related beliefs.	Complexity	No	Stereotypical thinking	Stereotypical thinking induces errors in users' judgments, despite the presence of counter-stereotypic privacy statements.
Walker (2016)	Introduces concept of surrendering to technology and presents a sharing–surrendering information matrix.	Complexity, time constraints, divided attention	No	Sharing vs. surrendering information	Consumers surrender data in settings they do not adequately understand.
This study	Conceptualizes data disclosure situations as stressful and uncovers corresponding privacy-related decision-making strategies.	Individual resources (i.e., cognitive resources, attention, self-efficacy), Environmental resources (i.e., time constraints, incomplete information, complexity, uncertainty)	Yes	Cognitive and affective processing strategies (i.e., biases, proneness to situational cues, and employment of heuristics)	Perceptions of stress arise when individual and environmental resources do not suffice to meet situational demands. Consumers under stress are likely to engage in affective processing instead of making purely cognitive decisions.

2.2 Conceptualizing Stress

2.2.1 Transactional model of stress.

Conceptualizations and definitions of stress are manifold (Johnson & Sarason, 1979; Lazarus, 1966; Selye, 1956). Among those, the transactional model of stress from Lazarus and Folkman (1984) is a widely accepted conceptualization of stress from the field of behavioral psychology. Lazarus and Folkman's (1984) model emphasizes the understanding of stress as a dynamic transaction between individuals' resources and environmental demands. According to this theory, individuals undergo a process involving two stages when confronted with a potentially stressful situation (Lazarus, 1966). During these stages, individuals assess if the environmental demands exceed their resources to handle the situation (Lazarus & Folkman, 1984). Before transferring the transactional model of stress to the context of data disclosure situations in the following chapter, I will first discuss the two steps of appraisal in general.

When confronted with a situation, consumers engage in primary appraisal in a first step. Lazarus and Folkman (1984) distinguish three kinds of primary appraisal: During this step, individuals evaluate whether a situation is irrelevant, benign-positive or stressful. The later can be further classified into harm/loss, threat or challenge (Lazarus, 1966). Harm/loss refers to the damage that has already occurred, while threat refers to the possibility of future damage, which might arise from the current situation. Individuals construe a situation as challenging, when they believe the situation might hold the potential for future gains (Lazarus & Folkman, 1984).

When a situation is categorized as potentially harmful, threatening or challenging, individuals engage in secondary appraisal. During this stage, individuals evaluate if available resources are sufficient to cope with the focal situation. Resources include personal capabilities, such as intelligence or personal skills, as well as external resources, such as aid from others. If individuals come to

the conclusion that available resources are not sufficient, stress arises (Lazarus, 1966). It is important to note, that both primary appraisal and secondary appraisal can take place either consciously or unconsciously (Lazarus, 1966). Further, both stages are not isolated processes, but rather happen simultaneously (Lazarus & Folkman, 1984).

In case a situation is appraised as stressful, individuals employ strategies to handle the stressful situation. Such strategies to reduce stress are referred to as coping strategies (Folkman & Lazarus, 1980). Coping strategies can be categorized into problem-based and emotion-based coping (Folkman & Lazarus, 1980). Problem-focused coping includes all actions that are available to an individual in order to change the disturbed person-environment-relationship. Emotion-focused coping, on the other hand, comprises indirect actions that aim to change the intensity and valence of thoughts and feelings regarding the present situation (Folkman & Lazarus, 1988). In most cases, problem-focused and emotion-focused coping strategies are employed simultaneously (Folkman & Lazarus, 1980). In the context of data disclosure situations, which often require immediate reactions from the consumer (i.e., disclosing data or not), problem-focused coping strategies are of primary interest. For this reason, the remainder of the article will focus on problem-focused coping strategies.

2.2.2 Data disclosure situations through the lens of the transactional model of stress.

Many consumers describe situations in which they are required to disclose data as stressful. According to the classification of stressful events from Lazarus and Cohen (1977) data disclosure settings can be classified into the group of daily hassles. Compared to major events, daily hassles are less severely but elicit stress nevertheless (Lazarus & Cohen, 1977). Through the lens of the transactional model of stress, consumers' stress perception in data disclosure settings can arise from many circumstances in both the primary appraisal and secondary appraisal stage.

Figure 2.1 summarizes the processes pertaining to consumers' perception of a data disclosure situation as stressful, which will be detailed in the following chapters.

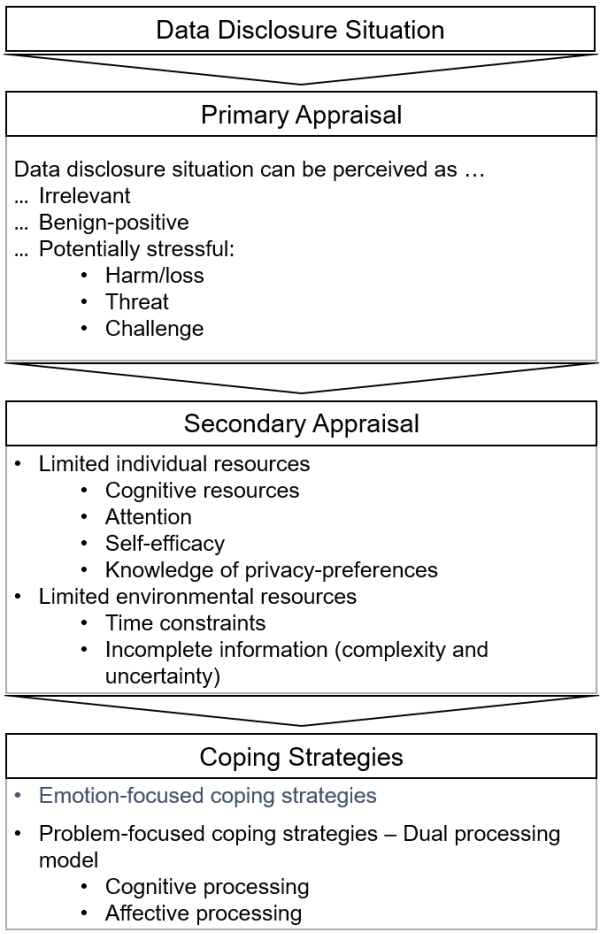


Figure 2.1. The formation of stress in data disclosure situations.

2.2.2.1 Primary appraisal.

When confronted with a data disclosure situation, consumers instantly construe a situation as irrelevant, benign-positive, or stressful. When a consumer believes that the data disclosure setting carries no implication for the consumer's well-being, the situation falls within the category of irrelevant. Given that privacy is a highly cherished value (Culnan, 1993; Taylor, 2003; Westin, 2003), it is not very likely for consumers to construe data disclosure settings as irrelevant. According to surveys on consumers' privacy attitudes only about ten percent of consumers fall into the group of "privacy unconcerned" (Taylor, 2003), which might classify a data disclosure setting as irrelevant.

The second option to appraise a situation is to construe it as benign-positive. Consumers will classify a data disclosure setting as benign-positive if they believe the outcome to be positive without any negative consequences (Lazarus, 1966). Such appraisals might occur in the context of data disclosure, when consumers disclose data for purposes, which carry high potential for positive outcomes, suppressing thoughts about potential negative side effects. Disclosing necessary data for health care purposes (e.g., medical treatment), for example, is likely to be perceived as positive, because consumers' focus lies on improving their health (He Li, Wu, Gao, & Shi, 2016).

While the first two kinds of appraisals do not result in stress, stress appraisals do. Stress appraisals include consumers' perception of a data disclosure situation as a challenge, harm/loss, or threat. Challenge appraisals occur, if consumers focus on positive outcomes associated with the data disclosure setting. Such positive outcomes include future gains from engaging in the data disclosure process. Any data disclosure setting, where consumers are asked for their data in return for benefits (e.g., personalization, monetary incentives, time saving, etc.) can be construed as a challenge to engage in a privacy-related risk-benefit trade-off (Chellappa & Sin, 2005; Dinev & Hart, 2006; Hann, Hui, Lee, & Png, 2007; Hui, Teo, & Lee, 2007).

In contrast to challenge appraisals, harm/loss and threat appraisals, focus on the negative outcomes associated with the data disclosure setting. While the category of harm/loss is characterized by actual damage, which has already occurred (e.g., data breach, phishing, etc.), threat focuses on anticipated harms or losses that have not yet taken place. These two categories are often interrelated, because each occurrence of harm/loss triggers negative implications for the future (Lazarus & Folkman, 1984). In the context of data disclosure, consumers may be confronted with personalized communication, which they perceive as an intrusion to their privacy (Xu, Luo, Carroll, & Rosson, 2011). This negative encounter will then

influence consumers' anticipations of future negative consequences (Culnan & Armstrong, 1999). Given the fact that the majority of consumers values their privacy (Westin, 2003), data disclosure settings bear high potential for consumers to appraise the situation as a harm/loss or threat (Culnan, 1993).

2.2.2.2 Secondary appraisal.

When consumers construe a data disclosure situation as challenging, harmful or threatening, they assess their available resources to cope with the situation in a next step. In the context of data disclosure, resources can be broadly classified into two groups (Acquisti, Taylor, & Wagman, 2016): individual resources and environmental resources – or lack thereof.

Individual resources. Among individual resources relevant for data disclosure decisions, literature emphasizes the role of cognitive resources (Acquisti et al., 2016; Dinev et al., 2015). An underlying assumption of privacy literature concerns consumers' decision-making as a strictly cognitive process (Dinev et al., 2015). Behavioral research on the other hand has long since acknowledged that consumers' cognitive capabilities are innately limited (Simon, 1990). Bounded rationality might negatively impact consumers' ability to acquire and process all relevant information in the focal privacy-related decision-making situation (Acquisti, 2004, 2009; Acquisti & Grossklags, 2005; Dinev et al., 2015). As such, limited cognitive capabilities constitute a lack of a critical individual resource needed to handle data disclosure situations under stress.

The issue of limited cognitive capabilities is further exacerbated by consumers' simultaneous engagement in multiple tasks, resulting in divided attention on the focal decision-making issue (March, 1994). Driven by the omnipresence of technological devices and constant access to the internet (Walker, 2016), consumers face the challenge to divide their limited cognitive attention among many issues (Kirsh, 2000; Klingberg, 2009; March, 1994; Veltri & Ivchenko, 2017). Studies found that overall time spent engaging with media increased rapidly

in the past years, which can be attributed to multitasking when engaging with media (Rideout, Foehr, & Roberts, 2010). Another study unveiled driving to be one of the most frequent multitasking activities regarding interaction with a mobile phone (Sohn, Li, Griswold, & Hollan, 2008). In data disclosure situations such multitasking activities might pose a serious challenge to privacy-related decision-making (Acquisti & Grossklags, 2005).

Besides consumers' cognitive resources and limited attention, the individual characteristic of self-efficacy has often been discussed in privacy-related decision-making contexts (Akhter, 2014; Chen & Chen, 2015; LaRose & Rifon, 2007; Lee & Hill, 2013; Yao & Linz, 2008; Yao, Rice, & Wallis, 2007). Self-efficacy refers to a consumer's belief in his or her capabilities needed to successfully engage in the current task (Bandura, 1977). As such, self-efficacy constitutes a valuable individual resource, which might facilitate consumers' privacy-related decision-making under stress.

Finally, consumers' knowledge of their own privacy-preferences constitutes an individual resource determining consumers' ability to cope with a stressful data disclosure situation. This resource is especially crucial in the privacy context, as consumers' tend to be uncertain about the psychological value of their privacy (Acquisti, 2004; Acquisti, John, & Loewenstein, 2013). Consumers lacking knowledge about their privacy-preferences perceive data disclosure situations to be more challenging. Hence, uncertainty about privacy preferences constitutes an impediment to consumers' coping strategies under stress.

Environmental resources. Often, even when consumers have sufficient individual resources, they may be limited by a lack of external resources (Acquisti, 2004; Acquisti & Grossklags, 2005). Various environmental peculiarities can be regarded as stress-inducing (Lazarus & Cohen, 1977).

Among those peculiarities, time constrains pose a serious threat to consumers' privacy-related decision-making (Dinev et al., 2015; Walker, 2016).

Driven by technological advancements, especially in the online context, consumers often face the challenge to make data disclosure decisions quickly (Keith et al., 2016; Walker, 2016). Such time constraints can be elicited by an urgent situation, where consumers seek to satisfy a certain need very quickly, such as in the case of a medical emergency (Walker, 2016) or from less severely, but nonetheless pressing matters such as navigating (Minch, 2004). Moreover, time constraints can be induced deliberately by data gathering firms to foster fast decision-making: Timely limited offers and calls to “act now!” can be employed to diminish consumers’ decision-making time (Dinev et al., 2015). As a result, consumers will appraise such situations, where they lack time to systematically evaluate the consequences of data disclosure as stressful (Dinev et al., 2015; Maule, Hockey, & Bdzola, 2000; Svenson & Maule, 1993).

Complexity and uncertainty further exacerbate the issue of time constraints in many modern data disclosure settings. While most data disclosure situations in the past consisted of straightforward, dyadic constellations involving one consumer and one firm (Culnan & Armstrong, 1999), consumers nowadays face increasingly complex data disclosure settings, which trigger high degrees of uncertainty (Dinev et al., 2006; Walker, 2016). One source for this complexity are business models based on the collection and trade of personal digital data across commercial networks of firms (Chen, Chiang, & Storey, 2012; Schumann, Wünderlich, & Evanschitzky, 2014; Steinhoff, Arli, Weaven, & Kozlenkova, 2019). Uber, Spotify, electronic payment systems, and loyalty programs are only some everyday examples for networks exchanging consumer data. Consumers confronting such complex networks face a high degree of uncertainty when asked to disclose data. Uncertainty refers to “an individual's perceived inability to predict something accurately” (Milliken, 1987). Consequences of data disclosure in complex settings are highly uncertain, because consumers often lack relevant information related to the further handling of their disclosed data (Acquisti & Grossklags, 2005; Pavlou et al., 2007; Walker, 2016). In

many situations, consumer engage in data disclosure setting without detailed information about the identity and intentions of all involved parties (Walker, 2016). As such, consumers cannot know ex ante which benefits and risks are to be expected from the involved firms (Pavlou et al., 2007). As a result, data disclosure settings, where consumers lack external resources by means of certainty about resulting consequences, bear potential for stress (Johnson, 1974).

2.2.3 Dual-processing.

Consumers' appraisal of the data disclosure situation results in a perception of stress when they construe the situation as potentially threatening or harmful and miss adequate individual and environmental resources to cope with the situation. Consumers then use various strategies to deal with existing limitations in stressful decision-making situations (Folkman & Lazarus, 1980). Decision-making processes underlying these strategies can be broadly classified according to dual-processing theory. Dual-processing theory comprises a group of distinct models (Chaiken, 1987; Chaiken & Trope, 1999; Epstein, 1994; Petty & Cacioppo, 1986), which share the common assumption that individuals process information through two separate but interacting systems (Evans, 2008; Evans & Stanovich, 2013). One system involves cognitive elaboration (cognitive processing), while the other system comprises affective processing (Evans, 2008). The following chapters will delineate consumers' privacy-related decision-making under stress according to this assumption of dual processing.

2.3 Conceptual Framework

2.3.1 Cognitive processing: The privacy calculus.

According to cognitive processing assumptions, consumers' privacy-related decision-making could take the form of deliberate information processing characterized by a systematic, organized information search, and thorough consideration of all consequences as well as all available alternatives (Chaiken,

1987; Janis & Mann, 1977; Petty & Cacioppo, 1986). The privacy calculus framework, which is the predominant perspective on privacy-related decision-making (Dinev & Hart, 2006; Laufer & Wolfe, 1977; Smith, Dinev, & Xu, 2011), can be classified into this group of cognitive processes. It is based on the assumption of an elaborate, well informed risk-benefit trade-off analysis (Culnan & Armstrong, 1999; Dinev & Hart, 2006). As such, consumers confronting the need to disclose data would accept the accompanying risks of data disclosure if their benefit perceptions outweighed those risks (Dinev & Hart, 2006).

Benefits in the context of privacy-related decision-making can take various forms such as financial compensation (Li, Sarathy, & Xu, 2010), personalization (Awad & Krishnan, 2006; Martin & Murphy, 2017), and access to digital content, which would otherwise be denied (Xu, Teo, Tan, & Agarwal, 2009). These benefits play a particularly important role in the context of e-commerce (Bleier & Eisenbeiss, 2015; Dinev & Hart, 2006; Hann, Hui, Lee, & Png, 2002). Another type of benefit in the digital landscape is that of social adjustment (Lu, Tan, & Hui, 2004), which refers to the need satisfaction of belonging to a social group. Moreover, literature identified individually perceived attractiveness, convenience, and time savings through data disclosure to be perceived as beneficial (Hann et al., 2002; Phelps, Nowak, & Ferrell, 2000). Notably, all of these potential benefit perceptions are highly subjective (Acquisti, 2004; Tversky, Slovic, & Kahneman, 1990).

Data disclosure also entails risks for consumers. Risks can be defined as the extent to which data disclosure is associated with the potential for loss (Malhotra, Kim, & Agarwal, 2004). Losses can take the form of consumers' vulnerability to fraud (Bleier & Eisenbeiss, 2015), privacy invasions (Culnan, 1993), unwanted or even obtrusive marketing communications (Martin & Murphy, 2017), and price discrimination (Odlyzko, 2003).

In order to cognitively assess risks and benefits associated with a data disclosure setting, consumers need adequate individual coping resources (e.g.,

undivided attention) and environmental coping resources (e.g., unambiguous information regarding consequences of data disclosure) (March, 1994). As described in the previous chapter, these resources are often limited, with the result that consumers perceive the data disclosure setting as stressful. Inherently, stress (i.e., limitation of coping resources) impedes cognitive processing. Such impediments of cognitive processing foster affective processing (Dinev et al., 2015; Finucane, Alhakami, Slovic, & Johnson, 2000). The following chapter will depict the influence of stress on affective processing in privacy-related decision-making contexts.

2.3.2 Affective processing.

Consumers' appraisals of the decision-making task at hand and their available resources elicits affective responses (Lazarus & Folkman, 1984). Affect is often used as an umbrella term for mental feeling processes including emotions, moods, and attitudes (Bagozzi, Gopinath, & Nyer, 1999). In the context of consumers' appraisal of a privacy-related decision-making situation, affective reactions must be differentiated according to their valence (Lazarus, 1999). Depending on whether the stress-triggering situation is perceived as a challenge, a threat, or a loss, different affective reactions can arise (Lazarus, 1999). Whereas challenging appraisals (i.e., focused on gains) are characterized by positive reactions such as eagerness, excitement, and exhilaration, threat appraisals trigger negative reactions such as fear, anxiety, or anger (Folkman & Lazarus, 1985). Accordingly, the first proposition can be derived:

Proposition 1a: If consumers' appraisal of the privacy-related decision-making situation leads to perceptions of challenge, positive affective reactions will be triggered.

Proposition 1b: *If consumers' appraisal of the privacy-related decision-making situation leads to perceptions of threat or loss, negative affective reactions will be triggered.*

It is important to note that stressful situations are likely to trigger multiple and sometimes even conflicting affective reactions (Folkman & Lazarus, 1985; Lazarus & Folkman, 1984), as has been found in the context of exam preparations, where students felt both threat and challenge emotions (Folkman & Lazarus,1985). Affective responses impact consumers' privacy-related decision-making in various ways (Dinev et al., 2015; Kehr et al., 2015; Yu, Hu, & Cheng, 2015). Figure 2.2 summarizes a conceptual model and corresponding propositions, that will be derived next.

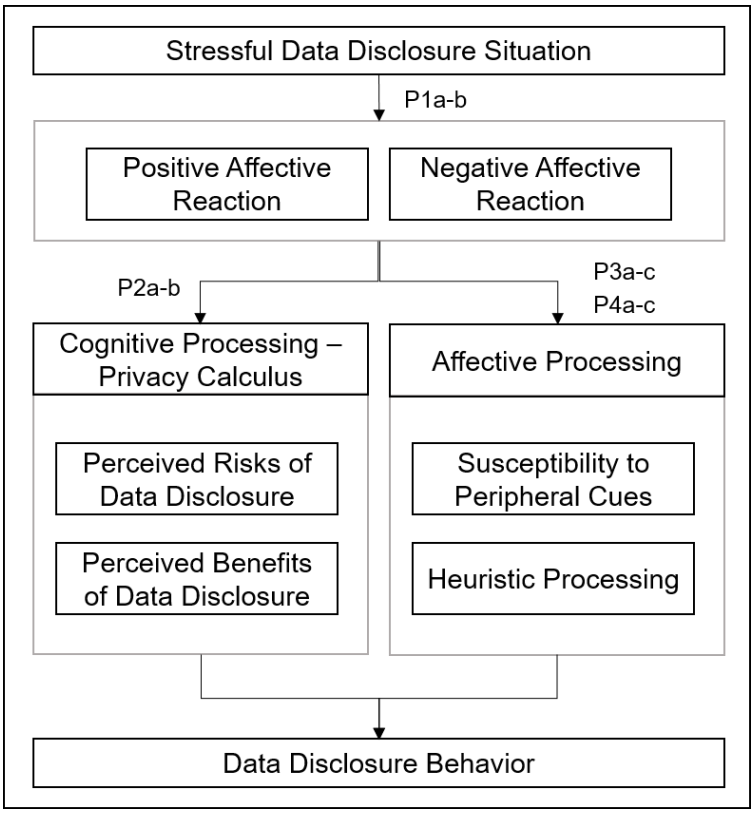


Figure 2.2. Conceptual framework for privacy-related decision-making under stress.

2.3.2.1 Affective reactions influencing the cognitive system.

Affective states can influence decision-making processes directly or indirectly by adjusting perceptions of situational aspects (Loewenstein & Lerner, 2003). Before discussing direct effects in the next chapter, this chapter will focus on indirect effects. Indirect effects refer to effects resulting from interferences of the affective system in the cognitive system. Such indirect effects have been observed in different contexts (Alhakami & Slovic, 1994; Hüttel, Schumann, Mende, Scott, &

Wagner, 2018; Lerner & Keltner, 2001; Slovic, Finucane, Peters, & MacGregor, 2004) including the privacy research domain. For example, Kehr et al. (2015) found positive affective reactions elicited by situational triggers (i.e., interface design) to influence disclosure behavior indirectly through an adjustment of perceived risks of disclosure; that is, consumers underestimated the risks of disclosure. Wakefield (2013) observed a similar interference investigating both positive and negative affect toward a website, such that trust beliefs were adjusted. Transferring these findings to the context of privacy-related decision-making under stress, affective reactions elicited by consumers' challenge or threat appraisals should lead to an adjustment of risk and benefit perceptions according to the valence of the affective state. While challenge appraisals and resulting positive affective reactions (e.g., eagerness, excitement) should lead to an overestimation of benefits, threat appraisals and resulting affective reactions (e.g., fear, anxiety) should lead to an overestimation of risks. According to Alhakami and Slovic (1994), who found that risk and benefit perceptions are often negatively correlated in consumers' minds, an overestimation of benefits (risks) should be accompanied by an underestimation of risks (benefits). This inverse relationship is especially pronounced under time pressure (Finucane et al., 2000) as is often the case in privacy-related decision-making situations under stress.

Proposition 2a: Elicited by consumers' appraisal of the disclosure setting as a challenge, positive affective reactions lead to an overestimation of benefits and an underestimation of risks associated with data disclosure.

Proposition 2b: Elicited by consumers' appraisal of the disclosure setting as a threat, negative affective reactions lead to an underestimation of benefits and an overestimation of risks associated with data disclosure.

2.3.2.2 Direct effects of affective processing on disclosure intentions under stress.

Stress impairs cognitive processing (Keinan, 1987). To deal with these impairments, consumers employ different strategies, which are often described as intuitive, impulsive or even hypervigilant (Dinev et al., 2015; Janis & Mann, 1977; Shiv & Fedorikhin, 1999). This group of strategies is characterized by selective information search, such that not all information is taken into account, or attention is paid only to distinctive properties (Janis & Mann, 1977). Environmental cues can constitute such distinctive properties, which may even not be related to the focal task, but are used by consumers to inform their privacy-related decision-making nevertheless (John et al., 2011; Kehr et al., 2015). For example, visual cues, which do not inherit critical information pertaining to the risks and benefits of data disclosure (e.g., website design), have been found to influence disclosure decision (John et al., 2011; Tang, Hong, & Siewiorek, 2011). Moreover, consumers tend to process available information only superficially, such that consumers interpret the mere existence of a privacy policy as an assurance for privacy (Urban & Hoofnagle, 2014). Keith et al. (2016) investigated other visual cues and found that consumers are also likely to be influenced by reported network size (i.e., previous downloads of a mobile application). They found that, when downloading a mobile application for location based services (i.e., disclosure of geographical data), consumers were more likely to download the application when download numbers indicated that others have already done so. This effect can be traced back to herding effects, which theorize that consumers are influenced by the behaviors of others in the same situation, such that they tend to mimic those behaviors (Allen, 1965; Huang & Chen, 2006).

Another peripheral cue influencing consumers in an affective processing mode is message framing (Chaiken, 1980; Tversky & Kahneman, 1981). Depending on whether a message frames objective consequences as losses or gains,

consumers' reactions differ (Meyerowitz & Chaiken, 1987). Angst and Agarwal (2009) investigated message framing in the context of attitudes toward data disclosure and found that consumers' provided with a positive message regarding electronic healthcare records were more likely to opt-in (i.e., disclose data for that purpose) compared to consumers presented with a neutral message.

Proposition 3: Consumers' decision-making process in data disclosure situations under stress is susceptible to environmental (i.e., peripheral) cues such as (a) design (b) herding effects, and (c) message framing.

Consumers under stress do not only engage in simplistic processing because of situational cues. Another group of affective processing strategies which are, likely to arise under stress, are heuristics (Shah, Shafir, & Mullainathan, 2015). Heuristics refer to simple schemes or decision rules based on past experiences and observations (Chaiken, 1987). One prominent example for consumers' employment of heuristics is their tendency to rely on a retailers' reputation (Xie, Teo, & Wan, 2006). Moreover, first investigations in the context of data disclosure found that consumers do not only judge the focal firm by its own reputation but also employ stereotypical thinking pertaining to data handling practices (Gerlach, Buxmann, & Dinev, 2019), such that general assumptions are transferred to the focal firm.

Relatedly, the so-called halo effect proposes that consumers transfer their perception of one attribute to another (Nisbett & Wilson, 1977). In the context of data disclosure, consumers might believe that a reputable firm would perform well in every regard including privacy protection (Li et al., 2016).

Moreover, consumers' in an affective processing mode fall prey to biases pertaining to their own vulnerability. According to the so-called optimistic bias, consumers believe that negative outcomes are less likely to happen to them, so that they underestimate the risks of disclosing data (Krasnova, Kolesnikova, & Guenther, 2009).

Proposition 4: Consumers' decision-making process in data disclosure situations under stress is susceptible to heuristic processing such as (a) stereotypical thinking (b) halo effects, and (c) optimistic biases.

In sum, privacy-related decision-making under stress evokes various different heuristics and biases on which consumers form their disclosure decision instead of engaging in elaborated, cognitive processing.

2.4 General Discussion

2.4.1 Theoretical contributions.

This article contributes to privacy-related decision-making literature pertaining to the role of situational and individual influences on disclosure behavior. As previously outlined, the majority of studies has focused on investigating single situational or individual inhibitors for consumers' privacy-related decision-making (Bansal & Gefen, 2010; Culnan & Armstrong, 1999; Gerlach, Widjaja, & Buxmann, 2015; Wu, Huang, Yen, & Popova, 2012; Xu et al., 2009). While these studies offer valuable insights into consumers' decision-making under certain restrictions (e.g., complex privacy policies,) and personal characteristics (e.g., big five personality traits), thus far no study comprehensively conceptualized individual resources and environmental demands as potential triggers for perceived stress. The proposed conceptualization of how stress arises in data disclosure decisions depending on consumers' appraisals of individual and environmental resources opens promising avenues for future research. Among other things, it would be interesting to investigate interdependencies between internal and external resources: Can internal resources compensate for a lack of external resources or vice versa?

Second, this study contributes to the emerging research stream advocating for the importance of affective processing in consumers' privacy-related decision-making (Acquisti & Grossklags, 2005; Alashoor, Al-Maidani, & Al-Jabri, 2018; Dinev et al., 2015; Kehr et al., 2015; Wakefield, 2013). Specifically, results from the literature review suggest that when under stress, consumers are more likely to

engage in affective processing compared to cognitive processing, as is widely assumed by privacy calculus researchers (Dinev & Hart, 2006; Li et al., 2010; Xu et al., 2009). Affective reactions elicited by stress influence disclosure intentions directly or through the adjustment of risk and benefit perceptions. To validate these propositions, empirical research is needed. In this context, it might be interesting to investigate whether dissonances between reported privacy concerns and actual disclosure behavior (i.e., privacy paradox) (Adjerid, Peer, & Acquisti, 2018; Xu et al., 2011) can be better understood, when regarding disclosure situations as stressful (i.e., affective processing leads to data disclosure despite general privacy concerns).

Third, within the group of affect driven decision-making strategies, this paper emphasizes heuristics as a crucial decision mechanism, thereby agreeing with emerging research on the role of heuristics in privacy-related decision-making (Gerlach et al., 2019; Gu, Xu, Xu, Zhang, & Ling, 2017; Sundar, Kang, Wu, Go, & Zhang, 2013). Because consumers under stress lack resources to process the decision-making situation in a cognitive, elaborated manner, they are more prone to employ “rules of thumb” (i.e., heuristics). Further investigations pertaining to the role of heuristics in privacy-related decision-making under stress as well as resulting decision quality might yield interesting insights.

2.4.2 Managerial implications.

This article provides guidance to managers of data gathering firms pertaining to consumers’ perception of potential stressors and resulting decision-making. Especially, managers need to realize that consumers appraise data disclosure settings through two stages: By assessing the potential threat to their privacy and by evaluating individual and environmental resources as means to overcome the stressful situation.

Against this background, data gathering firms should seek to design data disclosure requests such that consumers are more likely to appraise the situations as a challenge rather than a threat. When consumers perceive the situation as a

challenge, stress-induced affective reactions will be positive, resulting in favorable decision-making outcomes. In order to trigger appraisals of challenge, firms need to emphasize future gains from data disclosure. To do so, they could offer benefits such as personalization or future time saving. Thereby, it is important for firms to take steps to support consumers' actual appraisal of these benefits. Firms could, for example, employ peripheral cues to highlight those benefits, thereby helping consumers process the information in an easy manner.

Regarding consumers' individual coping resources, data gathering firms must be considerate of consumers' limited cognitive capabilities. While firms cannot directly influence those factors, they can manage environmental coping resources. To provide consumers with resources needed to cope with the data disclosure situation, firms should avoid putting consumers under time pressure deliberately when requesting data. Moreover, firms should provide adequate information regarding the future handling of the requested data to reduce uncertainty. If firms do not provide sufficient resources, consumers will rely on affective processing during decision-making, such as overestimating risks or engaging in stereotypical thinking. Firms must be cautious about affective reaction even if they seem favorable at first: Consumers who disclose data on a whim might regret is soon after, resulting in negative long-term consequences for the consumer-firm relationship.

2.4.3 Limitations.

Although this article makes valuable contribution to privacy-related decision-making literature, there are some limitations which offer opportunities for future research. First, the conceptualization of consumers' privacy-related decision-making was based on prevalent drivers regarding environmental demands and individual resources. While literature found those factors to form stressful decisions in general, there may be other situational factors pertaining to privacy-related decision-making situations in particular, which need to be identified yet. One interesting context to investigate such privacy-specific stressors would be in the domain of the internet of

things, where established stressors (e.g., divided attention) may be enhanced or mitigated by newly arising stress-related resources (e.g., virtual assistants).

Second, this article did not address personality traits' potential to moderate the impact of stress on coping strategies. Among other characteristics, consumers' resilience or hardiness might reduce consumers' reliance on affective processing even under stress, fostering more elaborated decision-making processes (Beasley, Thompson, & Davidson, 2003).

Finally, this article considered problem-focused coping strategies pertaining to general disclosure intentions. However, strategies such as the provision of false or incomplete data have not been addressed. Future research might want to explore such strategies.

2.5 Conclusion

Integrating fragmented literature pertaining to the role of inhibiting factors in consumers' privacy-related decision-making, this article conceptualizes data disclosure settings as stressful situations and uncovers elicited decision-making strategies. Drawing on stress, decision-making and privacy literature, a conceptual model is derived, which provides a valuable framework for empirical investigations.

2.6 References

Acquisti, A. (2004). Privacy in Electronic Commerce and the Economics of Immediate Gratification. *Proceedings of the 5th ACM Conference on Electronic Commerce*, New York, NY, USA.

Acquisti, A. (2009). Nudging Privacy: The Behavioral Economics of Personal Information. *IEEE Security & Privacy, 7*(6), 82–85. https://doi.org/10.1109/msp.2009.163

Acquisti, A., & Grossklags, J. (2005). Privacy and Rationality in Individual Decision Making. *IEEE Security & Privacy*, *3*(1), 26–33. https://doi.org/10.1109/MSP.2005.22

Acquisti, A., John, L. K., & Loewenstein, G. (2013). What is Privacy worth? *The Journal of Legal Studies*, 42(2), 249–274. https://doi.org/10.1086/671754

Acquisti, A., Taylor, C., & Wagman, L. (2016). The Economics of Privacy. *Journal of Economic Literature, 54*(2), 442–492. https://doi.org/10.1257/jel.54.2.442

Adjerid, I., Peer, E., & Acquisti, A. (2018). Beyond the Privacy Paradox: Objective Versus Relative Risk in Privacy Decision Making. *MIS Quarterly, 42*(2), 465-488. https://doi.org/10.25300/MISQ/2018/14316

Agarwal, R., & Dhar, V. (2014). Big Data, Data Science, and Analytics: The Opportunity and Challenge for IS Research. *Information Systems Research, 25*(3), 443–448. https://doi.org/10.1287/isre.2014.0546

Akhter, S. H. (2014). Privacy Concern and Online Transactions: The Impact of Internet Self-efficacy and Internet Involvement. *Journal of Consumer Marketing, 31*(2), 118–125. https://doi.org/10.1108/jcm-06-2013-0606

Alashoor, T., Al-Maidani, N., & Al-Jabri, I. (2018). The Privacy Calculus under Positive and Negative Mood States. *Proceedings of the 39th International Conference on Information Systems*, San Francisco, CA, USA.

Alhakami, A. S., & Slovic, P. (1994). A Psychological Study of the Inverse Relationship Between Perceived Risk and Perceived Benefit. *Risk Analysis:*

An International Journal, 14(6), 1085–1096. https://doi.org/10.1111/j.1539-6924.1994.tb00080.x

Allen, V. L. (1965). Situational Factors in Conformity. *Advances in Experimental Social Psychology, 2*, 133–175. https://doi.org/10.1016/s0065-2601(08)60105-7

Angst, C. M., & Agarwal, R. (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. https://doi.org/10.2307/20650295

Awad, N. F., & Krishnan, M. S. (2006). The Personalization Privacy paradox: An Empirical Evaluation of Information Transparency and the Willingness to be Profiled Online for Personalization. *MIS Quarterly, 30*(1), 13–28. https://doi.org/10.2307/25148715

Bagozzi, R. P., Gopinath, M., & Nyer, P. U. (1999). The Role of Emotions in Marketing. *Journal of the Academy of Marketing Science, 27*(2), 184–206. https://doi.org/10.1177/0092070399272005

Bandura, A. (1977). Self-efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review, 84*(2), 191–215. https://doi.org/10.1037//0033-295x.84.2.191

Bansal, G., & Gefen, D. (2010). The Impact of Personal Dispositions on Information Sensitivity, Privacy Concern and Trust in Disclosing Health Information Online. *Decision Support Systems*, *49*(2), 138–150. https://doi.org/10.1016/j.dss.2010.01.010

Beasley, M., Thompson, T., & Davidson, J. (2003). Resilience in Response to Life Stress: The Effects of Coping Style and Cognitive Hardiness. *Personality and Individual Differences, 34*(1), 77–95. https://doi.org/10.1016/s0191-8869(02)00027-2

Bleier, A., & Eisenbeiss, M. (2015). The Importance of Trust for Personalized Online Advertising. *Journal of Retailing, 91*(3), 390–409. https://doi.org/10.1016/j.jretai.2015.04.001

Chaiken, S. (1980). Heuristic versus Systematic Information Processing and the Use of Source versus Message Cues in Persuasion. *Journal of Personality and Social Psychology, 39*(5), 752–766. https://doi.org/10.1037//0022-3514.39.5.752

Chaiken, S. (1987). The Heuristic Model of Persuasion. In M. P. Zanna, J. M. Olson, & C. P. Herman (Eds.), *Social Influence: The Ontario Symposium*, Volume 5. New York: Psychology Press.

Chaiken, S., & Trope, Y. (1999). *Dual-Process Theories in Social Psychology*. New York: Guilford Press.

Chellappa, R. K., & Sin, R. G. (2005). Personalization versus Privacy: An Empirical Examination of the Online Consumer's dilemma. *Information Technology and Management*, *6*(2–3), 181–202. https://doi.org/10.1007/s10799–005–5879–y

Chen, H., Chiang, R. H., & Storey, V. C. (2012). Business Intelligence and Analytics: From Big Data to Big Impact. *MIS Quarterly, 36*(4), 1165–1188. https://doi.org/10.2307/41703503

Chen, H.-T., & Chen, W. (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. https://doi.org/10.1089/cyber.2014.0456

Culnan, M. J. (1993). " How Did They Get My Name?": An Exploratory Investigation of Consumer Attitudes Toward Secondary Information Use. *MIS Quarterly, 17*(3), 341–363. https://doi.org/10.2307/249775

Culnan, M. J., & Armstrong, P. K. (1999). Information Privacy Concerns, Procedural Fairness, and Impersonal Trust: An Empirical Investigation. *Organization Science*, *10*(1), 104–115. https://doi.org/10.1287/orsc.10.1.104

Dinev, T., & Hart, P. (2006). An Extended Privacy Calculus Model for e–Commerce Transactions. *Information Systems Research*, *17*(1), 61–80. https://doi.org/10.1287/isre.1060.0080

Dinev, T., Bellotto, M., Hart, P., Russo, V., Serra, I., & Colautti, C. (2006). Privacy Calculus Model in e-Commerce - A Study of Italy and the United States. *European Journal of Information Systems, 15*(4), 389–402. https://doi.org/10.1057/palgrave.ejis.3000590

Dinev, T., McConnell, A. R., & Smith, H. J. (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. http://dx.doi.org/10.1287/isre.2015.0600

Epstein, S. (1994). Integration of the Cognitive and the Psychodynamic Unconscious. *American Psychologist, 49*(8), 709–724. https://doi.org/10.1037//0003-066x.49.8.709

Evans, J. S. B. (2008). Dual-processing Accounts of Reasoning, Judgment, and Social Cognition. *Annual Review of Psychology,* 59, 255–278. https://doi.org/10.1146/annurev.psych.59.103006.093629

Evans, J. S. B., & Stanovich, K. E. (2013). Dual–Process Theories of Higher Cognition: Advancing the Debate. *Perspectives on Psychological Science*, *8*(3), 223–241. https://doi.org/10.1177/1745691612460685

Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The Affect Heuristic in Judgments of Risks and Benefits. *Journal of Behavioral Decision Making*, *13*(1), 1–17. https://doi.org/10.1002/(SICI)1099–0771(200001/03)13:1<1::AID–BDM333>3.0.CO;2–S

Folkman, S., & Lazarus, R. S. (1980). An Analysis of Coping in a Middle-aged Community Sample. *Journal of Health and Social Behavior, 21*(3), 219–239. https://doi.org/10.2307/2136617

Folkman, S., & Lazarus, R. S. (1985). If it Changes it must be a Process: Study of Emotion and Coping During Three Stages of a College Examination. *Journal of Personality and Social Psychology, 48*(1), 150–170. https://doi.org/10.1037//0022-3514.48.1.150

Folkman, S., & Lazarus, R. S. (1988). Coping as a Mediator of Emotion. *Journal of Personality and Social Psychology, 54*(3), 466–475. https://doi.org/10.1037//0022-3514.54.3.466

Gerlach, J., Buxmann, P., & Dinev, T. (2019). "They're All the Same!" Stereotypical Thinking and Systematic Errors in Users' Privacy–Related Judgments About Online Services. *Journal of the Association for Information Systems*, *20*(6), 787–823. https://doi.org/10.17705/1.jais.00551

Gerlach, J., Widjaja, T., & Buxmann, P. (2015). Handle with Care: How Online Social Network Providers' Privacy Policies Impact Users' Information Sharing Behavior. *Journal of Strategic Information Systems, 24*(1), 33–43. https://doi.org/10.1016/j.jsis.2014.09.001

Gu, J., Xu, Y. C., Xu, H., Zhang, C., & Ling, H. (2017). Privacy Concerns for Mobile App Download: An Elaboration Likelihood Model Perspective. *Decision Support Systems, 94*, 19–28. https://doi.org/10.1016/j.dss.2016.10.002

Hann, I.-H., Hui, K.-L., Lee, S.-Y. T., & Png, I. P. L. (2007). Overcoming Online Information Privacy Concerns: An Information-processing Theory Approach. *Journal of Management Information Systems, 24*(2), 13–42. https://doi.org/10.2753/MIS0742-1222240202

Hann, I.-H., Hui, K.-L., Lee, T., & Png, I. (2002). Online Information Privacy: Measuring the Cost-Benefit Trade-off. *Proceedings of the* 23th *International Conference on Information Systems*, Barcelona, Spain.

Huang, J.-H., & Chen, Y.-F. (2006). Herding in Online Product Choice. *Psychology & Marketing, 23*(5), 413–428. https://doi.org/10.1002/mar.20119

Hui, K.-L., Teo, H. H., & Lee, S.-Y. T. (2007). The Value of Privacy Assurance: An Exploratory Field Experiment. *MIS Quarterly, 31*(1), 19–33. https://doi.org/10.2307/25148779

Hüttel, B. A., Schumann, J. H., Mende, M., Scott, M. L., & Wagner, C. J. (2018). How Consumers Assess Free E-services: The Role of Benefit-inflation and Cost-deflation Effects. *Journal of Service Research, 21*(3), 267–283. https://doi.org/10.1177/1094670517746779

Janis, I. L., & Mann, L. (1977). *Decision making: A Psychological analysis of conflict, choice, and commitment*. New York: Free Press.

John, L. K., Acquisti, A., & Loewenstein, G. (2011). Strangers on a Plane: Context–Dependent Willingness to Divulge Sensitive Information. *Journal of Consumer Research*, *37*(5), 858–873. https://doi.org/10.1086/65642

Johnson, C. A. (1974). Privacy as Personal Control. In D. H. Carson (Ed.), *Man-Environment Interactions: Evaluations and Applications* (pp. 83–100). Washington, DC: Environmental Design Research Association.

Johnson, J. H., & Sarason, I. G. (1979). *Moderator Variables in Life Stress Research*. Seattle: Washington University Seattle Department of Psychology.

Kehr, F., Kowatsch, T., Wentzel, D., & Fleisch, E. (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. https://doi.org/10.1111/isj.12062

Keinan, G. (1987). Decision Making under Stress: Scanning of Alternatives under Controllable and Uncontrollable Threats. *Journal of Personality and Social Psychology, 52*(3), 639–644. https://doi.org/10.1037//0022-3514.52.3.639

Keith, M. J., Babb, J., Furner, C., Abdullat, A., & Lowry, P. B. (2016). Limited Information and Quick Decisions: Consumer Privacy Calculus for Mobile Applications. *AIS Transactions on Human-Computer Interaction, 8*(3), 88–130. https://doi.org/10.17705/1thci.00081

Kelley, H. H. (1967). Attribution Theory in Social Psychology. *Nebraska symposium on motivation*.

Kirsh, D. (2000). A Few Thoughts on Cognitive Overload. *Intellectica, 30*(1), 19–51. https://doi.org/10.3406/intel.2000.1592

Klingberg, T. (2009). *The Overflowing Brain: Information Overload and the Limits of Working Memory*. New York: Oxford University Press.

Krasnova, H., Kolesnikova, E., & Guenther, O. (2009). " It won't happen to me!": Self-disclosure in Online Social Networks. *Proceedings of the 15th Americas Conference on Information System*, San Francisco, CA, USA.

LaRose, R., & Rifon, N. J. (2007). Promoting i-safety: Effects of Privacy Warnings and Privacy Seals on Risk Assessment and Online Privacy Behavior. *Journal of Consumer Affairs, 41*(1), 127–149. https://doi.org/10.1111/j.1745-6606.2006.00071.x

Laufer, R. S., & Wolfe, M. (1977). Privacy as a Concept and a Social Issue: A Multidimensional Developmental Theory. *Journal of Social Issues, 33*(3), 22–42. https://doi.org/10.1111/j.1540-4560.1977.tb01880.x

Lazarus, R. S. (1966). *Psychological Stress and the Coping Process*. New York: McGraw-Hill Book Company.

Lazarus, R. S., & Cohen, J. B. (1977). Environmental Stress. In I. Altman & J. F. Wohlwill (Eds.), *Human Behavior and Environment* (pp. 89–127). Boston: Springer Publishing.

Lazarus, R. S., & Folkman, S. (1984). *Stress, Appraisal, and Coping*. New York: Springer Publishing Company.

Lee, H.-H., & Hill, J. T. (2013). Moderating Effect of Privacy Self-efficacy on Location-based Mobile Marketing. *International Journal of Mobile Communications, 11*(4), 330–350. https://doi.org/10.1504/ijmc.2013.055747

Lerner, J. S., & Keltner, D. (2001). Fear, Anger, and Risk. *Journal of Personality and Social Psychology, 81*(1), 146–159. ttps://doi.org/10.1037//0022-3514.81.1.146

Li, H., Wu, J., Gao, Y., & Shi, Y. (2016). Examining Individuals' Adoption of Healthcare Wearable Devices: An Empirical Study from Privacy Calculus Perspective*. International Journal of Medical Informatics, 88*, 8–17. https://doi.org/10.1016/j.ijmedinf.2015.12.010

Li, H., Sarathy, R., & Xu, H. (2010). Understanding Situational Online Information Disclosure as a Privacy Calculus. *Journal of Computer Information Systems*, *51*(1), 62–71. https://doi.org/10.1080/08874417.2010.11645450

Loewenstein, G., & Lerner, J. S. (2003). The Role of Affect in Decision Making. In R. J. Davidson, K. R. Schrer, & H. H. Goldsmith (Eds.), *Handbook of Affective Sciences* (pp. 619–642). New York: Oxford University Press.

Lu, Y., Tan, B., & Hui, K.-L. (2004). Inducing Customers to Disclose Personal Information to Internet Businesses with Social Adjustment Benefits. *Proceedings of the* 25th *International Conference on Information Systems*, Washington, DC, WA, USA.

Malhotra, N. K., Kim, S. S., & Agarwal, J. (2004). Internet Users' Information Privacy Concerns (IUIPC): The Construct, the Scale, and a Causal Model. *Information Systems Research, 15*(4), 336–355. https://doi.org/10.1287/isre.1040.0032

March, J. G. (1994). *Primer on Decision Making: How Decisions Happen*. New York: Simon and Schuster.

Martin, K. D., & Murphy, P. E. (2017). The Role of Data Privacy in Marketing. *Journal of the Academy of Marketing Science*, *45*(2), 135–155. https://doi.org/10.1007/s11747–016–0495–4

Maule, A. J., Hockey, G. R. J., & Bdzola, L. (2000). Effects of Time-pressure on Decision-making under Uncertainty: Changes in Affective State and

Information Processing Strategy. *Acta Psychologica, 104*(3), 283–301. ttps://doi.org/10.1016/s0001-6918(00)00033-0

Meyerowitz, B. E., & Chaiken, S. (1987). The Effect of Message Framing on Breast Self-examination Attitudes, Intentions, and Behavior. *Journal of Personality and Social Psychology, 52*(3), 500–510. https://doi.org/10.1037//0022-3514.52.3.500

Milliken, F. J. (1987). Three Types of Perceived Uncertainty About the Environment: State, Effect, and Response Uncertainty. *Academy of Management Review, 12*(1), 133–143. https://doi.org/10.2307/257999

Minch, R. P. (2004). Privacy Issues in Location-aware Mobile Devices. *Proceedings of the 37th Annual Hawaii International Conference on System Sciences*, Big Island, HI, USA.

Nisbett, R. E., & Wilson, T. D. (1977). The Halo Effect: Evidence for Unconscious Alteration of Judgments. *Journal of Personality and Social Psychology, 35*(4), 250–256. https://doi.org/10.1037/0022-3514.35.4.250

Odlyzko, A. (2003). Privacy, Economics, and Price Discrimination on the Internet. *Proceedings of the 5th International Conference on Electronic Commerce*. Pittsburgh, PA, USA.

Pavlou, P. A., Liang, H., & Xue, Y. (2007). Understanding and Mitigating Uncertainty in Online Exchange Relationships: A Principal-Agent Perspective. *MIS Quarterly, 31*(1), 105–136. https://doi.org/10.2307/25148783

Petty, R. E., & Cacioppo, J. T. (1986). The Elaboration Likelihood Model of Persuasion. In *Communication and Persuasion Springer Series in Social Psychology* (pp. 1–24). New York: Springer Publishing.

Phelps, J., Nowak, G., & Ferrell, E. (2000). Privacy Concerns and Consumer Willingness to Provide Personal Information. *Journal of Public Policy & Marketing, 19*(1), 27–41. https://doi.org/10.1509/jppm.19.1.27.16941

Rideout, V. J., Foehr, U. G., & Roberts, D. F. (2010). Generation M 2: Media in the Lives of 8-to 18-Year-Olds. Retrieved 20.10.2019 from https://files.eric.ed.gov/fulltext/ED527859.pdf

Schumann, J. H., von Wangenheim, F., & Groene, N. (2014). Targeted Online Advertising: Using Reciprocity Appeals to Increase Acceptance Among Users of Free Web Services. *Journal of Marketing*, *78*(1), 59–75. https://doi.org/10.1509/jm.11.0316

Selye, H. (1956). *The Stress of Life*. New York: McGraw-Hill Book Company.

Shah, A. K., Shafir, E., & Mullainathan, S. (2015). Scarcity Frames Value. *Psychological Science, 26*(4), 402–412. https://doi.org/10.1177/0956797614563958

Shiv, B., & Fedorikhin, A. (1999). Heart and Mind in Conflict: The Interplay of Affect and Cognition in Consumer Decision Making. *Journal of Consumer Research, 26*(3), 278–292. https://doi.org/10.1086/209563

Simon, H. A. (1990). Bounded Rationality. In J. Eatwell, M. Milgate, & P. Newman (Eds.), *Utility and Probability* (pp. 15–18). London: Palgrave Macmillan.

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2004). Risk as Analysis and Risk as Feelings: Some Thoughts about Affect, Reason, Risk, and Rationality. *Risk Analysis: An International Journal, 24*(2), 311–322. https://doi.org/10.1111/j.0272-4332.2004.00433.x

Smith, H. J., Dinev, T., & Xu, H. (2011). Information Privacy Research: An Interdisciplinary Review. *MIS Quarterly*, *35*(4), 989–1016. https://doi.org/10.2307/41409970

Sohn, T., Li, K. A., Griswold, W. G., & Hollan, J. D. (2008). A Diary Study of Mobile Information Needs. *SIGCHI Conference on Human Factors in Computing Systems*, Florence, Italy.

Steinhoff, L., Arli, D., Weaven, S., & Kozlenkova, I. V. (2019). Online Relationship Marketing. *Journal of the Academy of Marketing Science, 47*(3), 369–393. https://doi.org/10.1007/s11747-018-0621-6

Sundar, S. S., Kang, H., Wu, M., Go, E., & Zhang, B. (2013). Unlocking the Privacy Paradox: Do Cognitive Heuristics Hold the Key? *CHI extended abstracts on human factors in computing Systems*, 811–816.

Svenson, O., & Maule, A. J. (1993). *Time Pressure and Stress in Human Judgment and Decision Making*. New York: Plenum Press.

Tang, K. P., Hong, J. I., & Siewiorek, D. P. (2011). Understanding how Visual Representations of Location Feeds Affect End-user Privacy Concerns. *Proceedings of the 13th International Conference on Ubiquitous Computing*, Pittsburgh, PA, USA.

Taylor, H. (2003). *Most People are "Privacy pragmatists" who, While Concerned about Privacy, will Sometimes Trade it off for Other Benefits* (The Harris Poll). Retrieved 28.11.2019 from https://theharrispoll.com/wp-content/uploads/2017/12/Harris-Interactive-Poll-Research-Most-People-Are-Privacy-Pragmatists-Who-While-Conc-2003-03.pdf

Tversky, A., & Kahneman, D. (1981). The Framing of Decisions and the Psychology of Choice. *Science, 211*(4481), 453–458. https://doi.org/10.1126/science.7455683

Tversky, A., Slovic, P., & Kahneman, D. (1990). The Causes of Preference Reversal. *The American Economic Review, 80*(1), 204–217. https://doi.org/10.1017/cbo9780511618031.009

Urban, J. M., & Hoofnagle, C. J. (2014). The Privacy Pragmatic as Privacy Vulnerable. *Symposium on Usable Privacy and Security: Workshop on Privacy Personas and Segmentation*, Menlo Park, CA, USA.

Veltri, G. A., & Ivchenko, A. (2017). The Impact of Different Forms of Cognitive Scarcity on Online Privacy Disclosure. *Computers in Human Behavior, 73*, 238–246. https://doi.org/10.1016/j.chb.2017.03.018

Wakefield, R. (2013). The Influence of User Affect in Online Information Disclosure. *The Journal of Strategic Information Systems*, *22*(2), 157–174. https://doi.org/10.1016/j.jsis.2013.01.003

Walker, K. L. (2016). Surrendering Information Through the Looking Glass: Transparency, Trust, and Protection. *Journal of Public Policy & Marketing*, *35*(1), 144–158. https://doi.org/10.1509/jppm.15.020

Westin, A. F. (2003). Social and Political Dimensions of Privacy. *Journal of Social Issues, 59*(2), 431–453. https://doi.org/10.1111/1540-4560.00072

Wu, K.-W., Huang, S. Y., Yen, D. C., & Popova, I. (2012). The Effect of Online Privacy Policy on Consumer Privacy Concern and Trust. *Computers in Human Behavior, 28*(3), 889–897. https://doi.org/10.1016/j.chb.2011.12.008

Xie, E., Teo, H.-H., & Wan, W. (2006). Volunteering Personal Information on the Internet: Effects of Reputation, Privacy Notices, and Rewards on Online Consumer Behavior. *Marketing Letters, 17*(1), 61–74. https://doi.org/10.1007/s11002-006-4147-1

Xu, H., Luo, X. R., Carroll, J. M., & Rosson, M. B. (2011). The Personalization Privacy paradox: An Exploratory Study of Decision Making Process for Location-aware Marketing. *Decision Support Systems, 51*(1), 42–52. ttps://doi.org/10.1016/j.dss.2010.11.017

Xu, H., Teo, H.-H., Tan, B. C. Y., & Agarwal, R. (2009). The Role of Push-pull Technology in Privacy Calculus: The Case of Location-based Services. *Journal of Management Information Systems, 26*(3), 135–174. https://doi.org/10.2753/mis0742-1222260305

Yao, M. Z., & Linz, D. G. (2008). Predicting Self-protections of Online Privacy. *CyberPsychology & Behavior, 11*(5), 615–617. https://doi.org/10.1089/cpb.2007.0208

Yao, M. Z., Rice, R. E., & Wallis, K. (2007). Predicting User Concerns about Online Privacy. *Journal of the American Society for Information Science and Technology, 58*(5), 710–722. https://doi.org/10.1002/asi.20530

Yu, J., Hu, P. J.-H., & Cheng, T.-H. (2015). Role of Affect in Self-Disclosure on Social Network Websites: A Test of Two Competing Models. *Journal of Management Information Systems, 32*(2), 239–277. https://doi.org/10.1080/07421222.2015.1063305

3. Essay 2: Privacy-related Decision-making in Business Network Data Exchange Settings: The Role of Consumers' Affective Reactions

Margarita Bidler, Jan H. Schumann, Thomas Widjaja

Submitted at the Journal of the Academy of Marketing Science (VHB Ranking: A)

Today consumers are often required to disclose private data to not only one single firm but to a network of data exchanging firms. We refer to such settings as business network data exchange (BNDE). Privacy-related decision-making research has so far mainly investigated data disclosure as a cognitive process in dyadic consumer–firm settings. While this cognitive approach can be appropriate for dyadic settings, we argue that BNDE disclosure settings cannot be easily assessed in a purely cognitive way. Thus, we propose and test a complementary extension of the established cognitive approach in form of a dual-processing model of privacy-related decision-making. Six experimental studies (N_{Study1}= 325, $N_{Study2a}$ = 304, $N_{Study2b}$ = 322, $N_{Study3a}$ = 215, $N_{Study3b}$ = 292, N_{Study4} = 306) reveal the crucial role of affective processes when confronted with a BNDE network. Notably, our empirical results indicate that the dual-processing model is suited to explain any data disclosure setting characterized by uncertainty, including dyadic settings.

Keywords: information privacy, privacy-related decision-making, dual-processing, business network data exchange

3.1 Introduction

The telecommunication provider Telefónica caused an uproar in 2012 when it tried to adapt a new business model based on the exchange of its customers' location data within a new to be established network of firms ranging over various branches, such as retailers, who could derive meaningful business insights from these data. Consumers' indignant reactions to this new business model halted the venture for four years. These negative reactions to Telefónica's shift from a dyadic to a network business model are surprising considering that these data would only have been used in an anonymous way and at an aggregated level and would have provided consumers with benefits in return (e.g., innovative services from different partner firms) (Telefónica, 2016). Another example for such negative reactions is the music streaming service Spotify, who uses consumer data in a business network of advertisers, concert providers and other third-party companies with the result that consumers voice various reservations (Harding, 2019). Examples like these illustrate consumers' unfavorable reactions to a new class of business models we denote as business network data exchange (BNDE). As consumer data constitutes a crucial competitive advantage (Agarwal & Dhar, 2014; Sorescu, 2017) firms engage in commercial networks, where consumer data are gathered by one firm and are exchanged across the network (Steinhoff, Arli, Weaven, & Kozlenkova, 2019). Typical BNDE collaboration aim to provide digital contents, services, or advertisements on the basis of consumer data, thereby generating value for consumers in the form of personalization. To do so, the focal data-gathering firm (e.g., Spotify) asks consumers to disclose data and give consent to exchanging the data across the BNDE network. With this, it takes control over consumers' data and shares it with its partners, without further need for consumers' consents for every single follow-up exchange. Detailed consumer profiles based on these newly gathered data can increase the focal firm's advertising revenues, because it can

charge higher prices for advertising spaces. The data-receiving network partners (e.g., concert providers) then use the data to confront consumers with personalized advertisements with the goal to improve their products' attractiveness. According to a survey conducted by Forbes Insights (2018) two-thirds of the surveyed firms allocate at least a quarter of advertising budgets to engage in such advertising networks. 40% of those firms working with third-party partners belief that this engagement yields their firms' competitive advantage (Forbes Insights, 2018).

While many firms recognize the potential for monetizing consumer data through BNDE settings, they do also hesitate to enter into BNDE networks, out of fear of negative reactions by consumers to the potential BNDE accompanying privacy intrusion, such as in the example of Telefónica. Hence, it is critical for firms to understand why consumers react in such a negative way to BNDE networks.

Research on privacy-related decision-making indicates that when confronted with a request to provide personal digital data, consumers engage in a "Privacy Calculus" which is a cognitive risk–benefit trade-off analysis (Dinev & Hart, 2006). According to this theoretical framework, data disclosure occurs in essence if the benefits outweigh the expected risks of data disclosure (Dinev & Hart, 2006). Investigations of the cognitive trade-off between risks and benefits focus on dyadic, consumer–firm settings (Smith, Dinev, & Xu, 2011; Xu, Teo, Tan, & Agarwal, 2009). The central assumption of elaborated decision-making seems fitting for dyadic contexts: Consumers might be able to observe and assess the risks and benefits associated with data disclosure to a single firm—however, even in dyadic settings, innate bounded rationality could limit such purely cognitive approaches (Acquisti & Grossklags, 2005). On the other hand, BNDE disclosure settings are characterized by uncertainty, which is defined as an inability to predict accurately what the outcomes of a decision might be (Milliken, 1987): e.g., Who are the data-receiving partners? Which (parts) of the data will be exchanged? Which benefits and risks are

to be expected from not only the focal firm but also from the other firms within the network? Due to these uncertainties, consumers cannot thoroughly assess all possible consequences of their data disclosures to (sometimes unknown) network partners (Acquisti, Adjerid, & Brandimarte, 2013). Prior literature has found that such uncertainties can hamper an elaborated, cognitive, risk–benefit assessment thereby fostering consumers' reliance on their very first automatic response to a stimulus (i.e., affective processing) (Acquisti & Grossklags, 2005). Following this line of argument, we belief that BNDE data disclosure settings are distinct contexts that constitute a challenge to privacy-related decision-making literature's assumption of deliberate, cognitive decision-making. Surprisingly, prior literature on consumer privacy related decision making has largely focused on dyadic settings. In a structured literature review, we identified only a few notable exceptions that test privacy-related decision-making in contexts similar to BNDE (see chapter privacy calculus research). For example, Angst and Agarwal (2009) investigate privacy concerns related to electronic health records, for which health providers store patients' data and make them accessible to other (medical) parties. Such a business constellation represents a BNDE setting. However, while this study offers valuable insights into the cognitive aspects related to data disclosure to networks, it overlooks the peculiarity of BNDE accompanying uncertainty.

Against this background, we aim to (a) introduce BNDE settings as distinct data disclosure settings different from dyadic settings and (b) propose and empirically test a dual-processing model of privacy-related decision-making to account for the peculiarity of BNDE-evoked uncertainty in consumers' decision-making. We argue that in order to account for uncertainty regarding potential risks and benefits of BNDE data disclosure settings, established cognitive processing needs to be complemented with an affective processing approach. In particular, we propose and empirically test a dual-processing model of privacy-related decision-

making (Epstein, 1994; Evans & Stanovich, 2013) for BNDE settings in one pre-study observing real disclosure behavior and six experimental studies focusing on disclosure intentions. We show the robustness of our focal effects with a within-paper meta-analysis.

Before study 1 introduces a dual-processing model for data disclosure in BNDE settings, a pre-study observing real behavior uncovers the unfavorable effect of BNDE on consumers' data disclosure behavior. Results from study 1 then show that from a purely cognitive point of view, consumers are aware of the objective scenario-specific differences resulting from data disclosure to a BNDE network. However, when forming their disclosure intentions, consumers do not rely on these objective aspects assessed on the cognitive processing route but rather base their decisions on their spontaneous negative affective reactions elicited by BNDE. In detail, we find that (1) immediate affective reactions triggered by BNDE accompanying uncertainty lead to a direct reduction of disclosure intentions through the affective processing route, and (2) immediate affective reactions influence assessments on the cognitive processing route unfavorably, thereby indirectly reducing disclose intentions through the cognitive processing route. In study 2a and 2b, we rule out perceived complexity and network size as alternative explanations for our focal effect pertaining to the formation of immediate affective reactions, supporting our assumption of BNDE accompanying uncertainty as the cause for this effect. Studies 3a and 3b provide a deep-dive into the mechanism of how BNDE-inherent uncertainty elicits immediate affective reactions. In study 3a, we demonstrate that consumers—especially those with a high need for cognition—express strong negative immediate affective reactions due to perceptions of deprivation (Cohen, Stotland, & Wolfe, 1955) because BNDE-evoked uncertainty hampers consumers' opportunity for cognitive evaluations (Acquisti & Grossklags, 2005). Study 3b supports this finding by manipulating consumers' opportunity to

engage in cognitive processing in both dyadic and BNDE settings. Results confirm that a hindrance of cognitive processing elicits immediate affective reactions. Finally, in study 4 we demonstrate the power of immediate affective reactions as they can induce spillover effects to cognitive evaluations of aspects unrelated to the focal disclosure decision. Our six experimental studies uncover a robust unfavorable effect of BNDE on immediate affective reactions and disclosure intentions, as a within-paper meta-analysis confirms.

These findings collectively underpin several contributions to privacy-related decision-making research and highlight practical insights for implementing business models that rely on exchanges of consumer data. First, we complement privacy-related decision-making research that so far has been predominantly investigated in dyadic data disclosure settings by introducing BNDE as a new class of business model, which has implications for consumers' decision-making processes. We demonstrate that compared to dyadic data disclosure settings, BNDE settings evoke higher uncertainty, which leads to a hindrance of cognitive processing thereby fostering negative immediate affective reactions.

Second, our results advance the emerging research stream which advocates for the importance of low-effort processing (i.e., affective processing) in privacy-related decision-making (Alashoor, Al-Maidani, & Al-Jabri, 2018; Dinev, McConnell, & Smith, 2015; Gerlach, Buxmann, & Dinev, 2019; Kehr, Kowatsch, Wentzel, & Fleisch, 2015; Li, Sarathy, & Xu, 2011; Wakefield, 2013), by delineating the underlying mechanism according to a dual-processing model (Epstein, 1994; Evans & Stanovich, 2013). Our dual-processing model complements established cognitive processing approaches (i.e., risk-benefit trade-off) with an affective processing route accounting for consumers' first, automatic reaction to a BNDE disclosure setting. With this, we address a call from Dinev et al. (2015) for empirical studies of the role of low-effort processing in privacy-related decisions (e.g., affective reactions).

Third, we contribute to privacy-related decision-making research by suggesting that a dual-processing model is suited not only to BNDE settings but can also be applied to other disclosure settings. The dual-processing model has greater predictive power than a purely cognitive privacy-related decision-making model, for both BNDE settings and dyadic settings. In turn, our work has managerial implications for any data disclosure setting, where cognitive elaborations are hampered such as BNDE settings but also dyadic settings characterized by uncertainty.

This paper is organized as follows: In the next section, we review the theoretical background and introduce BNDE as a distinct data disclosure context. We next develop a dual-processing model for privacy-related decision-making in BNDE settings. For this we first establish a cognitive base model corresponding to the objective differences that arise in a dyadic versus BNDE setting. Next, we extend this model to a dual-processing model of privacy-related decision-making. Subsequent sections describe our data collection procedures, hypotheses testing with serial mediation and moderation analyses, and discussions of each of the experimental studies. Finally, we include a within-paper meta-analysis to test the focal effects (i.e., affective reaction and disclosure intentions) in aggregate. We conclude with a general discussion of the findings, limitations, and avenues for further research.

3.2 Conceptual Model and Hypotheses

Two main streams of literature provide the theoretical foundation for this work. The privacy calculus framework is the conceptual basis for our base model; dual-processing theories offer a complementary view that encompasses affective processes.

3.2.1 Privacy calculus research.

An established approach to research individuals' data disclosure is the "Privacy Calculus" framework (Smith et al., 2011). This framework is based on the notion of a calculus of privacy-related behavior that Laufer and Wolfe (1977) propose. It predicts that consumers seek to behave in ways that maximize the positive and minimize the negative outcomes (Culnan & Armstrong, 1999). Hence, the privacy calculus is a strictly rational approach, in line with traditional decision-making theories such as expectancy theory and utility maximization theory (Acquisti & Grossklags, 2005; Li, 2012). If consumers confront the need to disclose private data, the privacy calculus assumes they weight the potential risks against the benefits of disclosing. This trade-off between risks and benefits in online settings originally involved a consumer disclosing data to a specific firm (Culnan & Armstrong, 1999). Consumers would accept the accompanying risks of data disclosure if they reached a positive evaluation, in favor of their benefit perception (Dinev & Hart, 2006). Through this rational consideration, the privacy calculus seeks to explain privacy-related attitudes, behavioral intentions, and resulting consumer behavior (Laufer & Wolfe, 1977).

Since the upcoming of the Privacy Calculus, numerous studies investigated consumers' privacy-related decision-making with this framework. Dinev and Hart (2006) for example, extend it to include internet trust and personal internet interest, to highlight how these positive beliefs can outweigh privacy risk perceptions. Other researchers investigate personal factors, such as general privacy concerns (Angst & Agarwal, 2009; Li et al., 2011), or situational factors, such as privacy assurances (Hui, Teo, & Lee, 2007), trust (Bansal, Zahedi, & Gefen, 2015) and fairness perceptions (Culnan & Armstrong, 1999; Li & Unger, 2012). Moreover, extensions of the privacy calculus framework include data-related factors, such as data sensitivity (Lwin, Wirtz, & Williams, 2007; Phelps, Nowak, & Ferrell, 2000), companies' uses of

personal data (Phelps et al., 2000), and data collection mode (Baruh, Secinti, & Cemalcilar, 2017). All these extensions leverage cognitive aspects to improve the predictive power of the privacy calculus framework.

A structured literature review in accordance with Webster and Watson (2002) specifies this observation further: We conducted structured keyword searches for "data," "information," and "priva*," combined with terms that represent data handling (e.g., concern*, disclos*, shar*, use, trust*, protect*, calcul*, deci*, control*, reveal*, trad*, expos*, provi*, collect*, inva*, gather*) in the title and keywords. We obtained 1,607 publications. After screening for publications which were specifically concerned with consumers' privacy-related decision-making (i.e., excluding articles, which only casually regarded "privacy"), we identified 90 publications published between 1991 and early 2017. Within these 90 publications, we identified studies pertaining to the role of affect in privacy-related decision-making and those focused on disclosure settings in which consumer data are exchanged across a network of firms. Shared consumer data with third-party firms and affective reactions both have received some research attention, but no study links them. Table 3.1 summarizes the results of our literature review and illustrates how our paper addresses this gap.

Table 3.1.

Prior work on privacy-related decision-making in BNDE or similar network settings or on affective reactions and comparison with this paper

Authors (Year)	Research focus	BNDE or similar disclosure setting	Consideration of affective reaction	Main findings
Angst and Agarwal (2009)	The paper investigates how individuals can be persuaded to disclose medical information to electronic health records.	Consumer data within electronic health records can be accessed by various medical parties.	–	Individual's privacy concerns interact with argument framing and issue involvement to affect attitude, which further influences opt-in behavior to electronic health records.
Dinev et al. (2015)	Propose that both high-effort and low-effort cognitive responses influence privacy-related attitudes and behaviors.	–	Low-effort processing	A variety of factors impact the level of cognitive effort, which in turn modifies relations between privacy-related constructs (APCO-macro model).
Gerlach et al. (2015)	Investigate the influence of privacy policy permissiveness on risk perception and intention to disclose on online social networks.	Online social networks monetize consumer data (i.e., targeted advertising).	–	Users' privacy risk perceptions mediate the effect that changes in policies' monetization options have on users' willingness to disclose information.
Kehr et al. (2015)	Examine the effects of dispositional and situational factors on consumers' willingness to use a data-gathering smartphone application.	–	Positive affect elicited by application design	Consumers underestimate the risks of disclosure when confronted with an interface that elicits positive affect.

Authors (Year)	Research focus	BNDE or similar disclosure setting	Consideration of affective reaction	Main findings
Krasnova et al. (2009)	Investigate whether users are willing to pay for online social networks to circumvent having their data used for personalized advertising.	Online social network providers generate revenue through personalized advertising.	–	Network providers can capitalize on different user preferences by offering premium accounts.
Li et al. (2017)	Examine the effects of general privacy concerns, cognitive appraisals, and emotions formed during actual website interactions.	–	Consumers' liking of a website	Consumers are more likely to disclose personal information when they have positive cognitive appraisals and liking toward the website.
Li et al. (2011)	Investigate the influence of affective and cognitive reactions toward an unfamiliar website on privacy protection and risk believes.	–	Emotion (i.e., fear and joy)	Initial emotions formed from an overall impression of an unknown website act as initial hurdles to information disclosure.
Wakefield (2013)	Investigates the roles of positive and negative affect on users' trust and privacy beliefs.	–	Positive affect (enjoyment) and negative affect (distress) toward using a website	Enjoyment positively influences website trust and privacy beliefs enhancing data disclosure.
Walker (2016)	Conceptualizes a matrix on the difference between surrendering to technology versus sharing information online.	Consumers face increasing complexity and uncertainty in online exchanges of information.	–	Consumers surrender data in circumstances that they do not adequately understand.

Authors (Year)	Research focus	BNDE or similar disclosure setting	Consideration of affective reaction	Main findings
Yu et al. (2015)	Test two competing models on the role of affect toward self-disclosure in online social network disclosure settings.	–	Affect toward self-disclosure and toward social network websites	Affect toward self-disclosure and toward social networks relate positively to self-disclosure. Affect a) directly steers self-disclosure (model 1) or b) influences cost and benefit appraisals (model 2).
This study	We introduce a dual-processing model of privacy-related decision-making for the BNDE context.	BNDE disclosure settings challenge purely cognitive decision-making because of uncertainty.	Immediate affect as a first reaction to a stimulus (i.e., data-disclosure to BNDE network)	Instead of engaging in purely cognitive decision-making, immediate affective reactions lower disclosure intentions a) directly, b) indirectly through adjustments of cognitive perceptions of control, ad-intrusiveness, risks and benefits, and c) through spillover effects on risks and benefits unrelated to BNDE.

3.2.2 Business network data exchange.

Because the context for data disclosure strongly influences consumers' privacy-related decision-making (Culnan & Bies, 2003; Li, Sarathy, & Xu, 2010), we next identify BNDE as settings distinct from dyadic disclosure settings. We define practices, where consumer data are gathered by one firm, which represents the focal firm from the consumer's perspective, and then are exchanged within a commercial network of firms as BNDE. Compared to this, dyadic settings require the consumer to disclose data to only one party, without further exchanges of data—as illustrated in figure 3.1.

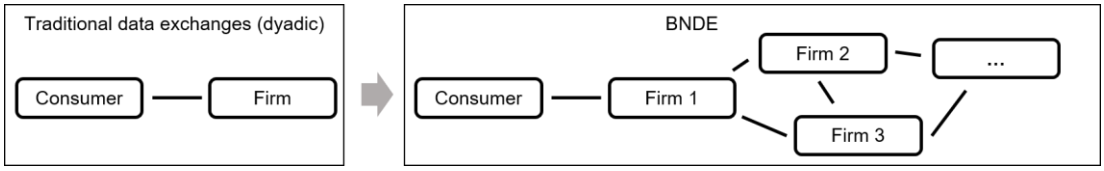


Figure 3.1. Dyadic vs. BNDE data disclosure settings.

BNDE networks consist of at least two commercial parties. The focal firm gathers consumer data, takes control of the disclosed data and exchanges (part of) them with BNDE partners. Firms within a BNDE network can further exchange consumer data among each other. Notably, we do not consider online social networks to be BNDE networks in the sense, that consumers disclose data (i.e., postings) to other users of their online network, as those receiving users have no commercial interest in further exchanging the disclosed data (i.e., objective risks and benefits greatly differ in commercial and non-commercial settings).

BNDE should not be confused with *unauthorized secondary data use*, which is the use of consumer data for a purposes other than they initially were provided for and without consumers' explicit knowledge or consent (Culnan, 1993). Contrary to that, BNDE assumes consumers' knowledge and consent to the data exchanges across the BNDE network. In particular, when confronted with a BNDE network, consumers are asked to disclose data and give consent for further exchanges of the data within the BNDE network. Hence, while being informed about the general fact

that data will be used in a BNDE network, BNDE settings create uncertainty, about which partners have access to their data and how they will use them. These uncertainties pose a challenge to consumers' privacy-related decision-making going beyond consumers' privacy concerns about future unauthorized secondary use or misuse, which is often researched in dyadic contexts (Smith et al., 2011). Compared to dyadic settings, where consumers might face some lower degree of uncertainty, it is inherent to the nature of BNDE networks to *always* elicit uncertainty regarding the network partners and their future data usage.

BNDE networks feature different constellations and various revenue models (Chen, Chiang, & Storey, 2012; Schumann, Wünderlich, & Evanschitzky, 2014). One prevailing example for a typical collaboration in BNDE networks is that of partner firms joining the network to inform personalization efforts (e.g., online targeting) (Aguirre, Mahr, Grewal, de Ruyter, & Wetzels, 2015). The BNDE collaborations within this BNDE type can produce various forms of personalization, but they all follow the same process: To provide services, contents, or advertisements that reflect consumer data, the data-gathering firm asks the consumer to disclose data to it and the whole BNDE network. Detailed consumer profiles based on these newly gathered data can increase the focal firm's advertising revenues, because it can charge higher prices for advertising spaces. The data-receiving partners than use these data to contact appropriate consumers with personalized advertisements, which should improve their product attractiveness. For consumers, such BNDE types are characterized by high degrees of uncertainty regarding future risks and benefits of data disclosure, because they cannot anticipate which kind of consequences to expect from each (often unknown) firm (e.g., in terms of relevance and frequency of personalized communication). This uncertainty about both risks and benefits might prompt consumers to engage in

affective privacy-related decision-making more likely, rather than using a cognitive route (Acquisti & Grossklags, 2005).

3.2.3 Data disclosure decisions in BNDE settings though the lens of the privacy calculus: A cognitive base model.

Following the established assumption of cognitive decision-making, in this chapter we focus on objective differences between a dyadic and a BNDE data disclosure setting. We will compare this cognitive base model to a dual-processing model accounting for immediate affective reactions triggered by BNDE in a next step.

Privacy-related decision-making literature emphasizes the role of consumers' perceived control over their private data (Smith et al., 2011). A widely accepted understanding of information privacy as the ability to personally control private data (Culnan, 1993; Smith, Milberg, & Burke, 1996) suggests that perceived control is closely associated with the perceived risk of losing private data. From a cognitive point of view, data disclosure in BNDE settings should reduce consumers' control over their personal data, because the data-collecting firm takes control over those data and shares them with its network partners. In a typical collaboration involving targeted advertising, the data-receiving partners then use the data to contact consumers with advertisement reflecting insights from the gathered consumer data. Research has shown that consumers often seek to avoid such marketing efforts (Hann, Hui, Lee, & Png, 2008) as they perceive firm-initiated communication as intrusive (Milne & Rohm, 2000). From consumers' perspective, BNDE should lead to increased perceptions of ad-intrusiveness, because consumers receive advertising from not just the focal firm but also unknown firms within the BNDE network. Therefore, instead of generating beneficial outcomes, personalized communication may evoke consumers' negative perceptions of the contacts as intrusive (Edwards, Li, & Lee, 2002). As a result, from a cognitive point of view, BNDE accompanying

control reduction over private data will lead to an increase of perceived privacy risks, while BNDE accompanying ad-intrusiveness will have a negative impact on perceived benefits.

Prior literature found that consumers do not assess risks and benefits independently but rather suggests that risk and benefit perceptions are often associated in consumers' minds (Finucane, Alhakami, Slovic, & Johnson, 2000). Hence, consumers' perceptions of loss of control in BNDE settings could not only influence risk perceptions positively, but may also reduce benefit perceptions, while ad-intrusiveness could not only impact benefits perceptions negatively but also risk perceptions positively. To account for that possibility, we will also test for those crosswise effects.

3.2.4 Extending the base model: The role of immediate affective reactions in decision-making.

3.2.4.1 Integrating cognitive privacy-related decision-making in a dual-processing framework.

Consumers usually can assess the risks and benefits of data disclosure cognitively in dyadic settings, but this assessment is more difficult in BNDE settings, because they introduce uncertainty about *who* has access to the data and *how* they are used. This uncertainty about negative and positive consequences hampers integrated cognitive evaluations (Acquisti & Grossklags, 2005). Therefore, instead of purely cognitive approaches to explain behavioral intentions, decision-making literature often proposes dual-processing models of thinking (Epstein, 1994; Evans & Stanovich, 2013), with two separate systems. The first system is a fast, automatic process that sparks immediate affective reactions (i.e., affective system); the second system is a deliberate, cognitive process, constrained by psychological limitations and situational aspects (i.e., cognitive system). In accordance with such dual-processing models, we propose that privacy-related decision-making in BNDE settings occurs through two systems: Reliance on an immediate affective reaction,

due to exposure to a stimulus (i.e., data disclosure to a BNDE network), and a process of deliberate weighing of cognitive factors (i.e., perceptions of loss of control, ad-intrusiveness, risks, and benefits). We argue that the use of the affective system (i.e., using immediate affective reactions to inform decision-making) will be especially likely for BNDE settings, because BNDE accompanying uncertainty hinders processing through the cognitive system thereby fostering affective processing (Finucane et al., 2000). That is, we suggest consumers in BNDE contexts do not thoroughly evaluate objective cognitive aspects related to data disclosure but instead rely on immediate affective reactions to form disclosure intentions.

3.2.4.2 Immediate affective reactions to BNDE settings.

In response to a stimulus, consumers unconsciously and automatically refer to an "affective pool" of positive and negative associations (Finucane et al., 2000; Zajonc, 1980). Consumers' immediate affective reactions to data disclosures likely are negative, because consumers seek to protect personal data from intrusion (Culnan, 1993). We argue that compared with dyadic settings, this negative affect is stronger in BNDE settings, where consumers are uncertain about the potential outcomes and feel trepidation about disclosing to a BNDE network of mostly unknown firms (Wakefield, 2013). Specifically, consumers will perceive negative immediate affective reactions because BNDE accompanying uncertainty limits their opportunity to engage in cognitive processing, triggering perceptions of deprivation.

H1: BNDE elicits stronger negative immediate affective reactions than dyadic data disclosure settings.

Research found that both positive and negative affect have strong direct influences on intentions to disclose private data to an unfamiliar website (Wakefield, 2013). Therefore, we anticipate that negative immediate affective reactions elicited by BNDE reduce consumers' intention to disclose. This reliance on immediate

affective reactions to inform decision-making through the affective system occurs because BNDE accompanying uncertainty hinders processing through the cognitive system thereby fostering affective processing (Finucane et al., 2000). In particular, we posit that compared to dyadic disclosure situations, where there are no hindrances to cognitive processing, BNDE disclosure situations foster consumers' reliance on affective processing. That is, consumers do not rely on their cognitive evaluations of loss of control, ad-intrusiveness, and the resulting risks and benefits but rather rely on immediate affective reactions to make decisions.

H2: Consumers in BNDE disclosure setting more heavily rely on affective processing to form disclosure intentions compared to consumers in dyadic disclosure settings.

3.2.4.3 Interaction of the affective and cognitive system.

The mechanisms from the previous hypotheses argue for the impact of BNDE on disclosure intentions through the affective system. However, dual-processing models assert that although the affective and cognitive system exist separately, they also interact (Epstein, 1994). For example, prior research has shown that affective processing influences cognitive risk and benefit assessments (Finucane et al., 2000). Hüttel, Schumann, Mende, Scott, and Wagner (2018) show that positive affect leads to benefit-inflation and risk-deflation effects, such that the benefits of a free product are overestimated and its risks are underestimated. Based on Li et al. (2011), who show that both positive and negative affect influence consumers' privacy risk assessments, we argue that previous findings about the impact of affective reactions on cognitive evaluations likely also apply to our BNDE research setting. That is, the negative immediate affect elicited by BNDE increases consumers' perceptions of loss of control and ad-intrusiveness and leads to an overestimation of risk perceptions and an underestimation of benefit perceptions (i.e., risk-inflation and benefit-deflation).

H3a-d: H3a-d: Immediate affective reactions elicited by BNDE bias assessments on the cognitive processing route, by inducing (a) control-deflation, (b) ad-intrusiveness-inflation, (c) risk-inflation, and (d) benefit-deflation effects.

Figure 3.2 summarizes our conceptual model.

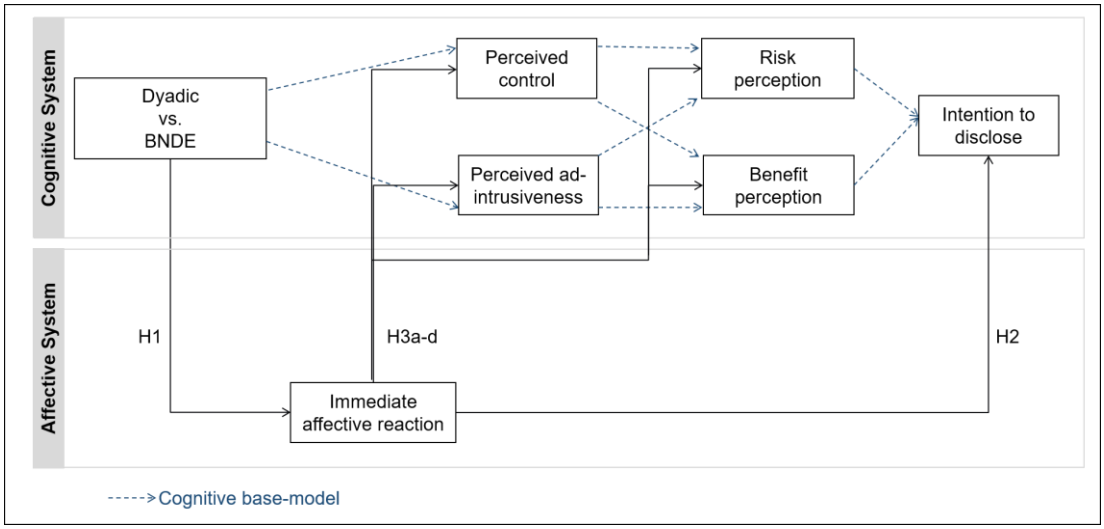


Figure 3.2. Conceptual model—Dual-processing model.

In the following section we will describe our experimental studies for testing this conceptual model. In a pre-study, we compare consumers' disclosure behavior in a dyadic and a BNDE disclosure setting to investigate the potential economic impact of consumers' reactions to BNDE networks. Study 1 will introduce our proposed dual-processing model and compare it to the cognitive base model. In study 2a and 2b, we will rule out perceived complexity and the size of the BNDE network as alternative explanation for the focal effects (i.e., immediate affective reactions arise due to BNDE accompanying uncertainty and not because of complexity or network size). Study 3a and 3b then represent deep-dives into the mechanism of how BNDE—due to uncertainty—hinders cognitive elaborations and thus fosters affective processing by investigating observed variance in consumers' need for cognition in study 3a and by inducing an artificial hindrance of cognitive processing in study 3b. Study 4 demonstrates the power of the affective processing

system by investigating spillover effects on unrelated cognitive evaluations. Finally, a within-paper meta-analysis underpins the robustness of our focal effects.

3.3 Research Methodology

3.3.1 Pre-study: Consumer intentions and behaviors in BNDE data disclosure settings.

To investigate the potential economic impact of BNDE business models, we first conducted a pre-test to evaluate if consumers' data disclosure behavior differs in dyadic versus BNDE disclosure settings.

3.3.1.1 Design, participants, and procedure.

Employing a paper-pencil approach, we exposed participants to a data disclosure request to observe disclosure behavior. Specifically, we told participants that an online fashion retailer required their private data (e.g., personal interests, income, marital status) for personalization purposes. Online retailers are ubiquitous and commonly request private data from consumers, so they provide an appropriate study setting. We assigned participants randomly to either a dyadic group (no BNDE), such that their data would be used by the focal firm only, or a BNDE group, such that the data would be shared with 30 partner firms in the shop's network. Appendix A provides the visual material used for the manipulation.

The convenience sample consists of data from 146 undergraduate students (M_{Age} = 20.68 years, SD_{Age} = 2.42, 57.8% women). Participants were exposed to the manipulation such that they would see either a data disclosure request from a fashion retailer (dyadic setting) or a data request from a retailer engaging in a BNDE network (BNDE setting). Participants were instructed to disclose the requested data or choose to decline the request. Both choices included real behavior (filling out the data request vs. checking a decline option). After engaging in this task, participants answered questions on their intention to disclose data (three items adopted from Malhotra, Kim, and Agarwal (2004) on a 7-point semantic differential scale).

3.3.1.2 Results of pre-study.

A chi square test of independence was conducted comparing the data disclosure behavior of consumers presented with a dyadic versus a BNDE disclosure setting. Results reveal a significant association between disclosure situation and consumers' data disclosure (χ^2 (1) = 16.47, p < .000). Consumers in the dyadic condition were more likely to disclose data (60.00%) than consumers in the BNDE condition (27.03%). Moreover, we find that consumers' intention to disclose data predicted actual disclosure behavior (Accuracy = 77.1%).

3.3.1.3 Discussion of pre-study.

The pre-study provides first evidence for the economic impact of BNDE business models. We find that consumers are significantly less likely to engage in data disclosure when confronting a BNDE network compared with a single firm requesting data. As such, this pre-study emphasizes the importance of investigating this new class of business models constituting a basis for our experimental studies, which we will discuss in the following chapters.

3.3.2 Study 1: Introducing a dual-processing model.

With this first study, we test whether a dual-processing model appropriately describes data disclosure decisions in BNDE settings. We start with the cognitive base model which accounts for the objective difference between data disclosure to a single firm and disclosure to a BNDE network (i.e., increased loss of control and ad-intrusiveness). We next compare this cognitive approach with our extended dual-processing model, which complements cognitive processing with an affective processing route.

3.3.2.1 Design, participants, and procedure.

We employed an online experimental approach and randomly assigned participants to a single treatment with two conditions, for which we manipulated BNDE in a fictional online shop setting. Similarly to the pre-study, we told

participants that the online shop required their private data (e.g., personal interests, income, marital status) for personalization purposes. Within this context, we then assigned participants randomly to either a dyadic group (no BNDE) or a BNDE group, (BNDE network of 30 firms). We coded the manipulation such that dyadic (0) versus BNDE (1) provided our independent variable.

From an online panel, we recruited participants who are representative of adult internet users. The sample consists of data from 325 respondents (M_{Age} = 31.99 years, SD_{Age} = 8.13, 50% women). Participants were exposed to the manipulation and then answered questions on all constructs specified in our theoretical framework. We adopted measures from prior studies and contextualized them to an online shopping setting. The multi-item scales improved the reliability and validity of the measurement. For intentions to disclose data, we used three items adopted from Malhotra, Kim, and Agarwal (2004) on a 7-point semantic differential scale. The perceived risks of data disclosure were measured with four items from Dinev, Xu, Smith, and Hart (2013), and the perceived benefits of data disclosure relied on four items from Voss, Spangenberg, and Grohmann (2003), all measured on seven-point Likert scales. We measured immediate affective reactions to BNDE on a bipolar 5-point scale (1: very negative immediate affect; 5: very positive immediate affect), adopted from Shampanier, Mazar, and Ariely (2007). This intuitive measure for immediate affective reactions corresponds well to our goal of measuring consumers' very first, automatic association with a data disclosure setting without cognitive interference. Participants also indicated their perceived control over private data (four items from Dinev et al. (2013)), ad-intrusiveness (four items from Li, Edwards, and Lee (2002)), how sensitive they perceived the requested data to be (one item from Xie, Teo, and Wan (2006)), and socio-demographic aspects. We also included three questions regarding consumers' perceived uncertainty: Reflecting our assumption that a BNDE situation is

characterized by a higher degree of uncertainty (compared to a dyadic setting) we asked participants whether the presented data disclosure situation was 1. easy to comprehend - difficult to comprehend, 2. straightforward – unclear, 3. not complex – complex. These questions served as our manipulation check. The Cronbach's alphas for all constructs were at least 0.77, indicating the high internal consistency of each construct (see the Appendix B).

To mitigate concerns about self-reported data (common method bias), we implemented the actions recommended by Podsakoff, MacKenzie, Lee, and Podsakoff (2003): We assured anonymity for all participants, provided contextual information to reduce ambiguity, and highlighted that there were no right or wrong answers.

3.3.2.2 Results of study 1.

Running our manipulation check we find that participants in the BNDE condition reported significantly higher perceptions of uncertainty (M_{BNDE} = 4.64) compared to participants in the dyadic data collection condition (M_{Dyadic} = 4.15), indicating that our underlying assumption about the challenging nature of decision-making in BNDE settings seems correct ($t(323) = -3.24$, $p < .001$). We next used the PROCESS macro for SPSS to test the proposed mediation model (Hayes, 2017). Thus, we programmed a customized serial mediation model with 5,000 bootstrapping samples, creating a 95% bias-corrected confidence interval (CI). Age, gender, and perceived sensitivity of the requested data were covariates.

Cognitive base model. In a first run, we tested the cognitive base model. Participants in the BNDE condition reported significantly lower intentions to disclose private data (M_{BNDE} = 2.50) than those in the dyadic condition (M_{Dyadic} = 4.03, $t(323) = 6.88$, $p < .001$). In line with our assumptions, the analyses confirmed that BNDE exerted a negative effect on control perceptions ($\beta = -.44$, $t(320) = -3.94$, $p < .001$) and a positive effect on perceptions of ad-intrusiveness ($\beta = .29$, $t(320) = 2.67$, $p =$

.008). Control in turn marginally affected risk perceptions negatively (β = -.09, t(318) = -1.82, p = .06), while ad-intrusiveness had a significant negative impact on benefit perceptions (β = -.36, t(318) = -7.34, p < .001). Moreover, we find positive effects of ad-intrusiveness on risk perceptions (β = .21, t(318) = 4.13, p < .001) and of perceived control on benefit perceptions (β = .20, t(318) = 4.24, p < .001), supporting the assumptions of crosswise effects related to risk and benefit perceptions.

In line with the trade-off assumption of the privacy calculus framework, we confirm a negative effect of risk perceptions (β = -.16, t(316) = -3.75, p < .001) and a positive effect of benefit perceptions (β = .48, t(316) = 10.75, p < .001) on disclosure intentions. The mediation analyses reveal significant indirect effects of BNDE on disclosure intentions, through ad-intrusiveness and risk perceptions (β = -.01, 95% CI [-.023, -.002]), as well as through ad-intrusiveness and benefit perceptions (β = -.05, 95% CI [-.101, -.012]) and through loss of control and benefit perceptions (β = -.04, 95% CI [-.085, -.013]). Contrary to our base model assumption pertaining to the relationship between perceived control and risk perceptions, we do not find a significant indirect effect of BNDE through loss of control and risk perceptions on disclosure intentions (β = -.006, 95% CI [-.019, .001]).

The serial mediation analyses also reveal significant direct effects of BNDE on risk perceptions (β = .21, t(318) = 2.06, p = .04), benefit perceptions (β = -.34, t(318) = -3.47, p < .001), and intentions to disclose (β = -.33, t(316) = -4.22, p < .001), despite the expected full mediations by perceived control and ad-intrusiveness in the cognitive base model.

Notably, perceived sensitivity of the requested data, which we included as a control variable significantly influenced perceptions of ad-intrusiveness, risks, benefits, and disclosure intentions. The effect sizes are detailed in the model summary in the appendix (Appendix C). The cognitive base model explains 58% of

the variance in disclosure intentions (*adjusted* R^2 = .584, $F(8, 316) = 57.82$, $p <$ .001). Figure 3.3 provides an overview of the empirical results from the base model.

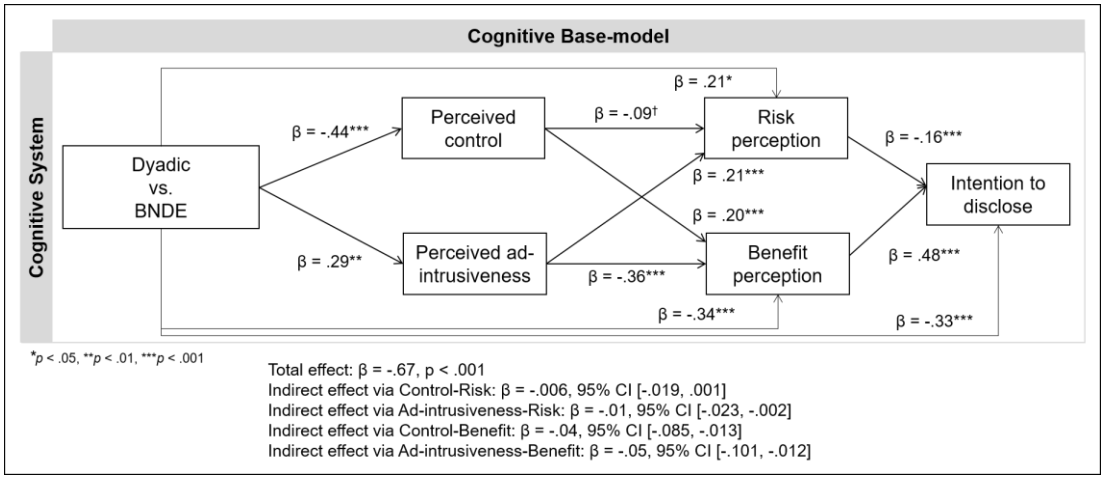


Figure 3.3. Cognitive base model results.

Dual-processing model. When we include immediate affect as a very first automatic reaction to the disclosure situation into the model, all remaining direct effects of BNDE on risks, benefits and disclosure intentions, which stayed significant in the base model now become insignificant. Moreover, the cognitive paths through control and ad-intrusiveness become insignificant, hinting at the strong predictive power of immediate affective reactions in consumers' privacy-related decision-making. BNDE induces strong negative immediate affective reactions (β = -.76, $t(320) = -7.67$, $p <$ .001). This finding confirms hypothesis 1. Further, immediate affective reactions reduce disclosure intentions (β = .52, $t(315) = 10.78$, $p <$ .001), resulting in full mediation of BNDE through immediate affective reactions on disclosure intentions (β = -.40, 95% CI [-.537, -.273]).

Next to this mediation effect through immediate affect on consumers' disclosure intentions, we also find immediate affective reactions to influence the cognitive system: In line with dual-processing theories, results confirm that immediate affective reactions, reflecting affective processing, influence subsequent cognitive evaluations. Immediate negative affect fosters consumers' perceptions of loss of control (β = .34, $t(319) = 5.67$, $p <$ .001) and ad-intrusiveness (β = -.48,

t(319) = -8.51, *p* < .001). Moreover, negative immediate affective reactions lead to a risk-inflation (*β* = -.35, *t*(317) = -5.59, *p* < .001) and benefit-deflation (*β* = .53, *t*(317) = 10.01, *p* < .001). These results support our hypotheses 3a-3d. Serial mediation analyses further revealed significant indirect effects of BNDE through immediate affect and benefit perceptions (*β* = -.10, 95% CI [-.165, -.054]), and immediate affect, perceived control and benefit perceptions (*β* = -.006, 95% CI [-.016, -.000]), as well as through immediate affect, ad-intrusiveness and benefit perceptions (*β* = -.016, 95% CI [-.031, -.006]) on disclosure intentions. The dual-processing model (Figure 3.4) explains substantial variance in consumers' data disclosure intentions (*adjusted* R^2 = .695, *F*(9, 315) = 83.02, *p* < .001).

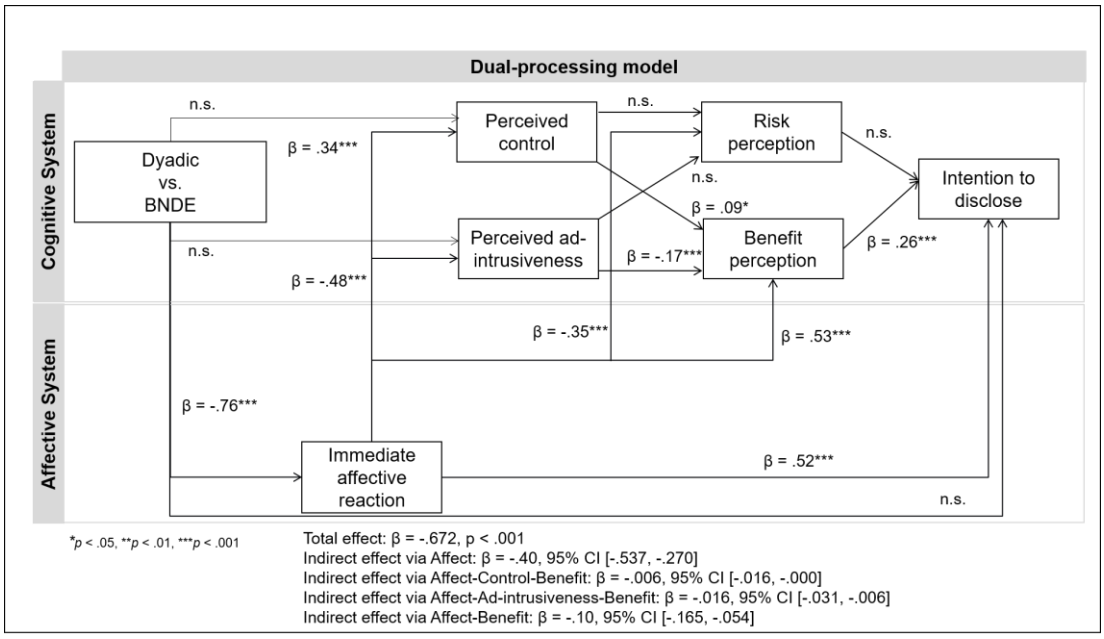


Figure 3.4. Dual-processing model results.

Consumers' reliance on affective processing – additional analyses. For detailed evaluations pertaining to consumers' reliance on affective processing as proposed in H2, we split the data into dyadic and BNDE subsets. We calculated hierarchical regression models for both and compared coefficients and the model fits for both the base model and the dual-processing model for each set. The additional analyses revealed that by adding immediate affective reactions to the base model,

the R-square values increased by 0.257 for the dyadic subset (ΔR^2 = .257, F(1, 189) = 50.27, p < .001) and by 0.317 in the BNDE subset (ΔR^2 = .317, F(1, 122) = 40.94, p < .001). Our proposed dual-processing framework explains more variance in disclosure intentions than purely cognitive approaches in BNDE and dyadic settings alike. Moreover, comparing the influence of immediate affective reactions on disclosure intentions, we find the β-coefficient to be higher in the BNDE subset (β = .56, t(112) = 7.47, p < .001) than in the dyadic subset (β = .46, t(189) = 7.28, p < .001). As such, findings from study 1 suggest that (a) BNDE settings trigger higher immediate affective reactions than dyadic settings and (b) consumers more heavily rely on these immediate affective reactions in BNDE settings to form disclosure intentions.

3.3.2.3 Discussion of study 1.

Study 1 complements privacy-related decision-making research in two important ways. First, it conceptually introduces BNDE settings as data disclosure settings distinct from dyadic disclosure settings. The uncertainty evoked by BNDE settings with regard to the risks and benefits of data disclosure leads to a different evaluation of the data disclosure setting than arises in dyadic settings. Second, study 1 introduces and confirms a dual-processing model of privacy-related decision-making. It provides an extension of purely cognitive models of privacy-related decision-making, by adding a complementary affective system, which accounts for consumers' automatic, immediate affective reaction to a data disclosure setting. In line with prior research (Milne & Rohm, 2000; Smith et al., 2011), we find that the cognitive base model emphasizes the role of loss of control and ad-intrusiveness for consumers' evaluations of BNDE disclosure settings. However, contrary to prior assumptions about strictly cognitive evaluations of disclosure settings, consumers form disclosure intentions through the affective system (i.e., immediate affective reactions) rather than by evaluating cognitive

aspects related to BNDE setting (i.e., loss of control, ad-intrusiveness). That is, consumers in BNDE disclosure settings perceive stronger immediate affective reactions and more heavily rely on them to inform their decision-making compared with consumers in dyadic disclosure settings. Immediate affective reactions further influence consumers' cognitive assessments such that loss of control, ad-intrusiveness, and risks are overestimated while benefits are underestimated. This finding is analogous to prior research that details influences of positive affect on risk and benefit assessments (Hüttel et al., 2018; Li et al., 2011). Notably, the dual-processing model explains more variance in disclosure intentions for both BNDE settings as well as for dyadic settings.

3.3.3 Study 2a: Ruling out alternative explanations: Complexity.

Throughout this article, we argue that it is BNDE accompanying uncertainty that elicits negative immediate affective reactions and triggers reliance on these reactions through the affective processing route. Within study 2a, we consider consumers' perceived complexity of the data disclosure situation as an alternative explanation driving these effects. Moreover, accounting for the fact that affective reactions comprise a wide range of psychological reactions (Bagozzi, Gopinath, & Nyer, 1999), study 2a makes an effort to investigate the validity of our measure of immediate affective reactions (Shampanier et al., 2007) from study 1. Finally, within study 2a, we seek to validate our manipulation check from study 1 using an established measure for perceived uncertainty.

3.3.3.1 Design, participants, and procedure.

We replicated study 1 using the same experimental design and procedure. The final sample consists of data from 304 participants (M_{Age} = 36.28 years, SD_{Age} = 13.49, 53.3% women). Participants were exposed to the manipulation and answered the same questions about their disclosure intentions and immediate affective reaction as in study 1. Additionally, we included two items to measure perceived

complexity (from Leppink et al. (2013)). Moreover, we included alternative measures for affective reactions. Specifically, we measured arousal using the self-assessments manikin scale by Bradley and Lang (1994) and general negative affect using a short version of the PANAS scale from Thompson (2007) in an effort to capture more elaborated perceptions of affect. Finally, we also included an established measure for perceived uncertainty (Morgan & Hunt, 1994).

3.3.3.2 Results of study 2a.

Comparing group means we find that participants in the BNDE condition reported significantly higher perceptions of uncertainty (M_{BNDE} = 4.20) compared to participants in the dyadic data collection condition (M_{Dyadic} = 3.78, *t(302)* = -2.28, *p* = .02). This replicates our finding from study 1 using an alternative measure for the construct. Perceived complexity, on the other hand, does not differ between a dyadic (M_{Dyadic} = 2.84) and a BNDE disclosure situation (M_{BNDE} = 2.79, *t(302)* = .47, *p* = .64), further underpinning our assumption about uncertainty being the crucial difference between those two settings.

Additional analyses pertaining to the measure of affective reactions. Investigating our measures of immediate affective reactions, arousal, and general negative affect, we find moderate correlations between all measures ($r_{Shampanier-Bradley}(304) = -.40$, $p < .01$; $r_{Shampanier-Thompson}(304) = -.61$, $p < .01$; $r_{Bradley-Thompson}(304) = .44$, $p < .01$), suggesting that the measures capture similar but not identical constructs. Group comparisons for immediate affective reactions reveal them to be more negative in a BNDE (M_{BNDE} = 2.24) compared to a dyadic disclosure setting (M_{Dyadic} = 2.91, *t(302)* = 5.83, *p* < .01). We obtain similar results employing the two other measures: Participant's arousal (*t(302)* = -2.71, *p* < .01) and general negative affect (*t(302)* = -5.58, *p* < .01) were both higher in the BNDE condition. These findings provide further support for H1. Moreover, they suggest that our initial

measure of immediate affective reactions employing a picture-based scale is valid for measuring immediate affective reactions without cognitive interferences.

3.3.3.3 Discussion of study 2a.

*R*esults from study 2a repeatedly confirm that BNDE disclosure situations elicit negative immediate affective reactions. Investigating the cause for this effect, we can rule out perceived complexity as an alternative explanation for the focal effects observed in study 1, whereas results repeatedly find perceived uncertainty to be significantly higher in a BNDE disclosure situation. This finding can be somewhat explained by the fact that while BNDE disclosure situations might be commonly described as complex (Walker, 2016), it is in fact not the situation per se that is complex but rather future consequences. From a conceptual perspective, perceptions of future consequences fall within the category of uncertainty (Milliken, 1987), as supported by our findings. Another potential explanation for consumers' negative immediate affective reactions to BNDE disclosure situations might be the amount of data sharing occurring in a network compared to a dyadic constellation. Study 2b investigates this possibility.

3.3.4 Study 2b: Ruling out alternative explanations: Network size.

After 2a ruled out perceived complexity as an alternative explanation, study 2b focuses on network size as another potential explanation for the formation of negative immediate affective reactions in BNDE settings. Study 1 tested the proposed dual-processing model for a BNDE network with 30 firms; in study 2b, we test the effects for different network sizes (i.e., 5, 30, and 100 interacting firms), in an effort to rule out network size as a potential driver for consumers' immediate affective reactions.

3.3.4.1 Design, participants, and procedure.

The experimental design and procedure are similar to those for study 1 and 2a, except that we manipulated the existence of BNDE to present participants with

networks of 5, 30, or 100 collaborating partners (three BNDE conditions) or a dyadic disclosure setting (dyadic condition). The final sample consists of data from 322 respondents (M_{Age} = 31.78 years, SD_{Age} = 7.66, 50% women). Again, after respondents saw the manipulation, they reported their disclosure intentions, immediate affective reactions and uncertainty (i.e., manipulation check) as in study 1.

3.3.4.2 Results of study 2b.

Looking at the focal effects from study 1, we find no significant differences across the three network sizes for uncertainty ($M_{5\text{-}BNDE}$ = 4.86, $M_{30\text{-}BNDE}$ = 5.02, $M_{100\text{-}BNDE}$ = 4.82), immediate affective reactions ($M_{5\text{-}BNDE}$ = 2.26, $M_{30\text{-}BNDE}$ = 2.14, $M_{100\text{-}BNDE}$ = 2.16) or disclosure intentions ($M_{5\text{-}BNDE}$ = 2.52, $M_{30\text{-}BNDE}$ = 2.62, $M_{100\text{-}BNDE}$ = 2.76). However, all BNDE conditions differ significantly from the dyadic setting. Previous results thus appear robust, in that we find that uncertainty is generally lower (M_{Dyadic} = 4.30, $t(320) = -3.23$, $p < .001$), immediate affective reactions are generally less negative (M_{Dyadic} = 2.97, $t(320) = 6.05$, $p < .001$), and disclosure intention generally higher (M_{Dyadic} = 4.02, $t(119.47) = 5.14$, $p < .001$) in dyadic settings compared with BNDE settings, as we depict in figure 3.5. This is a very conservative test, as we did not include any control variables.

3.3.4.3 Discussion of study 2b.

Study 2b validates the results of the focal effects of study 1 and 2a by ruling out network size as an alternative explanation for the occurrence of negative immediate affect. Even when the size of the BNDE network varies, the negative affective reaction and its effects on disclosure intentions still emerge. This is surprising, because research into stimulus intensity (Nissen, 1977) suggests that consumers should perceive a BNDE network consisting of 100 firms as a more intense threat to their privacy, compared with a BNDE network of only five potentially intrusive firms. Resulting affective reaction to stimuli of varying intensity

should therefore differ. Instead, our results indicate that BNDE networks per se evoke negative associations among consumers, and the actual network size has no significant effect.

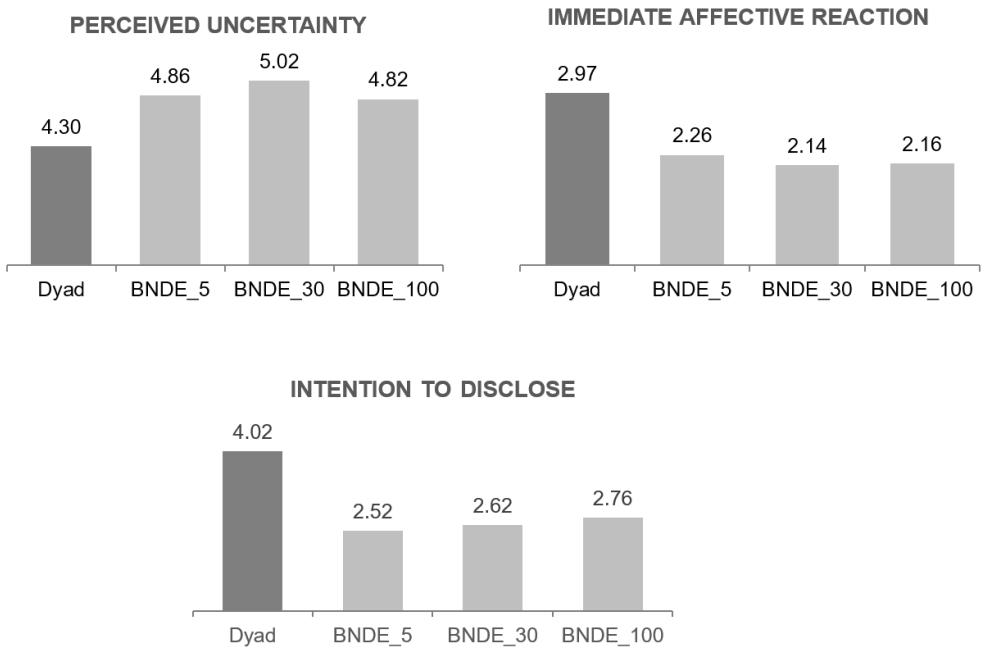


Figure 3.5. Effect of BNDE with varying network sizes.

This finding highlights the importance of BNDE as a distinct data disclosure setting: Differences arise in consumers' perceptions of uncertainty and resulting immediate affective reactions to dyadic versus BNDE settings, but no such differences emerge for varying network sizes. As such, study 2b provides further evidence for our assumption about uncertainty as a driver for consumers' immediate affective reactions by ruling our network size as a potential alternative explanation for this effect. Accordingly, firms employing a BNDE business model cannot hope to circumvent its unfavorable effects by limiting their network size, though they also do not face any additional "punishment" for joining very large networks.

3.3.5 Study 3a: Deep-dive into the mechanism: Need for cognition.

Our results thus far indicate that consumers' privacy-related decision-making in BNDE settings is driven by their immediate affective reactions rather than

cognitive elaborations. We argue that (a) consumers perceive negative immediate affective reactions and (b) use these affective reactions to inform their decision-making (i.e., reliance on the affective system) because of uncertainty perceptions. Specifically, BNDE-evoked uncertainty triggers negative immediate affective reactions and fosters consumers' reliance on affective processing by reducing consumers' opportunity for cognitive evaluations (Acquisti & Grossklags, 2005). With study 3a we seek to further investigate this mechanism underlying the relationship between BNDE-evoked uncertainty, the resulting hindrance of cognitive processing and immediate affective reactions: To do so, we investigate consumers' natural predisposition to engage in cognitive processing, which is denoted as consumers' need for cognition (Cacioppo & Petty, 1982; Cohen, Stotland, & Wolfe, 1955; Verplanken, 1993). Consumers with a high need for cognition seek as much relevant information as possible to come to a conclusion (i.e., rely on cognitive system) (Cohen et al., 1955). They prefer structured, transparent situations to ambiguous situations (Cohen et al., 1955). By investigating BNDE disclosure settings, our study limits the chance to engage in cognitive efforts, leading to perceptions of deprivation for consumers high in need for cognition (Cohen et al., 1955). Hence, we expect consumers with a high need for cognition (i.e., with the wish to process cognitively) to perceive the hindrance of their cognitive processing to be especially severe. That is, their immediate affective reaction to BNDE will be especially strong. In contrast, consumers with a low need for cognition have less desire to engage in cognitive elaboration in the first place and therefore do not perceive BNDE-evoked hindrances to their cognitive processing to be as severe, so they might develop less negative immediate affective reactions.

3.3.5.1 Design, participants, and procedure.

As in the previous studies, participants saw a fictional online shop, describing either a dyadic or a BNDE disclosure setting (network size of 30). The

sample reflects data from 306 respondents (M_{Age} = 31.87 years, SD_{Age} = 7.59, 51% women). We measured all the constructs from the dual-processing framework, as well as age, gender and perceived sensitivity of the requested data as covariates (see study 1), but we also included a measure of need for cognition (four items from Cacioppo, Petty, and Kao (1984)) to employ a 2 (dyadic vs. BNDE) × continuous (need for cognition) design.

3.3.5.2 Results of study 3a.

Employing the PROCESS macro for SPSS, we calculated moderation effects (Model 1; 5,000 bootstrapping samples; 95% bias-corrected CI; Age, gender, and perceived sensitivity of the requested data were covariates) (Hayes, 2017). In line with our expectations, the conditional effects show that the negative effect of BNDE on immediate affective reactions is stronger for consumers high in need for cognition (β | (W = 5.25) = -.84, t(299) = -5.84, p < .001) than for consumers low in need for cognition (β | (W = 3.25) = -.49, t(299) = -3.61, p < .001).

To account for the well-established effect of need for cognition on cognitive elaborations (Cacioppo & Petty, 1982; Cohen et al., 1955; Nair & Ramnarayan, 2000), we also tested moderating effects of need for cognition on the effect of BNDE on perceived loss of control and perceived ad-intrusiveness respectively (Model 1; 5,000 bootstrapping samples; 95% bias-corrected CI; Age, gender, and perceived sensitivity of the requested data were covariates) (Hayes, 2017). In line with prior literature, conditional effects show that the effect of BNDE on perceived control is stronger for consumers high in need for cognition (β | (W = 5.25) = -.65, t(299) = -4.18, p < .001) than for consumers low in need for cognition (β | (W = 3.25) = -.29, t(299) = -1.97, p = .049). The interaction of BNDE and need for cognition on perceived ad-intrusiveness revealed conditional effects such that the negative effect of BNDE on perceived ad-intrusiveness is only significant for consumers with high levels of need for cognition (β | (W = 5.25) = .47, t(299) = 3.12, p = .002) but not for

consumers with low levels (β | (W = 3.25) = .06, $t(299) = .43$, $p = .67$). Figure 3.6 provides group means for perceived control, ad-intrusiveness and immediate affective reactions for low and high levels of need for cognition.

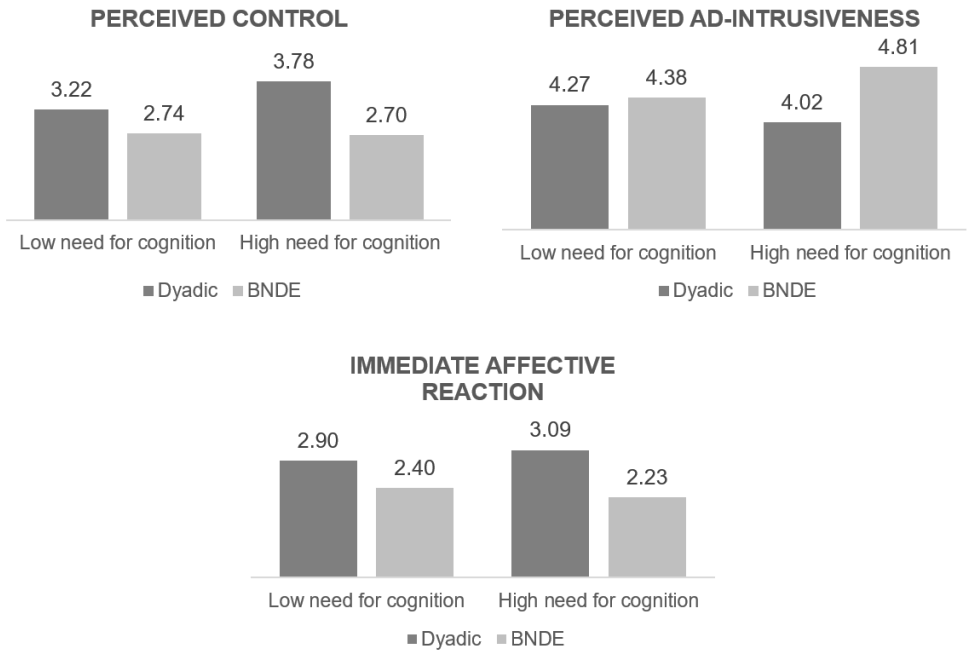


Figure 3.6. Effect of BNDE on cognitive and affective processing at low vs. high levels of need for cognition.

3.3.5.3 Discussion of study 3a.

In study 1 we argued and empirically demonstrated, that consumers' data disclosure intentions in BNDE settings are based on their immediate affective reactions rather than purely cognitive evaluations. With study 3a we now provide further insight into how this effect is triggered because BNDE-evoked uncertainty reduces consumers' opportunity for cognitive evaluations (Acquisti & Grossklags, 2005). By investigating consumers' need for cognition in a decision-making setting characterized by a high degree of uncertainty (BNDE), our study limits the chance that participants can engage in cognitive evaluations. This hindrance leads to a perception of deprivation for consumers high in need for cognition (Cohen et al., 1955). We show empirically that BNDE has a stronger influence on the immediate affect expressed by consumers who demonstrate a high need for cognition.

Specifically, consumers with a high need for cognition want to use a cognitive approach to form their disclosure intentions, but they cannot, due to the uncertainty of risks and benefits in BNDE settings. The effect of BNDE on their immediate affective reaction thus is especially strong. This finding is in line with prior research that argues that consumers with a high need for cognition experience tension when they are unable to make sense of a decision situation (Cohen et al., 1955). In BNDE settings this tension takes the form of negative immediate affective reactions.

3.3.6 Study 3b: Deep-dive into the mechanism: Cognitive blocking.

The previous study investigated the mechanism underlying the hindrance of the cognitive system due to BNDE-accompanying uncertainty and the formation of immediate affective reactions investigating natural variance in participants' predisposition to engage in cognitive effort. With study 3b we seek to further investigate this mechanism with an experimental approach. For this purpose, we employed a 2 (dyadic vs. BNDE) $\times$ 2 (no cognitive blocking vs. cognitive blocking) design. Arguing that it is indeed the hindrance of the cognitive system which triggers negative immediate affective reactions, we propose that artificially hampering participants' opportunity for cognitive processing in a dyadic situation should elicit immediate affective reactions similar to those be observe in a typical BNDE setting.

3.3.6.1 Design, participants, and procedure.

As in the previous studies, we assigned participants to either a dyadic or BNDE disclosure setting in a fictional online shop context. Before presenting them with the scenario, we manipulated memory load to decrease cognitive processing capacity as suggested by previous research (Gilbert & Hixon, 1991; Shiv & Fedorikhin, 1999). For this, we presented participants with a cognitive task, which we manipulated such that one group (no cognitive blocking) was asked to memorize two terms (i.e., sun, moon), whereas the other group was asked to memorize a set of six terms (i.e., belief, team, venture, comment, intelligence, idea). We coded our

independent variable such that it reflected the four manipulation groups (1 = Dyad—No cognitive blocking, 2 = Dyad—Cognitive blocking, 3 = BNDE—No cognitive blocking, 4 = BNDE-Cognitive blocking). The sample consists of data from 192 respondents (M_{Age} = 33.55 years, SD_{Age} = 12.40, 59% women). After the memory task, participants answered questions pertaining to their disclosure intentions and immediate affective reaction as in the previous studies. At the end of the questionnaire, participants were asked to recall the memorized terms.

3.3.6.2 Results of study 3b.

Investigating group means, we find that participants in the cognitive blocking condition needed longer to finish the survey ($M_{cogBlock.}$ = 6.2 min.) compared with participants in the condition without cognitive blocking ($M_{noCogBlock.}$ = 5.4 min.), indicating our manipulation worked as intended.

To test our assumption about the impact of hampering cognitive processing on immediate affective reactions, we next conducted an ANOVA. Results reveal a significant effect of our independent variable on immediate affective reactions ($F(3,188) = 9.60$, $p < .001$). Conducting a post hoc test we find that this effect is driven by differences between the dyadic group without cognitive blocking ($M_{Dyadic-noCogBlock.}$ = 3.45) and both BNDE conditions ($M_{BNDE-noCogBlock.}$ = 2.61, $p < .001$; $M_{BNDE-CogBlock}$ = 2.37, $p < .001$). In line with our assumption, there are no differences in reported immediate affective reactions between participants from the cognitively blocked, dyadic group ($M_{Dyadic-CogBlock.}$ = 2.98) and the BNDE group without cognitive hindrance ($M_{BNDE-noCogBlock.}$ = 2.61, $p = .43$). As such, results suggest that hampering consumers' possibilities to engage in cognitive processing—regardless whether this is done artificially or by BNDE-innate uncertainty— elicits negative immediate affective reactions, as figure 3.7 illustrates.

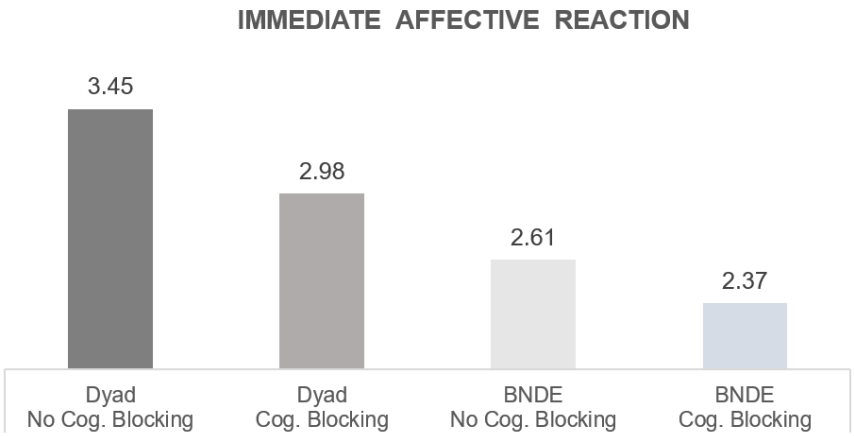


Figure 3.7. Effects of a hindrance of the cognitive system on immediate affective reactions.

3.3.6.3 Discussion of study 3b.

Study 3b provides further evidence for the mechanism underlying the unfavorable effect of BNDE data disclosure situations on consumers' perceptions of negative immediate affective reactions. By inducing a hindrance of cognitive processing into a dyadic data disclosure setting, we find that this hindrance elicits negative immediate affective reactions. Consumers exposed to this artificial hindrance of the cognitive system report similar levels of immediate affective reactions as consumers exposed to a BNDE disclosure setting, which hinders cognitive processing due to its innate uncertainty. As such, this study contributes to literature's understanding of how immediate affective reactions arise due to a lack of opportunity for cognitive evaluations (Cohen et al., 1955).

3.3.7 Study 4: Spillover effects through the affective system.

The previous studies provide empirical evidence for the impact of BNDE on disclosure intentions through immediate affective reactions directly and through interactions of both systems. However, all of the previously accounted for constructs directly relate to the BNDE data disclosure setting (i.e., loss of control, ad-intrusiveness, risks and benefits resulting from disclosure to the BNDE network).

With study 4 we investigate how the affective system can influence not only BNDE-related assessments in the cognitive system but also might induce spillover effects such that BNDE-unrelated aspects will be evaluated unfavorably. From a purely cognitive point of view, consumers should only assess information related to the focal decision-making situation when confronted with a decision-making task. However, prior literature found that external information can trigger spillover effects on unrelated aspects (Epstein, 1994). For example, an emotional carryover effect describes how consumers in a strong affective state transfer their emotions to unrelated situations (Loewenstein & Lerner, 2003). In the context of privacy Martin, Borah, and Palmatier (2017) found privacy breaches from rival firm to have spillover effects on focal firms. We expect similar spillover effects in the context of data disclosures to BNDE networks, such that immediate affective reactions influence not only BNDE-related constructs (i.e., risks and benefits related to disclosure to the BNDE network) but also associated, not directly involved elements (i.e., BNDE-unrelated risks and benefits).

3.3.7.1 Design, participants, and procedure.

We exposed participants to the same experimental design as in study 1, a single treatment with two conditions (dyadic setting vs. BNDE setting with 30 network partners). The final sample consists of data from 215 respondents (M_{Age} = 32.06 years, SD_{Age} =7.90, 51% women). Participants reported their immediate affective reactions, disclosure intentions, perceived sensitivity of the requested data, and socio-demographic aspects (as in study 1). To identify spillover effects on cognitive assessments unrelated to the focal decision, we asked participants for their perceptions of risks and benefits unrelated to BNDE. That is, they evaluated how beneficial they perceived a free product to be (measure adapted from Voss et al. (2003)) and reported their perceptions of the risk of technical errors (adapted from Dinev et al. (2013)). From a purely cognitive point of view, participants should

report the same risk and benefit perceptions, whether in the BNDE condition or not. But as we expect spillover effects, we propose that immediate affective reactions influence not only BNDE-related constructs (i.e., risks and benefits) but also associated, not directly involved elements (i.e., BNDE-unrelated risks and benefits).

3.3.7.2 Results of study 4.

We conducted a serial mediation analysis (PROCESS macro model 81; 5,000 bootstrapping samples; 95% bias-corrected CI; Age, gender, and perceived sensitivity of the requested data were covariates) (Hayes, 2017).

Replicating our findings from the previous studies, we again find BNDE to elicit negative immediate affect (β = -.67, t(210) = -5.44, p < .001). Serial mediation analyses revealed a significant indirect effects of BNDE through immediate affect on disclosure intentions (β = -.38, 95% CI [-.537, -.229]). Furthermore, the negative affect elicited by BNDE exerted a significant effect on BNDE-unrelated risks (β = -.29, t(209) = -3.93, p < .001) as well as a significant effect on BNDE-unrelated benefits (β = .43, t(209) = 5.88, p < .001), highlighting the influential power of the affective system on the cognitive system. These spillover effects suggest another route that reduces consumers' disclosure intentions: BNDE-unrelated risks marginally (β = -.08, t(207) = -1.78, p = .08) and BNDE-unrelated benefits significantly (β = .17, t(207) = 3.59, p < .001) affect disclosure intentions unfavorably. We also find an indirect effect of BNDE through affect and perceptions of BNDE-unrelated benefits on disclosure intentions (β = -.05, 95% CI [-.095, -.017]).

3.3.7.3 Discussion of study 4.

Study 4 illustrates the power of immediate affective reactions in consumers' privacy-related decision-making by investigating potential spillover effects. We uncover unfavorable spillover effects on consumers' cognitive assessments of BNDE-unrelated aspects. In particular, we find negative immediate affect to influence consumers' perceptions of free products and their perceptions of likelihood

for technical errors on the website unfavorably. This finding is in line with literature on spillover effects (Loewenstein & Lerner, 2003; Martin, Borah, & Palmatier, 2017).

3.3.8 Meta-analysis: Testing the robustness of the focal effects across studies.

To test the overall validity of the negative effect of BNDE on immediate affective reactions and on disclosure intentions we performed a single-paper meta-analysis (McShane & Böckenholt, 2017) on those studies employing a single-treatment design (i.e., studies 1, 2a, 2b, 3a, 4). The single-paper meta-analysis analyzes multiple studies concerning the same research focus conjointly and thus yields an estimate of the focal effect that is more accurate than the estimates of the individual studies respectively (McShane & Böckenholt, 2017).The single-paper meta-analysis revealed that across the five studies, BNDE elicited higher negative immediate affective reactions (*Estimate* = -.715, *SE* = .053; z = -13.49, $p < .001$; I^2 = 20.33, 95% CI [.000, 61.689]) and resulted in lower disclosure intentions (*Estimate* = -.696, *SE* = .052; z = 13.39, $p < .001$; I^2 = 12.40, 95% CI [.000, 54.151]) than a dyadic disclosure setting. We did not include any control variables, making this a conservative test. The results are in support of our hypotheses providing evidence for a robust unfavorable effect of BNDE on consumers' privacy-related decision-making.

3.4 General Discussion

Despite the practical relevance of business models based on exchanges of consumer data within a network of firms, privacy-related decision-making research has paid little attention to peculiarities of such BNDE disclosure settings and their implications for consumers' decision-making processes. With this paper, we introduce BNDE as a distinct data disclosure situation and develop and empirically test a dual-processing model to explain data disclosures in BNDE settings. By

complementing existing cognitive approaches with an affective processing route, we help explicate privacy-related decision-making.

3.4.1 Theoretical contributions.

This research contributes to privacy-related decision-making literature in several ways. First, we introduce BNDE as a new class of business models, which has distinct implications for consumers' privacy-related decision-making compared to dyadic settings. We provide empirical evidence that BNDE settings and their accompanying uncertainty cannot be reconciled with traditional approaches—originating from investigations of dyadic settings—that assume purely cognitive privacy-related decision-making. Rather, ruling out perceived complexity and network size as alternative explanations, our findings suggest that decision-making models for BNDE settings need to account for the peculiarity of evoked uncertainty, by considering immediate affective reactions. In this sense, our findings expand research detailing the influence of uncertainty on privacy decision-making (Acquisti, Brandimarte, & Loewenstein, 2015; Acquisti & Grossklags, 2005). We demonstrate that consumers, who wish to employ the cognitive system but cannot due to uncertainty, experience tensions because they cannot make sense of the BNDE decision-making situation (Cohen et al., 1955). In turn, they exhibit a negative immediate affective reaction and lower intentions to disclose data to BNDE networks. Against this background, BNDE and similar disclosure settings should be differentiated from traditional dyadic settings. Our study opens a promising avenue for further research into BNDE data disclosure settings, as those could generate additional insights into the peculiarities of BNDE.

Second, from a conceptual perspective, this study unveils the mechanism underlying consumers' decision-making in BNDE settings through an affective route. While data exchange with third-party firms and affective reactions both have received some research attention, thus far no study links them. We address this

issue by introducing affective processing as a complementary route to cognitive processing. Underpinned by the result of a within-paper meta-analysis, the results from six experimental studies confirm a robust negative influence of immediate affective reactions on consumers' disclosure intentions. Consumers do not rely on cognitive factors to evaluate the differences between a dyadic and a BNDE setting but instead turn to the affective system to form disclosure intentions through reliance on immediate affective reactions. In sum, we demonstrate a strong, direct, negative effect of immediate affect on disclosure intentions; we also show that immediate affective reactions bias assessments on the cognitive processing route, which reduce consumers' intentions to disclose their data. Finally, negative immediate affect elicited by BNDE evokes spillover effects on BNDE-unrelated risk and benefit assessments, leading to a third negative influence on disclosure intentions. Our findings respond to a recent call by Dinev et al. (2015) for empirical research into the role of low-effort processing (e.g., affective processing) and support emerging research that highlights the importance of affect in privacy-related decision-making (Alashoor et al., 2018; Gerlach et al., 2019; Kehr et al., 2015; Li et al., 2011; Wakefield, 2013).

Third, we contribute to privacy-related decision-making by showing that our dual-processing model is appropriate for BNDE settings but also for dyadic disclosure settings. Our analyses reveal the higher predictive power of a dual-processing model, relative to a purely cognitive approach, even in dyadic settings. This finding further emphasizes the importance of affective processing in privacy-related decision-making in general (Dinev et al., 2015) and opens promising options for employing this generally valid approach to consumers' privacy-related decision-making. Among other things, it might be an interesting approach to help explaining disparities between consumers' general privacy concerns and disclosure behavior (Acquisti et al., 2013; Adjerid, Peer, & Acquisti, 2018b), which cannot be explained

by purely cognitive approaches (Acquisti et al., 2013). Hence, future studies could not only apply our model to BNDE settings but also to other data disclosure settings, even dyadic ones, in which disclosure intentions might not be based on purely cognitive elaborations.

3.4.2 Managerial implications.

Our results also have important managerial implications. They can help firms understand how consumers evaluate BNDE-related data disclosures. Our results show that BNDE data disclosure settings differ from dyadic settings when it comes to consumers' decision-making process. Hence, firms shifting from a dyadic to a BNDE business model cannot transfer prior experiences regarding consumers' acceptance of data exchange practices to BNDE settings. For example, offering purely cognitive arguments to encourage consumers to disclose data (e.g., promises of more benefits), as is a common industry practice, are unlikely to achieve the intended outcomes. Specifically, our findings suggest that although consumers might recognize such cognitive arguments, their cognitive evaluation of these arguments is hindered by affective inferences. Consumers will not rely on cognitive evaluations, but rather on their immediate affective reactions to form disclosure intentions. Moreover, immediate affective reactions bias consumers' perceptions of risks and benefits—both BNDE-related and unrelated—such that consumers will overestimate the risks and underestimate the benefits of data disclosure. These unfavorable effects cannot be circumvented by joining small BNDE networks with only a few firms, as opposed to bigger networks of many collaborating firms. Consumers experience immediate affective reactions and reduced disclosure intentions, regardless of the network size. Accordingly, it is important for data-gathering firms to mitigate the impact of immediate affective reactions. Based on our findings regarding the underlying mechanism through consumers' perception of uncertainty and elicited immediate affect, we advise firms to design data disclosure

request in such a way that consumers do not perceive the situation as an impediment to an elaborated decision-making. To achieve this, data requests should not require consumers to engage in much cognitive processing. In practice, data requests could be visualized in such a way that they can be easily processed without much cognitive effort. If consumers confront a situation which they feel they do not have to analyze extensively, they will likely react less negative to the hindrance of cognitive processing triggered by BNDE. Notably, our recommendations do not only apply to firms employing BNDE business models but also to any data disclosure setting, where consumers' opportunity for cognitive processing is hampered—including dyadic settings.

3.4.3 Limitations and further research.

The limitations of our study offer opportunities for further research. First, in all of our experimental studies, we employed a setting, requesting moderately sensitive data (personal interests, monthly income, marital status) for personalization purposes. Consumers frequently encounter similar situations in real life, but data disclosure also depends strongly on situational aspects (Dinev & Hart, 2006; Li et al., 2010; Xu et al., 2009). Therefore, continued research could examine whether our findings are robust for BNDE constellations that require consumers to disclose more sensitive information (e.g., health care), to generate additional insights on the negative impacts of BNDE on data disclosures. A related line of research could test whether consumers perceive negative immediate affect if the disclosure involves a familiar, trustworthy, focal firm. Another interesting situational aspect is the relevance of data collection (Lwin et al., 2007): If the BNDE network seeks to create an integrated benefit for the consumer (i.e., data sharing is required to generate the benefit), immediate affective reactions might be less negative because consumers perceive the network to act as a single entity (similar to dyadic setting).

Second, in our experimental studies we consider consumers' disclosure intentions when confronted with a specific BNDE network for the first time. However, especially in the online context consumers' decision-making is often cascaded. That is, consumers might first opt-in for certain types of data-usage and later on adjust their disclosure settings in more detail (Adjerid, Acquisti, & Loewenstein, 2018). We did not provide participants with any information about such further adjustments being possible and it would be an interesting avenue for future research to investigate the effect of immediate affective reactions on upstream and downstream decisions in BNDE settings.

Third, despite our choice for an intuitive measure of immediate affective reactions, it could be possible that participants reported more elaborated forms of affect (e.g., attitude), which could have arisen after the participants performed some cognitive evaluations. A physiological measure would offer a promising next step to examine immediate affective reactions in the very moment that consumers confront the need to disclose their data.

Finally, we investigated consumers' privacy-related decision-making in an artificial BNDE setting. Whereas results from our pre-study offer preliminary evidence for the impact of BNDE business models on actual disclosure behavior, these findings origin from an artificial BNDE settings. This approach was appropriate for our goal to uncover psychological processes (Aguinis & Bradley, 2014). However, given the fact that consumers' decision-making differs in hypothetical and actual decision-making (Adjerid et al., 2018b) a fruitful direction for research would be to investigate field data to uncover the objective economic harm (or value) of BNDE business models.

3.4.4 Conclusion.

In modern, consumer-centric economic landscapes, business models based on the exchange of consumer data are gaining momentum. This new class of

business models depend on consumers' willingness to disclose private data to networks of firms, which we call BNDE networks. We investigate consumers' privacy-related decision-making in such BNDE settings by introducing a dual-processing model that complements established cognitive processing with an affective processing route. We find that consumers' intentions to disclose private data are reduced, due to their immediate affective reactions to BNDE, in three ways, such that negative immediate affect elicited by BNDE-inherent uncertainty (1) directly reduces disclosure intentions; (2) leads to an overestimation of risks and underestimation of benefits, and (3) influences assessments of risks and benefits unrelated to BNDE. We rule our perceived complexity and network size as alternative explanations for this unfavorable effect. The proposed dual-processing model offers great predictive power, even in dyadic exchange settings. With these findings, our study opens a promising avenue for further work on consumers' immediate affective reactions to BNDE disclosure settings.

3.5 References

Acquisti, A., Adjerid, I., & Brandimarte, L. (2013). Gone in 15 Seconds: The Limits of Privacy Transparency and Control. *IEEE Security & Privacy, 11*(4), 72–74. https://doi.org/10.1109/msp.2013.86

Acquisti, A., Brandimarte, L., & Loewenstein, G. (2015). Privacy and Human Behavior in the Age of Information. *Science*, *347*(6221), 509–514. https://doi.org/10.1126/Science.aaa1465

Acquisti, A., & Grossklags, J. (2005). Privacy and Rationality in Individual Decision Making. *IEEE Security & Privacy*, *3*(1), 26–33. https://doi.org/10.1109/MSP.2005.22

Adjerid, I., Acquisti, A., Brandimarte, L., & Loewenstein, G. (2013). Sleights of Privacy: Framing, Disclosures, and the Limits of Transparency. *Proceedings of the 9th Symposium on Usable Privacy and Security ACM*.

Adjerid, I., Acquisti, A., & Loewenstein, G. (2018). Choice Architecture, Framing, and Cascaded Privacy Choices. *Management Science, 65*(5), 1–24. https://doi.org/10.1287/mnsc.2018.3028

Adjerid, I., Peer, E., & Acquisti, A. (2018b). Beyond the Privacy Paradox: Objective Versus Relative Risk in Privacy Decision Making. *MIS Quarterly, 42*(2), 465-488. https://doi.org/10.25300/MISQ/2018/14316

Aguinis, H., & Bradley, K. J. (2014). Best Practice Recommendations for Designing and Implementing Experimental Vignette Methodology Studies. *Organizational Research Methods, 17*(4), 351–371. https://doi.org/10.1177/1094428114547952

Aguirre, E., Mahr, D., Grewal, D., de Ruyter, K., & Wetzels, M. (2015). Unraveling the Personalization Paradox: The Effect of Information Collection and Trust-building Strategies on Online Advertisement Effectiveness. *Journal of Retailing, 91*(1), 34-49. https://doi.org/10.1016/j.jretai.2014.09.005

Alashoor, T., Al-Maidani, N., & Al-Jabri, I. (2018). The Privacy Calculus under Positive and Negative Mood States. *Proceedings of the 39th International Conference on Information Systems*, San Francisco, CA, USA.

Angst, C. M., & Agarwal, R. (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. https://doi.org/10.2307/20650295

Bagozzi, R. P., Gopinath, M., & Nyer, P. U. (1999). The Role of Emotions in Marketing. *Journal of the Academy of Marketing Science, 27*(2), 184–206. https://doi.org/10.1177/0092070399272005

Bansal, G., & Gefen, D. (2010). The Impact of Personal Dispositions on Information Sensitivity, Privacy Concern and Trust in Disclosing Health Information Online. *Decision Support Systems*, *49*(2), 138–150. https://doi.org/10.1016/j.dss.2010.01.010

Bansal, G., Zahedi, F. M., & Gefen, D. (2015). The Role of Privacy Assurance Mechanisms in Building Trust and the Moderating Role of Privacy Concern. *European Journal of Information Systems, 24*(6), 624–644. https://doi.org/10.1057/ejis.2014.41

Baruh, L., Secinti, E., & Cemalcilar, Z. (2017). Online Privacy Concerns and Privacy Management: A Meta-Analytical Review. *Journal of Communication, 67*(1), 26–53. https://doi.org/10.1111/jcom.12276

Bradley, M. M., & Lang, P. J. (1994). Measuring Emotion: The Self-Assessment Manikin and the Semantic Differential. *Journal of Behavior Therapy and Experimental Psychiatry, 25*(1), 49-59. https://doi.org/10.1016/0005-7916(94)90063-9

Cacioppo, J. T., & Petty, R. E. (1982). The Need for Cognition. *Journal of Personality and Social Psychology, 42*(1), 116-131. https://doi.org/10.1037//0022-3514.42.1.116

Cacioppo, J. T., Petty, R. E., & Kao, F. C. (1984). The Efficient Assessment of Need for Cognition. *Journal of Personality Assessment, 48*(3), 306–307. https://doi.org/10.1207/s15327752jpa4803_13

Chen, H., Chiang, R. H., & Storey, V. C. (2012). Business Intelligence and Analytics: From Big Data to Big Impact. *MIS Quarterly, 36*(4), 1165–1188. https://doi.org/10.2307/41703503

Cohen, A. R., Stotland, E., & Wolfe, D. M. (1955). An Experimental Investigation of Need for Cognition. *The Journal of Abnormal and Social Psychology, 51*(2), 291-294. https://doi.org/10.1037/h0042761

Culnan, M. J. (1993). "How Did They Get My Name?": An Exploratory Investigation of Consumer Attitudes Toward Secondary Information Use. *MIS Quarterly, 17*(3), 341–363. https://doi.org/10.2307/249775

Culnan, M. J., & Armstrong, P. K. (1999). Information Privacy Concerns, Procedural Fairness, and Impersonal Trust: An Empirical Investigation. *Organization Science*, *10*(1), 104–115. https://doi.org/10.1287/orsc.10.1.104

Culnan, M. J., & Bies, R. J. (2003). Consumer Privacy: Balancing Economic and Justice Considerations. *Journal of Social Issues*, *59*(2), 323–342. https://doi.org/10.1111/1540–4560.00067

Dinev, T., & Hart, P. (2006). An Extended Privacy Calculus Model for e–Commerce Transactions. *Information Systems Research*, *17*(1), 61–80. https://doi.org/10.1287/isre.1060.0080

Dinev, T., McConnell, A. R., & Smith, H. J. (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. http://dx.doi.org/10.1287/isre.2015.0600

Dinev, T., Xu, H., Smith, J. H., & Hart, P. (2013). Information Privacy and Correlates: An Empirical Attempt to Bridge and Distinguish Privacy-related Concepts. *European Journal of Information Systems, 22*(3), 295–316. https://doi.org/10.1057/ejis.2012.23

Edwards, S. M., Li, H., & Lee, J. H. (2002). Forced Exposure and Psychological Reactance: Antecedents and Consequences of the Perceived Intrusiveness of Pop-Up Ads. *Journal of Advertising, 31*(3), 83–95. https://doi.org/10.1080/00913367.2002.10673678

Epstein, S. (1994). Integration of the Cognitive and the Psychodynamic Unconscious. *American Psychologist*, *49*(8), 709. https://doi.org/10.1037//0003–066x.49.8.709

Evans, J. S. B. (2008). Dual-processing Accounts of Reasoning, Judgment, and Social Cognition. *Annual Review of Psychology,* 59, 255–278. https://doi.org/10.1146/annurev.psych.59.103006.093629

Evans, J. S. B., & Stanovich, K. E. (2013). Dual–Process Theories of Higher Cognition: Advancing the Debate. *Perspectives on Psychological Science*, *8*(3), 223–241. https://doi.org/10.1177/1745691612460685

Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The Affect Heuristic in Judgments of Risks and Benefits. *Journal of Behavioral Decision Making*, *13*(1), 1–17. https://doi.org/10.1002/(SICI)1099–0771(200001/03)13:1<1::AID–BDM333>3.0.CO;2–S

Forbes Insights (2018). The Modern CMO: New Goals. New Metrics. New Markets. Retrieved 05.12.2019 from https://www.forbes.com/forbes-insights/our-work/modern-cmo-new-goals-new-metrics-new-markets/

Gerlach, J., Buxmann, P., & Dinev, T. (2019). “They’re All the Same!” Stereotypical Thinking and Systematic Errors in Users’ Privacy–Related Judgments About Online Services. *Journal of the Association for Information Systems*, *20*(6), 787–823. https://doi.org/10.17705/1.jais.00551

Gerlach, J., Widjaja, T., & Buxmann, P. (2015). Handle with Care: How Online Social Network Providers’ Privacy Policies Impact Users’ Information Sharing Behavior. *Journal of Strategic Information Systems, 24*(1), 33–43. https://doi.org/10.1016/j.jsis.2014.09.001

Gilbert, D. T., & Hixon, J. G. (1991). The Trouble of Thinking: Activation and Application of Stereotypic Beliefs. *Journal of Personality and Social Psychology, 60*(4), 509. https://doi.org/10.1037//0022-3514.60.4.509

Hann, I. H., Hui, K. L., Lee, S. Y. T., & Png, I. P. (2008). Consumer Privacy and Marketing Avoidance: A Static Model. *Management Science, 54*(6), 1094-1103. https://doi.org/10.1287/mnsc.1070.0837

Harding, X. (2019). Spotify’s Pre-Save Feature Gives Record Labels User Data, Account Access. Retrieved 04.08.2019 from https://fortune.com/2019/06/28/spotify-presave-tracking-privacy/

Hayes, A. F. (2017). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach* (2nd ed.). Methodology in the Social Sciences. New York: Guilford Publications.

Hui, K.-L., Teo, H. H., & Lee, S.-Y. T. (2007). The Value of Privacy Assurance: An Exploratory Field Experiment. *MIS Quarterly, 31*(1), 19–33. https://doi.org/10.2307/25148779

Hüttel, B. A., Schumann, J. H., Mende, M., Scott, M. L., & Wagner, C. J. (2018). How Consumers Assess Free E-services: The Role of Benefit-inflation and Cost-deflation Effects. *Journal of Service Research, 21*(3), 267–283. https://doi.org/10.1177/1094670517746779

Junglas, I. A., Johnson, N. A., & Spitzmüller, C. (2008). Personality Traits and Concern for Privacy: An Empirical Study in the Context of Location-based Services. *European Journal of Information Systems, 17*(4), 387–402. https://doi.org/10.1057/ejis.2008.29

Kehr, F., Kowatsch, T., Wentzel, D., & Fleisch, E. (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. https://doi.org/10.1111/isj.12062

Laufer, R. S., & Wolfe, M. (1977). Privacy as a Concept and a Social Issue: A Multidimensional Developmental Theory. *Journal of Social Issues, 33*(3), 22–42. https://doi.org/10.1111/j.1540-4560.1977.tb01880.x

Leppink, J., Paas, F., Van der Vleuten, C. P., Van Gog, T., & Van Merriënboer, J. J. (2013). Development of an Instrument for Measuring Different Types of Cognitive Load. *Behavior Research Methods, 45*(4), 1058-1072. https://doi.org/10.3758/s13428-013-0334-1

Li, H., Edwards, S. M., & Lee, J. H. (2002). Measuring the Intrusiveness of Advertisements: Scale Development and Validation. *Journal of Advertising, 31*(2), 37–47. https://doi.org/10.1080/00913367.2002.10673665

Li, H., Sarathy, R., & Xu, H. (2010). Understanding Situational Online Information Disclosure as a Privacy Calculus. *Journal of Computer Information Systems*, *51*(1), 62–71. https://doi.org/10.1080/08874417.2010.11645450

Li, H., Sarathy, R., & Xu, H. (2011). The Role of Affect and Cognition on Online Consumers' Decision to Disclose Personal Information to Unfamiliar Online Vendors. *Decision Support Systems*, *51*(3), 434–445. https://doi.org/10.1016/j.dss.2011.01.017

Li, T., & Unger, T. (2012). Willing to Pay for Quality Personalization? Trade-off Between Quality and Privacy. *European Journal of Information Systems, 21*(6), 621–642. https://doi.org/10.1057/ejis.2012.13

Li, Y. (2012). Theories in Online Information Privacy Research: A Critical Review and an Integrated Framework. *Decision Support Systems, 54*(1), 471–481. https://doi.org/10.1016/j.dss.2012.06.010

Loewenstein, G., & Lerner, J. S. (2003). The Role of Affect in Decision Making. In R. J. Davidson, K. R. Schrer, & H. H. Goldsmith (Eds.), *Handbook of Affective Sciences* (pp. 619–642). New York: Oxford University Press.

Lu, Y., Tan, B., & Hui, K.-L. (2004). Inducing Customers to Disclose Personal Information to Internet Businesses with Social Adjustment Benefits. *Proceedings of the* 25th *International Conference on Information Systems*, Washington, DC, WA, USA.

Lwin, M., Wirtz, J., & Williams, J. D. (2007). Consumer Online Privacy Concerns and Responses: A Power–Responsibility Equilibrium Perspective. *Journal of the Academy of Marketing Science, 35*(4), 572–585. https://doi.org/10.1007/s11747-006-0003-3

Malhotra, N. K., Kim, S. S., & Agarwal, J. (2004). Internet Users' Information Privacy Concerns (IUIPC): The Construct, the Scale, and a Causal Model. *Information Systems Research, 15*(4), 336–355. https://doi.org/10.1287/isre.1040.0032

Martin, K. D., & Murphy, P. E. (2017). The Role of Data Privacy in Marketing. *Journal of the Academy of Marketing Science*, *45*(2), 135–155. https://doi.org/10.1007/s11747–016–0495–4

Martin, K. D., Borah, A., & Palmatier, R. W. (2017). Data Privacy: Effects on Customer and Firm Performance. *Journal of Marketing, 81*(1), 36-58. https://doi.org/10.1509/jm.15.0497

McShane, B. B., & Böckenholt, U. (2017). Single-Paper Meta-Analysis: Benefits for Study Summary, Theory Testing, and Replicability. *Journal of Consumer Research, 43*(6), 1048–1063. https://doi.org/10.1093/jcr/ucw085

Milliken, F. J. (1987). Three Types of Perceived Uncertainty About the Environment: State, Effect, and Response Uncertainty. *Academy of Management Review, 12*(1), 133–143. https://doi.org/10.2307/257999

Milne, G. R., & Rohm, A. J. (2000). Consumer Privacy and Name Removal Across Direct Marketing Channels: Exploring Opt-In and Opt-Out Alternatives. *Journal of Public Policy & Marketing, 19*(2), 238–249. https://doi.org/10.1509/jppm.19.2.238.17136

Morgan, R. M., & Hunt, S. D. (1994). The Commitment-trust Theory of Relationship Marketing. *Journal of Marketing, 58*(3), 20-38. https://doi.org/10.2307/1252308

Nair, K. U., & Ramnarayan, S. (2000). Individual Differences in Need for Cognition and Complex Problem Solving. *Journal of Research in Personality, 34*(3), 305–328. https://doi.org/10.1006/jrpe.1999.2274

Nissen, M. J. (1977). Stimulus Intensity and Information Processing. *Perception & Psychophysics, 22*(4), 338–352. https://doi.org/10.3758/bf03199699

Phelps, J., Nowak, G., & Ferrell, E. (2000). Privacy Concerns and Consumer Willingness to Provide Personal Information. *Journal of Public Policy & Marketing, 19*(1), 27–41. https://doi.org/10.1509/jppm.19.1.27.16941

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology, 88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Schumann, J. H., Wünderlich, N., & Evanschitzky, H. (2014). Spillover Effects of Service Failures in Coalition Loyalty Programs: The Buffering Effect of Special

Treatment Benefits. *Journal of Retailing, 90*(1), 111–118. https://doi.org/10.1016/j.jretai.2013.06.005

Shampanier, K., Mazar, N., & Ariely, D. (2007). Zero as a Special Price: The True Value of Free Products. *Marketing Science, 26*(6), 742–757. https://doi.org/10.1287/mksc.1060.0254

Shiv, B., & Fedorikhin, A. (1999). Heart and Mind in Conflict: The Interplay of Affect and Cognition in Consumer Decision Making. *Journal of Consumer Research, 26*(3), 278–292. https://doi.org/10.1086/209563

Smith, H. J., Dinev, T., & Xu, H. (2011). Information Privacy Research: An Interdisciplinary Review. *MIS Quarterly*, *35*(4), 989–1016. https://doi.org/10.2307/41409970

Smith, H. J., Milberg, S. J., & Burke, S. J. (1996). Information Privacy: Measuring Individuals' Concerns about Organizational Practices. *MIS Quarterly, 20*(2), 167–196. https://doi.org/10.2307/249477

Sorescu, A. (2017). Data-driven Business Model Innovation. *Journal of Product Innovation Management*, *34*(5), 691–696. https://doi.org/10.1111/jpim.12398

Steinhoff, L., & Palmatier, R. W. (2016). Understanding Loyalty Program Effectiveness: Managing Target and Bystander Effects. *Journal of the Academy of Marketing Science, 44*(1), 88-107. https://doi.org/10.1007/s11747-014-0405-6

Steinhoff, L., Arli, D., Weaven, S., & Kozlenkova, I. V. (2019). Online Relationship Marketing. *Journal of the Academy of Marketing Science, 47*(3), 369–393. https://doi.org/10.1007/s11747-018-0621-6

Telefónica. (2016). Smart Data. Retrieved 04.08.2019 from https://analytics.telefonica.de

Thompson, E. R. (2007). Development and Validation of an Internationally Reliable Short-form of the Positive and Negative Affect Schedule (PANAS). *Journal of*

Cross-Cultural Psychology, 38(2), 227-242. https://doi.org/10.1177/0022022106297301

Van Doorn, J., & Hoekstra, J. C. (2013). Customization of Online Advertising: The Role of Intrusiveness. *Marketing Letters, 24*(4), 339-351. https://doi.org/10.1007/s11002-012-9222-1

Veltri, G. A., & Ivchenko, A. (2017). The Impact of Different Forms of Cognitive Scarcity on Online Privacy Disclosure. *Computers in Human Behavior, 73*, 238–246. https://doi.org/10.1016/j.chb.2017.03.018

Verplanken, B. (1993). Need for Cognition and External Information Search: Responses to Time Pressure During Decision-Making. *Journal of Research in Personality, 27*(3), 238-252. https://doi.org/10.1006/jrpe.1993.1017

Voss, K. E., Spangenberg, E. R., & Grohmann, B. (2003). Measuring the Hedonic and Utilitarian Dimensions of Consumer Attitude. *Journal of Marketing Research, 40*(3), 310–320. https://doi.org/10.1509/jmkr.40.3.310.19238

Wakefield, R. (2013). The Influence of User Affect in Online Information Disclosure. *The Journal of Strategic Information Systems*, *22*(2), 157–174. https://doi.org/10.1016/j.jsis.2013.01.003

Walker, K. L. (2016). Surrendering Information Through the Looking Glass: Transparency, Trust, and Protection. *Journal of Public Policy & Marketing*, *35*(1), 144–158. https://doi.org/10.1509/jppm.15.020

Webster, J., & Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly, 26*(2), xiii–xxiii. http://www.jstor.org/stable/4132319

Westin, A. F. (2003). Social and Political Dimensions of Privacy. *Journal of Social Issues, 59*(2), 431–453. https://doi.org/10.1111/1540-4560.00072

Wu, K.-W., Huang, S. Y., Yen, D. C., & Popova, I. (2012). The Effect of Online Privacy Policy on Consumer Privacy Concern and Trust. *Computers in Human Behavior, 28*(3), 889–897. https://doi.org/10.1016/j.chb.2011.12.008

Xie, E., Teo, H.-H., & Wan, W. (2006). Volunteering Personal Information on the Internet: Effects of Reputation, Privacy Notices, and Rewards on Online Consumer Behavior. *Marketing Letters, 17*(1), 61–74. https://doi.org/10.1007/s11002-006-4147-1

Xu, H., Teo, H.-H., Tan, B. C. Y., & Agarwal, R. (2009). The Role of Push-pull Technology in Privacy Calculus: The Case of Location-based Services. *Journal of Management Information Systems, 26*(3), 135–174. https://doi.org/10.2753/mis0742-1222260305

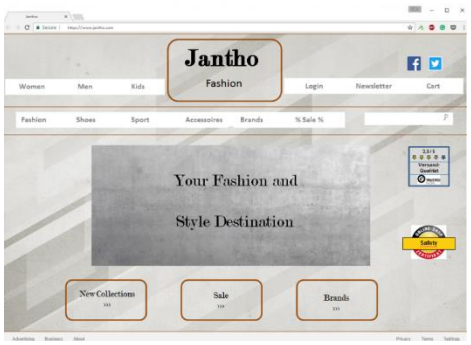
Zajonc, R. B. (1980). Feeling and Thinking: Preferences Need No Inferences. *American Psychologist, 35*(2), 151–175. https://doi.org/10.1037//0003-066x.35.2.151

3.6 Appendices

Appendix A

Base scenario for all studies

Please imagine that you are customer of the online fashion retailer Jantho. Your past experiences with the retailer were largely positive: There have never been any technical issues and your orders were always delivered correctly.
In order to make it easier for you to imagine, you can see an exemplary screenshot of the online shop below:



On your latest visit to the online shop you get the following message:

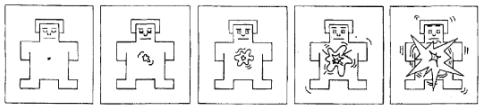
„In order to provide a better services and personalized products we would like to know some more about you. By answering the following questions, you help us to improve your shopping experience. All data will be used for *internal purposes only* (Dyadic/ No BNDE Condition) / All data will be used in *cooperation with our network partners* (BNDE Condition).
As a thank-you gift you will receive a free t-shirt with your next order."
This is the form Jantho asks you to fill out:

Please provide the following information:	
What are you interested in?	○ Sports
	○ Travel
	○ Electronics
	○ Art & Culture
	○ Politics & Economics
	○ Literature
How much money do you have to spend each month:	○ Less than 500 €
	○ 500 € - 1,000 €
	○ 1,001 € - 1,500 €
	○ 1,501 € - 2,000 €
	○ More than 2,000 €
Are you …	○ Married
	○ Single
	○ Divorced

No, thanks Send

Appendix B

Measurement Items and Validity Assessments, Studies 1–4

Construct	Statistics[1]	Measurement Items[2]
Immediate Affective Reaction Shampanier, Mazar, & Ariely (2007)	/	How did you feel when confronted with the data disclosure situation right now? 
Arousal Bradley & Lang (1994)	/	How strong was that reaction when you confronted the data disclosure situation right now? 
Positive and Negative Affect Schedule (PANAS) Thompson (2007)	α_{2a} = .88	How did you feel when confronted with the data disclosure situation right now? 1. Upset 2. Afraid 3. Nervous 4. Hostile 5. Ashamed
Perceived Control Dinev, Xu, Smith, & Hart (2013)	α_1 = .96 / α_{3a} = .94	1. I think I have control over who uses data I disclosed. 2. I believe I have control over who gathers my personal data. 3. I believe I have control over who has access to my personal data.
Perceived Ad-intrusiveness Li, Edwards, & Lee (2002)	α_1 = .92, α_{3a} = .93	Advertisements I will get based on my data disclosure will be … 1. … intrusive. 2. … disturbing. 3. … obtrusive. 4. … distracting.
Perceived Risks of Data Disclosure Dinev, Xu, Smith, & Hart (2013)	α_1 = .91	1. It would be risky to disclose personal data. 2. There would be high potential for privacy loss associated with disclosing personal data.

[1] The values in this column refer to all studies in which the measure appears; subscripts indicate which study.

[2] For all items except the affect (smiley) and arousal (manikin) scale, participants indicated their responses on seven-point Likert or semantic differential scales (1 = "strongly disagree," and 7 = "strongly agree").

		3. Personal data I disclosed could be inappropriately used. 4. Disclosing my personal data would involve many unexpected problems.
Perceived Benefits of Data Disclosure Voss, Spangenberg, & Grohmann (2003)	α_1 = .89	Benefits resulting from my data disclosure will be… 1. …functional. 2. …practical. 3. …necessary. 4. …helpful.
Perceived Risks Unrelated to BNDE Dinev, Xu, Smith, & Hart (2013)	α_4 = .95	Because it is likely that technical errors occur on the website, … 1. … it would be risky to disclose personal data. 2. … there would be high potential for privacy loss associated with disclosing personal data. 3. … personal data I disclosed could be inappropriately used. 4. … disclosing my personal data would involve many unexpected problems.
Perceived Benefits Unrelated to BNDE Voss, Spangenberg, & Grohmann (2003)	α_4 = .88	The use of the offered free t-shirt for me is… 1. …functional. 2. …practical. 3. …necessary. 4. …helpful.
Intention to Disclose Data Malhotra, Kim, & Agarwal (2004)	α_1 = .97 / α_{2a} = .98 / α_{2b} = .97/ α_{3b} = .98 / α_4 = .97	Specify the extent to which you would disclose the requested data. 1. Unlikely/Likely 2. Impossible/Possible 3. Unwilling/Willing
Perceived Uncertainty Self-developed	α_1 = .77 α_{2b} = .80	How do you perceive the data disclosure situation? 1. Easy to comprehend/Difficult to comprehend 2. Straightforward/Unclear 3. Not complex/Complex

Perceived Uncertainty Morgan & Hunt (1994)	α_{2a} = .59	To what extent did Jantho provide you with adequate information for making your disclosure decision? Very adequate/Very inadequate How confident are you in your ability to make predictions regarding future consequences of data disclosure? Complete confidence/No confidence
Perceived Complexity Leppink et al. (2013)	α_{2a} = .76	1. The situation in which I had to decide whether to disclose my data or not was very complex. 2. The information Jantho provided pertaining to future data handling were very complex.
Need for Cognition Cacioppo, Petty, & Kao (1984)	α_{3a} = .71	1. I would prefer complex to simple problems. 2. I find satisfaction in deliberating hard and for long hours. 3. The idea of relying on thought to make my way to the top appeals to me. 4. I really enjoy a task that involves coming up with new solutions to problems.
Perceived Sensitivity of Requested Data Xie, Theo, & Wan (2006)	/	How sensitive do you perceive the data requested to be? Not sensitive at all/Very sensitive

Appendix C

Model Results

Dependent Variable	**Intention to disclose**		
	Study 1		Study 4
	Base model	Dual processing model	
Age	n.s.	n.s.	n.s.
Gender	n.s.	n.s.	n.s.
Sensitivity of the Data	-.18***	-.13***	-.11*
Dyad (0) vs. BNDE (1)	-.33***	n.s.	n.s.
Perceived Control	n.s.	n.s.	
Perceived Ad-intrusiveness	-.15**	n.s.	
Perceived Risks of Data Disclosure	-.16***	n.s.	
Perceived Benefits of Data Disclosure	.48***	.26***	
Affective Reaction		.52***	.52***
BNDE-unrelated Risks			-.08 †
BNDE-unrelated Benefits			.17***
Adj. R^2	.584	.695	.597

Notes: Values show standardized regression coefficients. †p < .10 * p < .05; ** p < .01; *** p < .001

4. Essay 3: Previewing a Meaningfully Gamified Data Disclosure Process to Increase Consumers' Willingness to Engage in Data Disclosure Processes

Margarita Bidler, Johanna Zimmermann, Jan H. Schumann, Thomas Widjaja

Submitted at the Journal of Retailing (VHB Ranking: A)

Consumer data enable retailers to engage in personalization, making their offers more relevant to consumers and more profitable for retailers. However, proliferating requests for data challenge retailers to differentiate themselves from competitors and convince consumers to enter a disclosure process. This paper suggests that retailers' disclosure requests should trigger consumers' anticipation of meaningful and hedonic engagement and thereby foster their willingness to enter the disclosure process. Altering data disclosure requests to include a preview of a meaningfully gamified data disclosure process could achieve this positive consumer engagement. Three experimental studies confirm that consumers are more likely to enter the disclosure process when data requests include a preview of a meaningfully gamified data disclosure process compared with a preview of a traditional data disclosure form. The authors propose three routes that underlie this effect: (1) anticipation of meaningful engagement, (2) anticipation of hedonic engagement, and (3) anticipation of process effort. Consumers' route choice depends on their involvement levels, such that highly involved consumers are more prone to anticipate meaningful engagement, whereas low involvement generates anticipation of hedonic engagement.

Keywords: data disclosure, meaningful engagement, hedonic engagement, gamification, personalization

4.1 Introduction

With detailed consumer profiles, retailers can offer different products that match consumers' sociodemographic traits and personal interests, such that their offers are more relevant to consumers and more profitable for the firm (Schumann, Wangenheim, & Groene, 2014). Obtaining consumer data thus can establish a crucial competitive advantage (Bradlow, Gangwar, Kopalle, & Voleti, 2017). However, because of the widespread proliferation of data collection efforts, consumers increasingly express negative attitudes toward disclosing personal data (Culnan & Armstrong, 1999). Schumann et al. (2014) show that online users are reluctant to participate in surveys that request personal data for personalization purposes, suggesting that the hardest challenge is convincing consumers to participate: Less than 1% of users click on online service providers' survey invitations, but, once started, 23.7% finish it (Schumann et al., 2014).

Online retailers use several approaches to address the difficult task of engaging consumers in the data disclosure process. However, research suggests that approaches such as providing appeals to lower consumers' perceived risk to foster their willingness to enter the data disclosure process have strict time limits (Culnan & Armstrong, 1999; Li & Unger, 2012; Pan & Zinkhan, 2006; Phelps, Nowak, & Ferrell, 2000), such that the positive effects disappear after only a few seconds (Acquisti, Adjerid, & Brandimarte, 2013). Other retailers seek to strengthen consumers' perceived benefits by offering monetary incentives for participating in data disclosure tasks (Hui, Teo, & Lee, 2007; Xu, Teo, Tan, & Agarwal, 2009), but such approaches create a risk that consumers might later believe they were tricked into something they will regret later on (e.g., Dinev, McConnell, & Smith, 2015), because the incentives are unrelated to the original idea of exchanging data for personalization benefits.

In line with an emerging research stream pertaining to consumers' meaningful engagement with gamified tasks (Eisingerich, Marchand, Fritze, & Dong,

2019; Liu, Santhanam, & Webster, 2017; Suh, Cheung, Ahuja, & Wagner, 2017), we argue that retailers can overcome the hurdle of motivating consumers to enter the data disclosure process by integrating a preview of a *meaningfully gamified data disclosure process* into the data request. Such an approach leverages theory about meaningful engagement, defined as a state of mind in which consumers feel a sense of meaning and gain a deep understanding of the experienced event (Dewey, 1934; Liu et al., 2017; Nicholson, 2013), and applies it to the data disclosure context. Data disclosure requests that foster meaningful engagement may help consumers appreciate the direct benefits of data disclosure (e.g., personalized services). Practitioner-oriented studies confirm the importance of communicating the direct benefits of data disclosure to consumers: 83% of adult consumers would be willing to disclose their data for personalization purposes, if retailers clearly stated how those data would be used and communicated a direct link between the disclosed data and resulting benefits (Accenture Interactive, 2018; Data & Marketing Association, 2018).

We propose that, instead of confronting consumers with generic data disclosure forms, retailers might collect the same data by letting consumers create a personal avatar that reflects their appearance and financial aspects. Consumers confronted with a data request featuring a preview of a meaningfully gamified data disclosure process can more easily envision how the collected data might lead to positive personalization outcomes. Thus, they should be encouraged to enter the disclosure process. Moreover, in line with prior findings in the field of gamification, employing a preview of a meaningfully gamified data disclosure process may lead to positive outcomes through a second route: Consumers likely not only anticipate meaningful engagement but also anticipate hedonic engagement (Müller-Stewens, Schlager, Häubl, & Herrmann, 2017; Rettie, 2001), because a gamified process should be more pleasant than filling out a generic form. However, gamification research also highlights that gamification approaches come with the downside of

increased effort (Csikszentmihalyi, 1997), forming a third (and in this case negative) route through which previewing a meaningfully gamified data disclosure process might influence consumers' decision to enter the process. Reconciling these routes with the Elaboration Likelihood Model (ELM), anticipation of meaningful engagement reflects consumers' central route choice, whereas anticipation of hedonic engagement and process effort reflect peripheral route choice (Petty & Cacioppo, 1986). According to the ELM, consumers' route choice depends on their level of involvement. Thus, consumers' involvement needs to be considered as a crucial contingency factor of the relative strength of the psychological mechanisms that drive the predicted effect.

Although both data disclosure (for a literature review see Smith, Dinev, & Xu, 2011) and gamification (for a literature review see Koivisto & Hamari, 2019) literature offer extensive insights, we know of no study that integrates these research streams to predict consumers' intentions to comply with data disclosure requests. This gap is surprising; the positive outcomes identified in gamification research suggest a promising approach for encouraging data disclosure. To fill this void and derive contributions for both research streams as well as to address practical issues pertaining to consumers' reluctance to enter disclosure processes, we pursue three main research goals:

1. We seek to provide empirical evidence that confronting consumers with a data request featuring a preview of a meaningfully gamified data disclosure process increases their intention to enter the data disclosure process for personalization purposes.
2. We aim to delineate the three psychological mechanisms underlying this effect—namely, consumers' anticipations of meaningful engagement, hedonic engagement, and process effort.
3. We show how those three psychological mechanisms vary in strength depending on consumers' involvement.

In turn, this study contributes to several streams of literature. First, regarding consumer acceptance of direct marketing approaches such as personalization and online targeting (Goldfarb & Tucker, 2011; Milne & Gordon, 1993; Schumann et al., 2014), we integrate approaches from privacy-related decision-making literature and gamification literature and thereby provide evidence of the effectiveness of a data disclosure request featuring a preview of a meaningfully gamified data disclosure process. It increases consumers' anticipation of benefits, prompting greater intentions to enter the disclosure process. As such, we introduce a new method to reduce consumers' reluctance to enter disclosure processes. Furthermore, we advance retailing literature by uncovering the psychological mechanisms related to three routes through consumers' (1) anticipation of meaningful engagement, (2) hedonic engagement, and (3) anticipated process effort.

Additionally, we contribute to privacy-related decision-making literature and gamification literature in general. First, by investigating data disclosure requests, we inform privacy-related decision-making literature, which thus far has focused on general disclosure behavior, without explicitly differentiating between consumers' willingness to enter a disclosure process and their intentions to disclose after entering the process (for literature review see Smith et al., 2011). Because of this lack of differentiation, privacy literature does not address the design of data disclosure requests, which is a crucial first hurdle to overcome before consumers will enter the disclosure process.

Second, we introduce the anticipation of meaningful engagement and hedonic engagement as two strong drivers of consumers' intentions to enter the data disclosure process. This view adds a new perspective, beyond personalization-unrelated, generic appeals (e.g., privacy protection seals, rewarding coupons) (e.g., Hui et al., 2007; Pan & Zinkhan, 2006; Xu et al., 2009). With this, we account for the fact, that situational cues such as privacy assurances and coupons in exchange for data disclosure constitute suboptimal leverages, as they can lose their effectivity after

only 15 seconds (Acquisti et al., 2013) and miss to address consumers' demand for long-term benefits (Data & Marketing Association, 2018).

In a more general sense, we also respond to calls for research into the role of meaningful engagement and the interaction of hedonic and meaningful engagement by introducing consumers' involvement as a contingency factor for route choice (Eisingerich et al., 2019; Liu et al., 2017; Mekler, Brühlmann, Opwis, & Tuch, 2013; Nicholson, 2015; Suh et al., 2017).

From a practical perspective, we provide retailers with a data collection request method that is superior to generic data disclosure request forms, because it not only fosters consumers' anticipation of personalization benefits but also increases their anticipation of hedonic benefits, leading to a greater chance that consumers will express willingness to enter the data disclosure process. Beyond the expansion of retailing, data disclosure, and gamification literature, this study thus highlights implications for practical implementation and avenues for further research.

4.2 Theoretical Background and Hypotheses Development

4.2.1 Privacy calculus perspective.

Based on the perception of privacy as a tradable commodity (Smith et al., 2011), consumers conduct a risk–benefit analysis when confronted with the decision to disclose data in exchange for economic or social benefits (Culnan & Armstrong, 1999; Dinev & Hart, 2006). This approach to explain individuals' data disclosure is called the "privacy calculus" framework (Smith et al., 2011). It assumes that data disclosure decisions are conscious, cognitive processes in which consumers consider the consequences, such as perceived risks or benefits of data disclosure, before they make a situation-specific decision (Laufer & Wolfe, 1977). In general, privacy calculus literature focuses on consumers' willingness to *disclose* data (e.g., Smith et al., 2011)—not explicitly investigating consumers' decision-making underlying their willingness to *enter* a data disclosure process.

Nevertheless, current industry practice uses some general principles from literature on disclosure intentions to encourage consumers to enter the disclosure process. Following the logic of the privacy calculus, retailers can employ two approaches to enhance consumers' willingness to enter data disclosure processes (Hui et al., 2007). First, retailers can address consumers' risk perceptions and minimize factors that deter consumers from disclosing their personal data, by highlighting their efforts to protect consumers' privacy. Second, retailers can provide benefits that motivate consumers to enter data disclosure processes.

The effectiveness of using situational factors to leverage disclosure intentions through risk perceptions has been demonstrated in studies that consider data sensitivity (Lwin, Wirtz, & Williams, 2007; Phelps et al., 2000), control over data (Culnan, 1993; Smith, Milberg, & Burke, 1996), and privacy assurances (Hui et al., 2007). However, recent research on the effectiveness of situational cues such as privacy assurances suggests that the implications for data disclosure are time limited, with positive effects disappearing after only a few seconds (Acquisti et al., 2013). Regarding the leverage of disclosure intentions through consumers' perception of benefits, both theory and practice suggest using monetary or time saving incentives in exchange for consumer participation in data disclosure tasks (Hui et al., 2007; Xu et al., 2009). The downside is that consumers might later believe they were tricked into the disclosure (e.g., Dinev et al., 2015). Specifically, consumers may regret participating in the data disclosure in exchange for a coupon, after having reflected on the decision and its long-term impact—compared to the short-term benefit of the coupon (Dinev et al., 2015). Thus, consumers might believe that the retailer and not themselves profits the most from disclosure. Consumers consider and agree to data disclosure requests when they believe that they explicitly and directly benefit from participating (Data & Marketing Association, 2018). Yet current, predominant, practical approaches continue to employ suboptimal forms of leverage to increase consumers' willingness to engage in disclosure behavior.

Against this background, we argue that retailers should redesign their data disclosure requests to catch consumers' attention and convince them of the future benefits of entering the disclosure process.

4.2.2 Increasing consumers' willingness to engage through meaningfully gamified data disclosure processes.

To encourage consumers to enter the data disclosure processes, retailers might include a preview of a meaningfully gamified data disclosure process into their data disclosure requests. Consumers, who are confronted with a preview of a meaningfully gamified data disclosure process, can more easily envision how they would feel when actually entering the process. They will understand—by visual perception—how the collected data could lead to positive personalization outcomes. As such, a preview would provide consumers with a means to explore and reflect on the data disclosure and its potential benefits. In particular, data requests featuring a meaningfully gamified data disclosure process grant consumers a personal connection with this specific situation, generating a strong motivational affordance (Deterding, Dixon, Khaled, & Nacke, 2011; Nicholson, 2015) that should affect consumer behavior favorably (e.g., Berger, Schlager, Sprott, & Herrmann, 2018; Müller-Stewens et al., 2017). Prior studies showed, for example, that presenting information about a product innovation in a gamified manner positively influences consumers' inclination to consider adopting the innovation (Müller-Stewens et al., 2017). We expect similar positive influences on consumers' intentions to enter the data disclosure processes for personalization purposes compared with generic data request forms that do not trigger any similar motivational affordances.

H1: Presenting consumers with data disclosure requests featuring a preview of a meaningfully gamified disclosure process increases their likelihood to enter the data disclose process compared with requests featuring a preview of a generic disclosure form.

4.2.3 Anticipated engagement in a gamified process.

The affective affordance model by Van Vugt et al. (2006) implies that the motivational affordances of a gamified system should prompt positive user engagement (Domínguez et al., 2013). To increase consumer engagement, retailers should enhance consumers' sense of meaning and foster an understanding and appreciation of the benefits resulting from data disclosure. This can be achieved by triggering perceptions of meaningful engagement. Meaningful engagement refers to a state of mind in which consumers experience a sense of meaning and more deeply understand the essence of the experienced event, while interacting with the gamified system (Dewey, 1934; Liu et al., 2017; Nicholson, 2013). Our suggestion, to leverage meaningful engagement as a psychological mechanism that underlies a gamified experience, is in line with an emerging research stream that advocates for its strong influence on consumer behavior (Eisingerich et al., 2019; Liu et al., 2017; Suh et al., 2017). This recent stream of literature proposes that meaningful engagement complements deep engagement, which has so far been considered as the predominant driver of a gamified task (Suh et al., 2017). Deep engagement reflects a depth of engagement from a hedonic perspective; thus, we refer to it as hedonic engagement. Investigations of the hedonic perspective often include the concept of flow, highlighting the need to design a gamified task in such a way that it elicits enjoyment, a state of total immersion, and a loss of a sense of time (e.g., Csikszentmihalyi, 1990; Hamari et al., 2016). Hedonic engagement reflects a situational state of mind eliciting immediate enjoyment (e.g., Agarwal & Karahanna, 2000; Hamari et al., 2016). For hedonic engagement to arise, the gamified activity must be challenging but not insoluble (Csikszentmihalyi, 1997). Therefore, hedonic engagement only occurs with a certain degree of process effort.

Meaningful engagement, the link between meaningful and hedonic engagement as well as the influence of process effort have not yet received much research attention. Moreover, no study has linked both engagement perspectives

with consumers' intention to enter a data disclosure process yet. This is especially surprising because meaningful engagement is a future-oriented reflection of the gamified task (Suh et al., 2017) and therefore especially valuable for retailers when investigating consumers' willingness to enter a data disclose process in exchange for future personalization benefits.

In sum, consumers' willingness to enter a data disclosure process can be driven by two routes, accounting for the two complementary forces of user engagement (i.e., anticipated meaningful engagement and anticipated hedonic engagement). The third route, anticipated process effort, is an inhibitor. Figure 4.1 illustrates this conceptual framework and the forthcoming hypotheses.

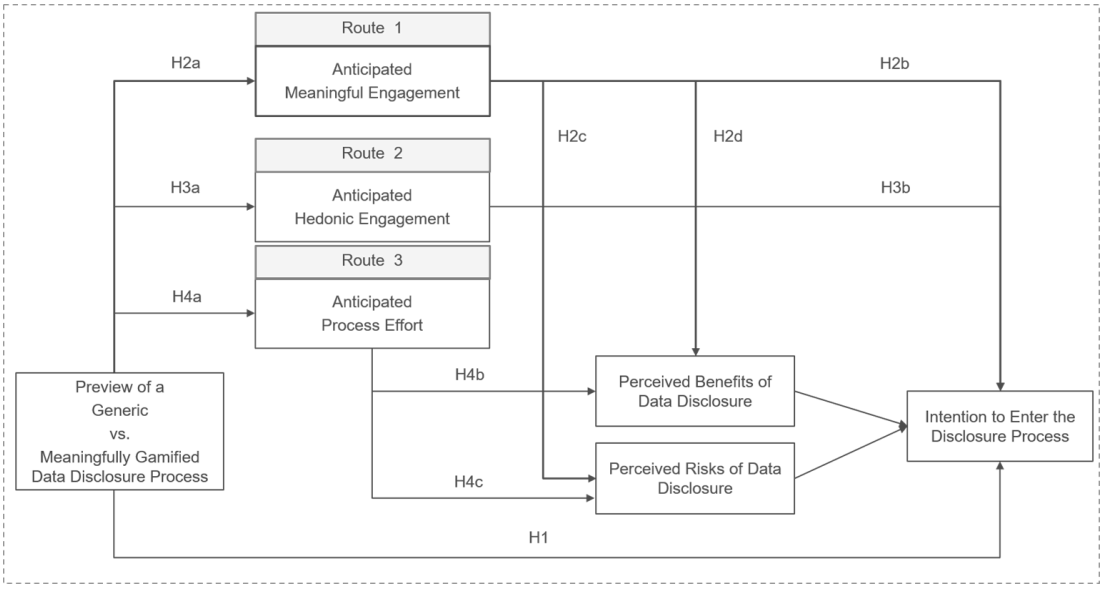


Figure 4.1. Conceptual framework.

4.2.3.1 Route 1: The mediating role of anticipated meaningful engagement.

Gamification literature stresses the importance of user engagement, noting that the mere addition of gameful affordances does not automatically lead to success (Hamari, 2013). Successful gamified systems should be designed to create positive engagement as a psychological outcome (van Vugt et al., 2006). Following prior literature on engagement with a gamified task (Eisingerich et al., 2019; Suh et

al., 2017), we argue that presenting consumers with a preview of a meaningfully gamified data disclosure process should trigger their anticipation of meaningful engagement. Compared with data requests involving a generic data disclosure process (e.g., filling out a form), we predict that consumers presented with a data request featuring a preview of a meaningfully gamified data disclosure process more easily envision the resulting personalization benefits and therefore anticipate meaningful engagement.

H2a: Consumers presented with a data disclosure request featuring a preview of a meaningfully gamified data disclosure process anticipate greater meaningful engagement than those presented with a disclosure request featuring a preview of a generic data disclosure form.

Greater anticipated meaningful engagement in turn should motivate consumer behavior (Suh et al., 2017). Thus, anticipation of meaningful engagement may directly increase consumers' intentions to enter the data disclosure process. Beyond this direct effect, we expect two indirect effects. First, it should be easier for consumers with a greater anticipation of meaningful engagement to imagine the future benefits of data disclosure, leading to greater benefit perceptions. Second, consumers' perceptions of benefits and risks related to a focal object or situation often correlate negatively, such that situations that offer more benefits appear to pose lower risks, and vice versa (Finucane, Alhakami, Slovic, & Johnson, 2000; Slovic, Finucane, Peters, & MacGregor, 2004). As such, anticipation of meaningful engagement, which reflects consumers' perception of beneficial outcomes, should lead to decreased risk perceptions. Increased benefit and decreased risk perceptions then should further enhance consumers' intentions to enter the data disclosure process (Dinev & Hart, 2006).

H2b: The greater consumers' anticipation of meaningful engagement, the higher their intention to enter the data disclosure process.

H2c-d: Consumers' anticipation of meaningful engagement increases their intentions to enter the disclosure process because of their (c) increased anticipation of the benefits of entering the gamified disclosure process and (d) decreased anticipation of risks related to entering the gamified disclosure process.

4.2.3.2 Route 2: The mediating role of anticipated hedonic engagement.

Although our proposed data request method focuses on fostering consumers' anticipation of meaningful engagement, previewing a gamified data disclosure process also might trigger anticipation of hedonic engagement. Various forms of gamification positively affect hedonic engagement (Müller-Stewens et al., 2017; Rettie, 2001; Suh et al., 2017). Thus, when confronting consumers with a data disclosure request featuring a preview of a meaningfully gamified data disclosure process, consumers should anticipate that the meaningfully gamified data disclosure will be a more entertaining task than filling out a generic data disclosure form.

H3a: Consumers presented with a data disclosure request featuring a preview of a meaningfully gamified data disclosure process anticipate greater hedonic engagement than those presented with a disclosure request featuring a preview of a generic data disclosure form.

Whereas meaningful engagement represents a future-oriented reflection of the gamified task that influences consumers' benefit and risk assessments (Suh et al., 2017), hedonic engagement reflects a situational state of mind (e.g., Agarwal & Karahanna, 2000; Hamari et al., 2016). Thus, anticipation of hedonic engagement should influence consumers' willingness to enter the disclosure process directly, without affecting the privacy calculus. Prior literature provides extensive evidence of the positive effect of hedonic engagement on behavioral outcomes. For example, hedonic engagement, conceptualized by a flow experience, prolongs the time consumers spend on the Internet (Rettie, 2001), positively affects consumers' exploratory behavior (Webster, Trevino, & Ryan, 1993), fosters continuous uses of

information systems (Suh et al., 2017), and increases consumers' intentions for future play (Hsu & Lu, 2004). These positive outcomes imply that consumers' intentions to enter the data disclosure process are proportionate to their anticipation of hedonic engagement.

H3b: The higher consumers' anticipation of hedonic engagement, the greater their intention to enter the data disclosure process.

4.2.3.3 Route 3: The mediating role of anticipated process effort.

Activities that promote a state of flow, reflecting hedonic engagement, must be designed to be challenging but not insoluble (Csikszentmihalyi, 1997). If the gamified activity is too challenging, consumers are likely to become anxious and abort the activity. If the challenge is too easy, consumers lose interest, again leading them to halt the activity (Hsu & Lu, 2004). For the meaningfully gamified data disclosure process anticipated hedonic engagement might arise only together with a certain degree of anticipated challenge (i.e., anticipated process effort). In comparison, consumers presented with a data request featuring a generic data collection process (i.e., filling out a form) may anticipate this disclosure to be less effortful, because it is less time consuming.

H4a: Consumers presented with a data disclosure request featuring a preview of a meaningfully gamified data disclosure process anticipate more process effort than those presented with a disclosure request featuring a preview of a generic data disclosure form.

Literature on value perceptions reveals that lower perceived process effort, reflected by ease of use (Davis, 1993), can increase utilitarian value perceptions related to the goal of the process (e.g., Davis, 1993; Venkatesh & Davis, 2000). In the reverse case this should mean that anticipated process effort elicited by a data disclosure request featuring a meaningfully gamified data disclosure process might reduce consumers' perceptions of personalization benefits. Furthermore,

Featherman, Miyazaki, and Sprott (2010) find that perceived ease of use reduces perceived risk levels in the context of consumer privacy. We expect analogous effects; that is, anticipated process effort, as the opposite of perceived ease of use, should increase consumers' perceptions of the risks related to entering a meaningfully gamified data disclosure process.

H4b: The higher consumers' anticipation of process effort, the lower their anticipation of benefits related to entering the meaningfully gamified disclosure process.

H4c: The higher consumers' anticipation of process effort, the greater their anticipation of risks related to entering the meaningfully gamified disclosure process.

In sum, employing a data request featuring a preview of a meaningfully gamified data disclosure process thus should affect consumers' willingness to enter the disclosure process through (1) anticipation of meaningful engagement and (2) anticipation of hedonic engagement, accompanied by (3) anticipated process effort. Before testing these proposed mechanisms in study 2, study 1 investigates the base effect.

4.3 Study 1: The Base Effect of a Data Request Featuring a Meaningfully Gamified Data Disclosure Process on Intention to Enter the Disclosure Process

The first study tests our first hypothesis by comparing the effectiveness of presenting consumers with a data request that previews a meaningfully gamified data disclosure process with a traditional approach that displays a generic data collection form.

4.3.1 Design, participants, and procedure.

We employed an online scenario experiment to investigate the main effect in a controlled setting (Aguinis & Bradley, 2014) that produces valid results related to

consumers' perceptions and intentions. We randomly assigned participants to a single treatment with two conditions, for which we manipulated the data disclosure request in a fictional online fashion retail setting. Online shops are ubiquitous and commonly request private data from consumers, so they provide a reasonable and realistic study setting. We told participants that the fashion retailer required personal data to provide personalized services and style recommendations.

We presented participants with either a short video demonstrating a generic data request form (i.e., preview of a non-gamified process) or a request featuring a preview of a gamified data disclosure process, where data disclosure involved creating an avatar that mimics the participants (see Appendix D). We chose the creation of avatars because this task triggers both meaningful and hedonic engagement: It visually emphasizes the potential for future personalization benefits and also is enjoyable. We added videos for two reasons. First, a dynamic visual approach helps consumers better envision the actual engagement that might occur during the disclosure process, leading to greater anticipation of this engagement. Such anticipation then should increase consumers' intentions to enter the disclosure process. Second, previewing videos is a realistic retailing practice.

The videos were matched to participants' gender, so that female (male) participants saw a video featuring a female (male) avatar. In the generic data disclosure condition, participants watched a video that detailed the procedure for filling out a form, with data attuned to either male or female characteristics (e.g., average height). Both data disclosure requests collected the same data (physical appearance, financial affairs).

We administered the questionnaire to a convenience sample of 114 participants (M_{Age} = 23.11 years, SD_{Age} = 6.65, 59% women). We first asked participants to indicate their gender so that we could expose them to a manipulation reflecting their gender: generic disclosure request setting (coded 0) vs. request setting featuring a meaningfully gamified disclosure process (coded 1).

After we exposed respondents to the manipulation, they indicated their intention to enter the data disclosure process. We adopted three items from Malhotra et al. (2004), using a 7-point semantic differential scale, to measure disclosure intentions. This established multi-item scale offers strong reliability and validity. The Cronbach's alpha for this construct was .97, indicating high internal consistency (see Appendix E). Next, participants completed manipulation checks. Specifically, they indicated how meaningful ("When deciding to update my profile, I would feel that the update will result in future benefits for me") and how playful ("When deciding to update my profile, I would feel that I could have fun") they perceived the potential data disclosure process. to be. These measures used 7-point Likert scales, ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Finally, participants reported their perception of realism and socio-demographic aspects. To mitigate concerns about common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), we assured anonymity for all participants, provided contextual information to reduce ambiguity, and highlighted that there were no right or wrong answers.

4.3.2 Results of study 1.

Results from study 1 indicate that our manipulation of anticipated meaningful engagement ($t(112) = -2.03$, $p = .045$, $M_{Generic} = 3.36$; $M_{Gamified} = 4.06$) and anticipated hedonic engagement ($t(86.68) = -4.48$, $p < .001$, $M_{Generic} = 1.87$; $M_{Gamified} = 3.34$) performed as intended. Participants perceived both scenarios as equally realistic ($t(112) = .022$, $p = .98$).

The group means show that consumers' intentions to enter the data disclosure process are significantly greater in the meaningfully gamified condition ($M_{Gamified} = 2.96$) compared with the generic request ($M_{Generic} = 2.28$) ($t(112) = -2.15$, $p = .033$). This finding confirms H1.

4.3.3 Discussion of study 1.

Study 1 confirms our hypothesis 1 about the favorable effect of confronting consumers with a data request featuring a preview of a meaningfully gamified disclosure process. The results of the two single item measures pertaining to anticipations of meaningful and hedonic engagement provide the first evidence for our prediction that incorporating a gamified data disclosure process increases anticipation of both meaningful and hedonic engagement. Study 2 therefore addresses the constructs of anticipated meaningful engagement and hedonic engagement and investigates the role of anticipated process effort, which we did not account for thus far.

4.4 Study 2: Mechanisms Underlying the Effect of a Data Disclosure Request Featuring a Preview of a Meaningfully Gamified Data Disclosure Process on Consumers' Intentions to Enter the Process

Study 2 aims to uncover the psychological mechanisms driving the positive effect we found in study 1. In particular, we test our hypotheses about the two parallel, positive mediating routes through anticipated meaningful engagement and anticipated hedonic engagement, as well as the accompanying anticipated process effort (i.e., the third, negative mediating route).

4.4.1 Design, participants, and procedure.

The experimental design and procedure for study 2 are identical to those for study 1. We recruited participants representative of an online shopping population from a professional panel provider. The final sample consisted of 295 participants (M_{Age} = 34.50 years, SD_{Age} = 14.94, 58% women). Again, we first asked participants to indicate their gender so that we could expose them to the corresponding manipulation. Then we randomly assigned participants to either a generic disclosure request setting (coded 0) or to a request setting featuring a meaningfully gamified disclosure process that matched their gender (coded 1). Participants then indicated

their intention to enter the data disclosure process as in study 1, and answered questions related to the anticipated process variables. We adopted four items from Agarwal and Karahanna (2000) to measure flow experience, reflecting the anticipated hedonic engagement of the meaningfully gamified disclosure process. Five items from Suh et al. (2017) measured anticipated meaningful engagement with a gamified task. To measure anticipated process effort, we employed three items from Franke and Schreier (2010). We measured the anticipated benefits and risks of data disclosure with three and four items, respectively (Dinev et al., 2013). Finally, we considered the perceived sensitivity of the requested data as a control variable, using a single-item measure adopted from Xie, Teo, and Wan (2006). All constructs were measured on 7-point Likert scales. Again, the Cronbach's alphas for all constructs showed satisfactory values, indicating high internal consistency (see Appendix E).

4.4.2 Results of study 2.

We used the PROCESS macro for SPSS (Hayes, 2018) and programmed a customized serial mediation model with 5,000 bootstrapping samples, creating a 95% bias-corrected confidence interval (CI). Age, gender, and perceived sensitivity of the requested data were covariates. By considering all process variables at the same time, we can draw conclusions about the psychological drivers of the positive effect of previewing a meaningfully gamified data disclosure process during the data request on consumers' intentions to enter the disclosure process

Route 1: Mediation through anticipated meaningful engagement.

Investigating the first proposed mediating route through meaningful engagement, we find that, in support of H2a, data requests featuring a meaningfully gamified data disclosure process elicited consumers' anticipation of meaningful engagement (β = .24, $t(290) = 2.17$, $p = .03$). Anticipated meaningful engagement directly increased consumers' intentions to enter the disclosure process ($\beta = .26$, $t(285) = 3.75$, $p <$

.001), and it indirectly increased consumers' intentions through benefit (β = .68, t(287) = 11.13, p < .000) and risk (β = -.42, t(287) = -6.06, p < .000) perceptions, in support of H2b–d. Serial mediation analyses revealed significant positive indirect effects of a data request featuring a meaningfully gamified data disclosure process on intentions to enter the disclosure process through anticipated meaningful engagement (β = .06, 95% CI [.006, .144]), anticipated meaningful engagement and benefit perceptions (β = .03, 95% CI [.003, .064]), and anticipated meaningful engagement and risk perceptions (β = .03, 95% CI [.003, .058]).

Route 2: Mediation through anticipated hedonic engagement. The results from the second mediating route support H3a, demonstrating the positive impact of previewing a meaningfully gamified data disclosure process during the data request on anticipated hedonic engagement (β = .32, t(290) = 2.81, p = .005). As proposed, compared with anticipated meaningful engagement, we find that anticipation of hedonic engagement had no effect on consumers' perceptions of the benefits associated with data disclosure (β = .05, t(287) = .84, p = .40) or their perceived risks of data disclosure (β = .002, t(287) = .03, p = .98). In line with H3b, anticipated hedonic engagement directly and positively influenced consumers' intentions to enter the disclosure process (β = .18, t(285) = 3.27, p < .001), constituting a significant positive mediation (β = .06, 95% CI [.009, .126]).

Route 3: Mediation through anticipated process effort. In support of H4a—representing a downside of gamification—we find that data requests featuring a meaningfully gamified data disclosure process elicited anticipation of process effort (β = .45, t(290) = 3.95, p < .000). This anticipated process effort lowered consumers' perceptions of the benefits of data disclosure, as we predicted in H4b (β = -.17, t(287) = -3.95, p < .000), but it had no effect on risk perceptions, contrary to H4c (β = .06, t(287) = 1.32, p = .19). Nor do we find any direct effect of anticipated process effort on consumers' intentions to enter the disclosure process (β = -.01, t(285) = -.19, p = .85). The negative indirect effect through anticipated process effort and

benefit perceptions (β = -.012, 95% CI [-.026, -.003]) was weaker than the positive effects related to anticipated meaningful and hedonic engagement. The research model (Figure 4.2) explains substantial variance in consumers' behavioral intentions (*adjusted* R^2 = .60, $F(9, 285) = 51.12$, $p < .000$).

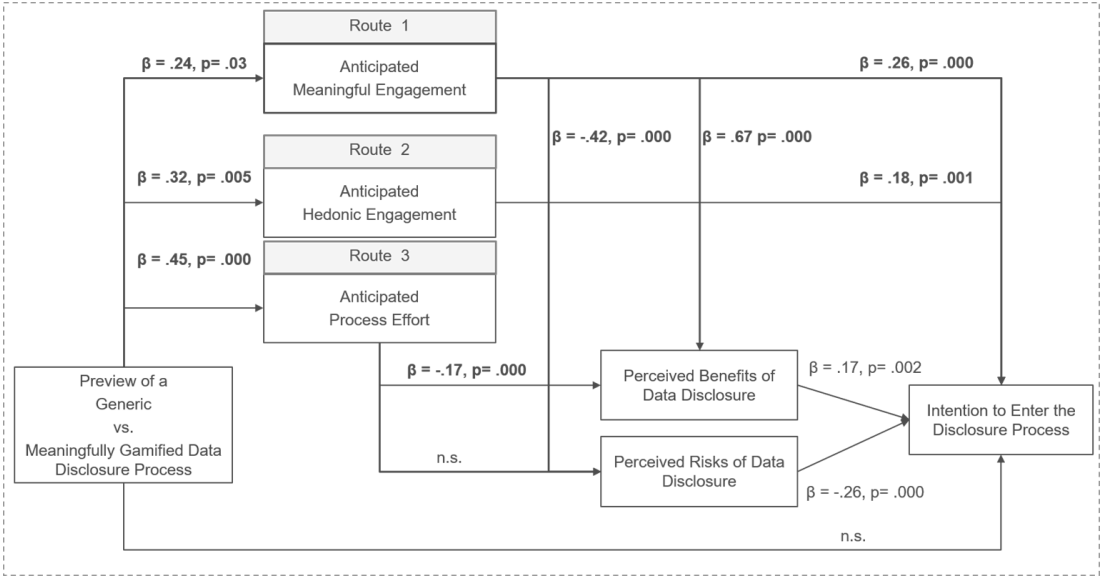


Figure 4.2. Mediation model results.

4.4.3 Discussion of study 2.

Study 2 uncovers the psychological mechanisms underlying the favorable effect of data requests featuring a meaningfully gamified data disclosure process on consumers' willingness to enter the data disclosure process. In support of our hypotheses, we find anticipation of both meaningful and hedonic engagement and anticipated process effort to be crucial process variables explaining this effect. The positive aspects related to anticipated meaningful and hedonic engagement outweigh the negative effect associated with process effort.

Contrary to H4c, anticipated process effort does not influence consumers' risk perceptions unfavorably. Although this finding is surprising, it seems consistent with the mixed findings of prior literature regarding this relationship (Featherman et al., 2010). Of the two engagement routes, anticipated meaningful engagement has a greater impact on intention to enter the disclosure process. While anticipated

meaningful engagement has a strong direct effect on behavioral intentions and the privacy calculus (i.e., risk and benefit perceptions), anticipated hedonic engagement has no impact on consumers' privacy-related decision making through the privacy calculus; it only directly influences behavioral intentions.

Study 2 uncovers the psychological mechanisms driving the favorable effect of previewing a meaningfully gamified data disclosure process. However, following the ELM, consumers should respond to persuasive messages differently depending on their involvement. Therefore, study 3 aims to understand how consumers, depending on their individual involvement, are more likely to base their decision to enter the disclosure process, based on their anticipation of either meaningful or hedonic engagement, accompanied by their anticipation of process effort.

4.5 Study 3: Involvement as a Contingency Factor Determining Route Choice

Building on our findings from study 2 for the two types of anticipated engagement, study 3 aims to investigate how consumers differ in their route choice when confronted with a data disclosure request featuring a meaningfully gamified data disclosure process, depending on their involvement levels. The ELM of persuasion proposes that when presented with information, consumers process this information on either a central or a peripheral route (Petty & Cacioppo, 1986). Consumers' route choice depends largely on their motivation to process the information, which in turn is determined by personal interest (i.e., involvement) in the subject (Morris, Woo, & Singh, 2005). When involvement is low, consumers are more likely to process information on the peripheral route, relying on heuristic shortcuts and situational cues related to negative or positive associations (Petty & Cacioppo, 1986). When consumers are more involved though, they likely process information on the central route, characterized by thoughtful elaborations (Petty & Cacioppo, 1986). In transferring this theoretical perspective to a data disclosure

request featuring a meaningfully gamified data disclosure process, we predict that consumers' involvement determines the impact of the request on consumers' perception of the elicited process variables: High involvement should lead consumers to reflect on the meaning and future benefits of entering the meaningfully gamified disclosure process (i.e., anticipated meaningful engagement) and ignore additional process effort. Consumers with low involvement levels instead should be more focused on peripheral cues, such as the positive association of enjoyment when playing a game (i.e., anticipated hedonic engagement). Moreover, low levels of involvement should make consumers more prone to anticipate more process effort. Figure 4.3 illustrates the proposed moderations.

H5a-c: Consumers' involvement moderates the relationship of a data disclosure request featuring a meaningfully gamified data disclosure process on three process variables, such that consumers with high involvement anticipate (a) more meaningful engagement but not process effort, whereas consumers with low involvement anticipate (b) more hedonic engagement and (c) more process effort.

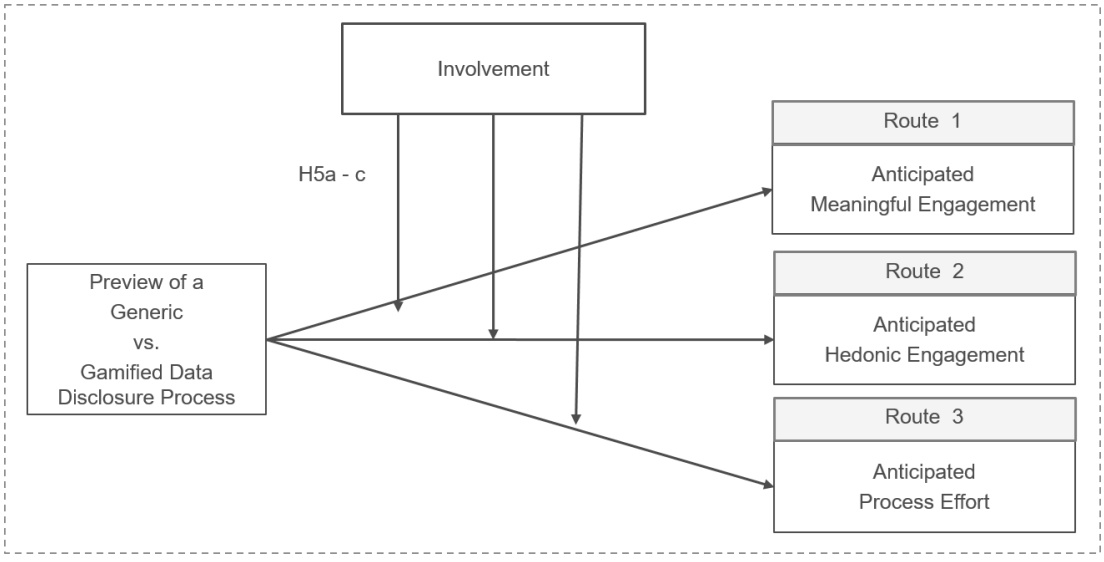


Figure 4.3. Moderation model.

4.5.1 Design, participants, and procedure.

We employed a 2 (data disclosure request: generic vs. gamified) × 2 (involvement: fashion retailer vs. retailing bank) experimental design. To induce

variety in perceived involvement, we randomly assigned participants to either a fashion retailing context, as in the previous studies, or a retail banking context. These two settings likely differ in the level of involvement they evoke from consumers, so we gain more variety in participants' measured involvement. We built the retail banking setting to match the manipulations from the two previous studies. Thus, participants in the data request condition featuring a meaningfully gamified data disclosure in the retail banking (fashion) setting received a data inquiry about their household makeup (data about physical appearance) and financial aspects. To create a realistic scenario, we changed the name of the fictional company requesting the data from the previous studies to fit both a fashion retailer and a retailing bank. Otherwise, we used the same scenarios as in the previous studies for the fashion retailing condition. Again, we provided videos of the fictional data disclosure process in our manipulation to achieve better insights on variables related to the process. The measures, acquisition of participants, and procedure were the same as in study 2. We also measured involvement using three items adopted from Swilley and Goldsmith (2007) and the perceived realism of the scenario, as in study 1. Our final sample included 318 participants (M_{Age} = 39.72 years, SD_{Age} = 15.26, 58.8% women).

4.5.2 Results of study 3.

Robustness of the mediation model. Participants reported high realism measures ($M_{Realism}$ = 4.93) with no differences between corresponding groups, indicating that our manipulation suited both online retailing and retail banking settings. To confirm the results from study 2, we ran a customized serial mediation model (Hayes, 2018). The results confirm the findings from study 2: Data requests featuring a meaningfully gamified data disclosure process elicit anticipation of meaningful engagement (β = .24, $t(312)$ = 2.20 p = .03), which increases consumers' intention to enter the data disclosure process directly (β = .43, $t(307)$ =

7.00, $p < .000$), as well as by adjusting their risk ($\beta = -.33$, $t(309) = -4.71$, $p < .000$) and benefit ($\beta = .62$, $t(309) = 10.25$, $p < .000$) perceptions. Therefore, we identify three positive indirect effects, through anticipated meaningful engagement ($\beta = .10$, 95% CI [.012, .203]), anticipated meaningful engagement and benefit perceptions ($\beta = .03$, 95% CI [.003, .067]), and anticipated meaningful engagement and risk perceptions ($\beta = .02$, 95% CI [.001, .036]), on consumers' intentions to enter the disclosure process. These findings confirm H2a–d.

Study 3 also confirms the second route through anticipated hedonic engagement. Previewing a meaningfully gamified data disclosure process triggers anticipation of hedonic engagement ($\beta = .24$, $t(312) = 2.29$, $p = .02$), which increases consumers' intentions to enter the data disclosure process ($\beta = .11$, $t(307) = 2.25$, $p = .03$), resulting in a positive indirect effect ($\beta = .03$, 95% CI [.000, .071]). These findings support H3a and H3b. Moreover, in line with H4a and H4b, a data request featuring a meaningfully gamified data disclosure process elicits anticipation of process effort ($\beta = .37$, $t(312) = 3.36$, $p < .000$), which further reduces perceived benefits ($\beta = -.16$, $t(309) = -3.59$, $p < .000$; indirect effect: $\beta = -.01$, 95% CI [-.026, -.003]). Again, we did not find an effect of anticipated process effort on perceived risks ($\beta = .08$, $t(309) = 1.65$, $p = .10$), which led to the rejection of H4c. The model explains substantial variance in consumers' intentions to enter the data disclosure process (*adjusted* $R^2 = .59$, $F(10, 307) = 45.32$, $p < .000$).

Involvement as a contingency factor. We ran moderation analyses to investigate consumers' route choice, according to their involvement (Hayes, 2018; 5,000 bootstrapping samples, 95% bias-corrected CI; age, gender, perceived sensitivity of the requested data, and the context [fashion/retail banking] were covariates). We did not find significant interaction effects of a gamified data disclosure process with involvement on anticipated meaningful engagement ($\beta = .08$, $t(311) = .80$, $p = .42$), hedonic engagement ($\beta = -.10$, $t(311) = -.88$, $p = .38$), or process effort ($\beta = -.19$, $t(311) = -1.69$, $p = .09$). Thus, we formally reject H5a–c.

However, the conditional effects analyses uncover the expected tendencies, such that compared with consumers with low involvement levels (β | (W = 2.00) = .13, t(311) = .84, p = .40), consumers with moderate involvement levels (β | (W = 4.00) = .23, t(311) = 2.17, p = .03) and high involvement levels (β | (W = 5.33) = .26, t(311) = 2.04, p = .04) anticipated more meaningful engagement when confronted with a data request featuring a meaningfully gamified data disclosure process. Anticipation of hedonic engagement emerged only for consumers with low involvement levels (β | (W = 2.00) = .33, t(311) = 2.08, p = .04), compared with those with moderate (β | (W = 4.00) = .21, t(311) = 1.93, p = .054) and high (β | (W = 5.33) = .97, t(311) = .90, p = .37) involvement levels. In addition, we find that consumers with low involvement levels (β | (W = 2.00) = .57, t(311) = 3.52, p < .000) and moderate involvement levels (β | (W = 4.00) = .34, t(311) = 3.02, p = .003), but not with high involvement levels (β | (W = 5.33) = .19, t(311) = 1.21, p = .23), anticipate process effort.

To generate more detailed insights, we employed the Johnson-Neyman procedure for all moderation analyses, to establish “regions of significance”. We find that a gamified data disclosure process elicits meaningful engagement for consumers with involvement levels ranging from 3.55 to 5.62, hedonic engagement for consumers with involvement levels ranging from 1.55 to 3.95, and process effort for consumers with involvement levels below 4.74 (all on 7-point Likert scales).

4.5.3 Discussion of study 3.

Study 3 confirms the results from study 2 regarding the three routes underlying the favorable effect of previewing a meaningfully gamified data disclosure process on consumers’ willingness to enter the disclosure process. Although we do not find overall moderating effects, the results from the conditional effects analyses generate important insights into the role of consumers’ involvement in determining which type of engagement is more likely to emerge and drive the favorable effect on consumer intentions. Consumers with moderate and high involvement levels who

encounter a data request featuring a meaningfully gamified data disclosure process likely base their decision to enter the disclosure process on their anticipation of meaningful engagement. Low and moderately involved consumers instead are likely to base their decision on their anticipation of hedonic engagement.

These findings highlight an important finding of employing data disclosure requests that feature meaningfully gamified disclosure processes: Retailers can profit from the favorable effect of this method, regardless of consumers' involvement. Although anticipation of meaningful engagement drives the effect for highly involved consumers, anticipation of hedonic engagement drives the effect for low involvement levels, and both result in increased consumer intentions to enter the data disclosure process. Only highly involved consumers do not anticipate that the meaningfully gamified disclosure process will be effortful.

4.6 General Discussion

With this article, we introduce a data disclosure request featuring a preview of a meaningfully gamified data disclosure process as a means to increase consumers' acceptance of, and participation in, retailers' data collection processes. We investigate the effectiveness of this approach and explore the underlying psychological mechanisms via three routes. Reconciling these routes with the ELM, we further explore consumers' route choice by accounting for involvement as a contingency factor.

4.6.1 Theoretical contributions.

Our study contributes to retailing literature in two ways. First, this study informs retailing literature on consumers' acceptance of direct marketing approaches such as personalization and online targeting (Goldfarb & Tucker, 2011; Milne & Gordon, 1993; Schumann et al., 2014). We integrate findings from privacy-related decision-making literature and gamification literature to introduce a new approach, reconciling retailers' need for data and consumers' demand for direct

benefits in exchange for those data. Specifically, we propose that this new technological approach facilitates consumers' decision-making in the retailing context (Grewal, Roggeveen, & Nordfält, 2017). We provide evidence for the effectiveness of confronting consumers with a data disclosure request previewing a meaningfully gamified data disclosure process. A meaningfully gamified data disclosure request increases consumers' understanding of how the requested data could lead to positive personalization outcomes, resulting in an increased willingness to enter the disclosure process.

Second, we advance literature on the acceptance of direct marketing approaches by uncovering the psychological mechanisms that drive consumers' willingness to enter the data disclosure process. Specifically, we find that a data request previewing a meaningfully gamified data disclosure process influences consumers' intentions to enter the process through three routes: (1) anticipation of meaningful engagement, (2) anticipation of hedonic engagement, and (3) anticipation of process effort. Anticipated meaningful engagement has a stronger effect on consumers' intentions to enter the disclosure process because it not only directly increases consumers' intentions to enter but also indirectly adjusts their benefit and risk anticipations. In contrast, anticipated hedonic engagement only directly, and less severely, affects consumers' intentions to enter the disclosure process. Finally, though a preview of a meaningfully gamified disclosure process leads to increased anticipation of process effort, it only reduces consumers' anticipation of benefits resulting from disclosure and has no further negative effects on disclosure intentions.

Besides our contributions to retailing literature, we also contribute to privacy-related decision-making literature in two ways. First, we argue that the initial hurdle of getting consumers to enter the process needs to be addressed separately from privacy-related disclosure behavior in general. Privacy research mainly has focused on investigating risks and benefits related to consumers' willingness to disclose

data, without differentiating between consumers' willingness to enter the disclosure process and their willingness to disclose after entering the process (Smith et al., 2011). As such current literature ignores the fact that consumers entering the disclosure process in the first place is distinct from consumers' disclosure behavior during the process. Our proposed procedure for designing data disclosure requests advances this research. As another contribution to privacy-related decision-making literature detailing the provision of personalization-unrelated, generic appeals (e.g., privacy protection seals, rewarding coupons) to increase general disclosure intentions (e.g., Hui et al., 2007; Pan & Zinkhan, 2006; Xu et al., 2009), we argue that such situational cues constitute suboptimal forms of leverage, because they lose effectiveness quickly (Acquisti et al., 2013) and fail to address consumers' demands for long-term benefits related to the disclosed data (Data & Marketing Association, 2018). Altering data disclosure requests to include a preview of a meaningfully gamified data disclosure process offers a promising new approach, because it meets consumers' expectations of direct benefits and encourages long-term engagement.

Finally, this study contributes to gamification literature. Specifically, we contribute to emerging research in the gamification literature that advocates for the importance of meaningful engagement (e.g., Eisingerich et al., 2019; Liu et al., 2017; Suh et al., 2017), whereas prior literature cites hedonic engagement as the only driver of a gamified task (Csikszentmihalyi, 1990; Hamari et al., 2016; Müller-Stewens et al., 2017; Rettie, 2001). When employing data disclosure requests featuring the preview of a meaningfully gamified data disclosure process, retailers foster consumers' anticipation of the future benefits that can result from their data disclosure (i.e., anticipation of meaningful engagement). In addition to this prevailing anticipation of meaningful engagement, the preview of a meaningfully gamified data disclosure process elicits anticipation of hedonic engagement, accompanied by anticipated process effort. By reconciling these routes with the ELM (i.e., uncovering

the moderating role of consumers' involvement determining consumers' route choice), our findings inform literature on the relationship between meaningful and hedonic engagement and the role of process effort in gamified processes. Specifically, we find that greater involvement makes consumers more likely to anticipate meaningful engagement and less likely to anticipate process effort, whereas low involvement favors the anticipation of hedonic engagement and process effort. With these findings, we respond to calls for more research into the role of meaningful engagement and the interaction of hedonic and meaningful engagement (Eisingerich et al., 2019; Liu et al., 2017; Mekler et al., 2013; Nicholson, 2015; Suh et al., 2017).

4.6.2 Managerial implications.

Our results also have important implications for retail managers. We propose a new appeal to foster consumers' willingness to enter the data disclosure process for personalization purposes. Instead of offering additional appeals, such as monetary rewards for disclosure, the data disclosure request should be designed to help the consumer understand how the requested data lead directly to personalization benefits. To do so, retailers might employ a meaningfully gamified data disclosure process and include a preview of this altered process into their data requests. Although the previewed meaningfully gamified data disclosure process is likely to be perceived as more effortful than generic data disclosure approaches, the positive aspects outweigh this negative effect.

However, when implementing the proposed meaningful appeal, retailers must consider consumers' involvement with their product or service, which determines the driver of the favorable effect. Retailers selling high involvement products and services are more likely to profit from the positive effect of anticipated meaningful engagement. To foster consumers' anticipation of meaningful engagement, those retailers should highlight the objective benefits resulting from

participating in the data disclosure. In contrast, retailers offering low involvement products and services are more likely to benefit from anticipated hedonic engagement and should design their data requests accordingly, such as by enhancing enjoyment. However, we caution those retailers not to focus solely on hedonic triggers, because consumers might believe they were tricked into disclosure, which could backfire on the retailer (e.g., Dinev et al., 2015).

4.6.3 Limitations and further research.

The limitations of this study offer opportunities for further research. First, we investigated consumer engagement as a motivator to enter a meaningfully gamified data disclosure process. It involved designing the previewed meaningfully gamified data disclosure process to include various gamification elements (avatars, direct feedback, progress bars, and curiosity) (Deterding et al., 2011). Future research might wish to investigate the influence of those affordances separately. Curiosity, for example, functions as a hedonically beneficial motivator in the marketing context (Ruan, Hsee, & Lu, 2018), constituting an interesting research object.

Second, to investigate the psychological mechanisms underlying consumers' privacy-related decision-making, we chose a data disclosure situation, which required moderately sensitive data. To draw more generally valid conclusions about the roles of the three process variables (i.e., anticipated meaningful engagement, hedonic engagement, and anticipated process effort), further research could investigate the relative importance of the three process variables and their relationship to one another for varying levels of sensitivity (e.g., could there be disclosure settings in which anticipated hedonic engagement would have no effect on willingness to enter the disclosure process because consumers perceive the situation as highly sensitive and are thus not prone to hedonic influences?).

Third, continued research might investigate the next step of our proposed approach. Whereas we investigated data disclosure requests as a means to

increase consumers' intentions to enter the disclosure process, additional studies could investigate how consumers behave, after they have entered a meaningfully gamified data disclosure process. An interesting question would be whether consumers answer more truthfully, because they understand that genuine answers will result in greater personalization benefits.

4.7 Conclusion

To resolve the increasing tension between retailers' need for consumer data and consumers' perception of a lack of benefits and resulting reluctance to enter data disclosure processes, we propose the use of data disclosure requests that preview a meaningfully gamified data disclosure process. We find that this appeal affects consumers' intentions to enter the previewed data disclosure process through three mediation routes: (1) anticipation of meaningful engagement, (2) anticipation of hedonic engagement, and (3) anticipation of process effort. Anticipated meaningful engagement increases intentions to enter both directly and indirectly through benefit and risk perceptions, whereas anticipated hedonic engagement only directly affects intention to enter. Anticipation of process effort reduces consumers' anticipation of benefits but has no further negative effects. Consumers' involvement levels determine their route choices.

4.8 References

Accenture Interactive (2018). *Making it Personal: Why Brands Must Move from Communication to Conversation for Greater Personalization. Pulse Check 2018*. Retrieved 19.09.2019 from https://www.accenture.com/_acnmedia/pdf-77/accenture-pulse-survey.pdf

Acquisti, A., Adjerid, I., & Brandimarte, L. (2013). Gone in 15 Seconds: The Limits of Privacy Transparency and Control. *IEEE Security & Privacy, 11*(4), 72–74. https://doi.org/10.1109/MSP.2013.86

Agarwal, R., & Karahanna, E. (2000). Time Flies When You're Having Fun: Cognitive Absorption and Beliefs about Information Technology Usage. *MIS Quarterly, 24*(4), 665–694. https://doi.org/10.2307/3250951

Aguinis, H., & Bradley, K. J. (2014). Best Practice Recommendations for Designing and Implementing Experimental Vignette Methodology Studies. *Organizational Research Methods, 17*(4), 351–371. https://doi.org/10.1177/1094428114547952

Berger, A., Schlager, T., Sprott, D. E., & Herrmann, A. (2018). Gamified Interactions: Whether, When, and How Games Facilitate Self–brand Connections. *Journal of the Academy of Marketing Science, 46*(4), 652–673. https://doi.org/10.1007/s11747-017-0530-0

Bradlow, E. T., Gangwar, M., Kopalle, P., & Voleti, S. (2017). The Role of Big Data and Predictive Analytics in Retailing. *Journal of Retailing, 93*(1), 79–95. https://doi.org/10.1016/j.jretai.2016.12.004

Csikszentmihalyi, M. (1990). *Flow: The Psychology of Optimal Experience*. New York: Harper and Row.

Csikszentmihalyi, M. (1997). *Finding flow: The Psychology of Engagement with Everyday Life*. New York: Basic Books.

Culnan, M. J. (1993). "How Did They Get My Name?": An Exploratory Investigation of Consumer Attitudes Toward Secondary Information Use. *MIS Quarterly, 17*(3), 341–363. https://doi.org/10.2307/249775

Culnan, M. J., & Armstrong, P. K. (1999). Information Privacy Concerns, Procedural Fairness, and Impersonal Trust: An Empirical Investigation. *Organization Science, 10*(1), 104–115. https://doi.org/10.1287/orsc.10.1.104

Data & Marketing Association (2018). Data Privacy: What the Consumer Really Thinks. Retrieved 15.09.2019 from https://marketing.acxiom.com/rs/982-LRE-196/images/DMA-REP-DataPrivacy-US.pdf

Davis, F. D. (1993). User Acceptance of Information Technology: System Characteristics, User Perceptions and Behavioral Impacts. *International Journal of Man-Machine Studies, 38*(3), 475–487. https://doi.org/10.1006/imms.1993.1022

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From Game Design Elements to Gamefulness. *Proceedings of the 15th International Academic MindTrek Conference on Envisioning Future Media Environments,* Tampere, Finland.

Dewey, J. (1934). *Art as Experience*. London: Allen & Unwin.

Dinev, T., & Hart, P. (2006). An Extended Privacy Calculus Model for E-Commerce Transactions. *Information Systems Research, 17*(1), 61–80. https://doi.org/10.1287/isre.1060.0080

Dinev, T., McConnell, A. R., & Smith, H. J. (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. https://doi.org/10.1287/isre.2015.0600

Dinev, T., Xu, H., Smith, J. H., & Hart, P. (2013). Information Privacy and Correlates: An Empirical Attempt to Bridge and Distinguish Privacy-related Concepts.

European Journal of Information Systems, 22(3), 295–316. https://doi.org/10.1057/ejis.2012.23

Domínguez, A., Saenz-de-Navarrete, J., de-Marcos, L., Fernández-Sanz, L., Pagés, C., & Martínez-Herráiz, J.-J. (2013). Gamifying Learning Experiences: Practical Implications and Outcomes. *Computers & Education, 63*, 380–392. https://doi.org/10.1016/j.compedu.2012.12.020

Eisingerich, A. B., Marchand, A., Fritze, M. P., & Dong, L. (2019). Hook vs. Hope: How to Enhance Customer Engagement through Gamification. *International Journal of Research in Marketing, 36*(2), 200–215. https://doi.org/10.1016/j.ijresmar.2019.02.003

Featherman, M. S., Miyazaki, A. D., & Sprott, D. E. (2010). Reducing Online Privacy Risk to Facilitate E-Service Adoption: The Influence of Perceived Ease of Use and Corporate Credibility. *Journal of Services Marketing, 24*(3), 219–229. https://doi.org/10.1108/08876041011040622

Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The Affect Heuristic in Judgments of Risks and Benefits. *Journal of Behavioral Decision Making, 13*(1), 1–17. https://doi.org/10.1002/(SICI)1099-0771(200001/03)13:1<1::AID-BDM333>3.0.CO;2-S

Franke, N., & Schreier, M. (2010). Why Customers Value Self-Designed Products: The Importance of Process Effort and Enjoyment. *Journal of Product Innovation Management, 27*(7), 1020–1031. https://doi.org/10.1111/j.1540-5885.2010.00768.x

Goldfarb, A., & Tucker, C. E. (2011). Privacy Regulation and Online Advertising. *Management Science, 57*(1), 57–71. https://doi.org/10.1287/mnsc.1100.1246

Grewal, D., Roggeveen, A. L., & Nordfält, J. (2017). The Future of Retailing. *Journal of Retailing, 93*(1), 1–6. https://doi.org/10.1016/j.jretai.2016.12.008

Hamari, J. (2013). Transforming Homo Economicus into Homo Ludens: A Field Experiment on Gamification in a Utilitarian Peer-to-Peer Trading Service.

Electronic Commerce Research and Applications, 12(4), 236–245. https://doi.org/10.1016/j.elerap.2013.01.004

Hamari, J., Shernoff, D. J., Rowe, E., Coller, B., Asbell-Clarke, J., & Edwards, T. (2016). Challenging Games Help Students Learn: An Empirical Study on Engagement, Flow and Immersion in Game-Based Learning. *Computers in Human Behavior, 54*, 170–179. https://doi.org/10.1016/j.chb.2015.07.045

Hayes, A. F. (2018). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach* (2nd edition). New York, London: The Guilford Press.

Hsu, C.-L., & Lu, H.-P. (2004). Why do People Play Online Games? An Extended TAM with Social Influences and Flow Experience. *Information & Management, 41*(7), 853–868. https://doi.org/10.1016/j.im.2003.08.014

Hui, Teo, & Lee (2007). The Value of Privacy Assurance: An Exploratory Field Experiment. *MIS Quarterly, 31*(1), 19–33. https://doi.org/10.2307/25148779

Koivisto, J., & Hamari, J. (2019). The Rise of Motivational Information Systems: A Review of Gamification Research. *International Journal of Information Management, 45*, 191–210. https://doi.org/10.1016/j.ijinfomgt.2018.10.013

Laufer, R. S., & Wolfe, M. (1977). Privacy as a Concept and a Social Issue: A Multidimensional Developmental Theory. *Journal of Social Issues, 33*(3), 22–42. https://doi.org/10.1111/j.1540-4560.1977.tb01880.x

Li, T., & Unger, T. (2012). Willing to Pay for Quality Personalization? Trade-off between Quality and Privacy. *European Journal of Information Systems, 21*(6), 621–642. https://doi.org/10.1057/ejis.2012.13

Liu, D., Santhanam, R., & Webster, J. (2017). Toward Meaningful Engagement: A Framework for Design and Research of Gamified Information Systems*. MIS Quarterly, 41*(4), 1011–1034. https://doi.org/10.25300/MISQ/2017/41.4.01

Lwin, M., Wirtz, J., & Williams, J. D. (2007). Consumer Online Privacy Concerns and Responses: A Power–responsibility Equilibrium Perspective. *Journal of the*

Academy of Marketing Science, 35(4), 572–585. https://doi.org/10.1007/s11747-006-0003-3

Malhotra, N. K., Kim, S. S., & Agarwal, J. (2004). Internet Users' Information Privacy Concerns (IUIPC): The Construct, the Scale, and a Causal Model. *Information Systems Research, 15*(4), 336–355. https://doi.org/10.1287/isre.1040.0032

Mekler, E. D., Brühlmann, F., Opwis, K., & Tuch, A. N. (2013). Do Points, Levels and Leaderboards Harm Intrinsic Motivation? *Proceedings of the 1st International Conference on Gameful Design, Research, and Applications* (pp. 66–73). New York, NY, USA.

Milne, G. R., & Gordon, M. E. (1993). Direct Mail Privacy-Efficiency Trade-offs within an Implied Social Contract Framework. *Journal of Public Policy & Marketing, 12*(2), 206–215. https://doi.org/10.1177/074391569101200206

Morris, J. D., Woo, C., & Singh, A. J. (2005). Elaboration Likelihood Model: A Missing Intrinsic Emotional Implication. *Journal of Targeting, Measurement and Analysis for Marketing, 14*(1), 79–98. https://doi.org/10.1057/palgrave.jt.5740171

Müller-Stewens, J., Schlager, T., Häubl, G., & Herrmann, A. (2017). Gamified Information Presentation and Consumer Adoption of Product Innovations. *Journal of Marketing, 81*(2), 8–24. https://doi.org/10.1509/jm.15.0396

Nicholson, S. (2013). Two Paths to Motivation Through Game Design Elements: Reward-Based Gamification and Meaningful Gamification. *Proceedings of the iConference,* Fort Worth, TX, USA.

Nicholson, S. (2015). A Recipe for Meaningful Gamification. In T. Reiners & L. C. Wood (Eds.), *Gamification in Education and Business* (Vol. 2, pp. 1–20). London: Springer International Publishing.

Pan, Y., & Zinkhan, G. M. (2006). Exploring the Impact of Online Privacy Disclosures on Consumer Trust. *Journal of Retailing, 82*(4), 331–338. https://doi.org/10.1016/j.jretai.2006.08.006

Petty, R. E., & Cacioppo, J. T. (1986). The Elaboration Likelihood Model of Persuasion. In R. E. Petty & J. T. Cacioppo (Eds.), *Communication and Persuasion* (pp. 1–24). New York: Springer Publishing.

Phelps, J., Nowak, G., & Ferrell, E. (2000). Privacy Concerns and Consumer Willingness to Provide Personal Information. *Journal of Public Policy & Marketing, 19*(1), 27–41. https://doi.org/10.1509/jppm.19.1.27.16941

Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology, 88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Rettie, R. (2001). An Exploration of Flow during Internet Use. *Internet Research, 11*(2), 103–113. https://doi.org/10.1108/10662240110695070

Ruan, B., Hsee, C. K., & Lu, Z. Y. (2018). The Teasing Effect: An Underappreciated Benefit of Creating and Resolving an Uncertainty. *Journal of Marketing Research, 55*(4), 556–570. https://doi.org/10.1509/jmr.15.0346

Schumann, J. H., Wangenheim, F. von, & Groene, N. (2014). Targeted Online Advertising: Using Reciprocity Appeals to Increase Acceptance among Users of Free Web Services. *Journal of Marketing, 78*(1), 59–75. https://doi.org/10.1509/jm.11.0316

Slovic, P., Finucane, M. L., Peters, E., & MacGregor, D. G. (2004). Risk as Analysis and Risk as Feelings: Some Thoughts about Affect, Reason, Risk, and Rationality. *Risk Analysis: An Official Publication of the Society for Risk Analysis, 24*(2), 311–322. https://doi.org/10.1111/j.0272-4332.2004.00433.x

Smith, Dinev, & Xu (2011). Information Privacy Research: An Interdisciplinary Review. *MIS Quarterly, 35*(4), 989–1016. https://doi.org/10.2307/41409970

Smith, H. J., Milberg, S. J., & Burke, S. J. (1996). Information Privacy: Measuring Individuals' Concerns about Organizational Practices. *MIS Quarterly, 20*(2), 167–196. https://doi.org/10.2307/249477

Suh, A., Cheung, C. M.K., Ahuja, M., & Wagner, C. (2017). Gamification in the Workplace: The Central Role of the Aesthetic Experience. *Journal of Management Information Systems, 34*(1), 268–305. https://doi.org/10.1080/07421222.2017.1297642

Swilley, E., & Goldsmith, R. E. (2007). The Role of Involvement and Experience with Electronic Commerce in Shaping Attitudes and Intentions Toward Mobile Commerce. *International Journal of Electronic Marketing and Retailing, 1*(4), 370–384. https://doi.org/10.1504/ijemr.2007.014850

Van Vugt, H. C., Hoorn, J. F., Konijn, E. A., & Bie Dimitriadou, A. de (2006). Affective Affordances: Improving Interface Character Engagement through Interaction. *International Journal of Human-Computer Studies, 64*(9), 874–888. https://doi.org/10.1016/j.ijhcs.2006.04.008

Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science, 46*(2), 186–204. https://doi.org/10.1287/mnsc.46.2.186.11926

Webster, J., Trevino, L. K., & Ryan, L. (1993). The Dimensionality and Correlates of Flow in Human-Computer Interactions. *Computers in Human Behavior, 9*(4), 411–426. https://doi.org/10.1016/0747-5632(93)90032-N

Xie, E., Teo, H.-H., & Wan, W. (2006). Volunteering Personal Information on the Internet: Effects of Reputation, Privacy Notices, and Rewards on Online Consumer Behavior. *Marketing Letters, 17*(1), 61–74. https://doi.org/10.1007/s11002-006-4147-1

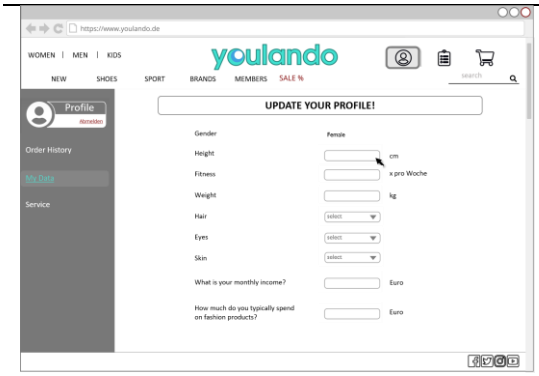
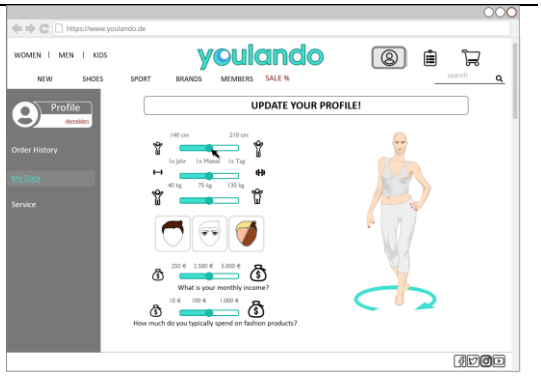
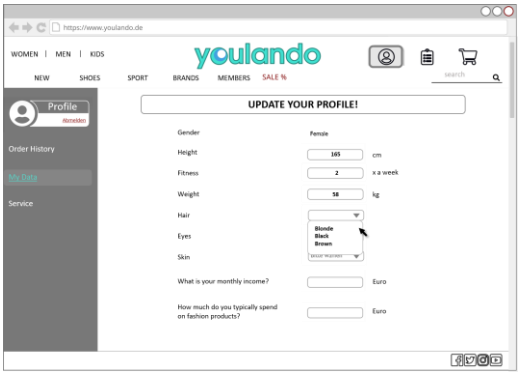
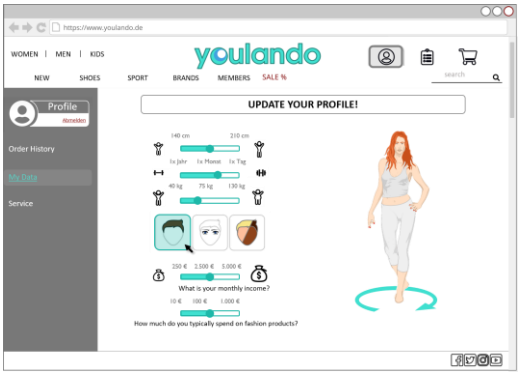
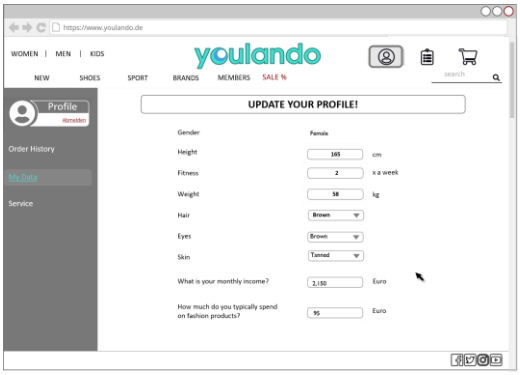
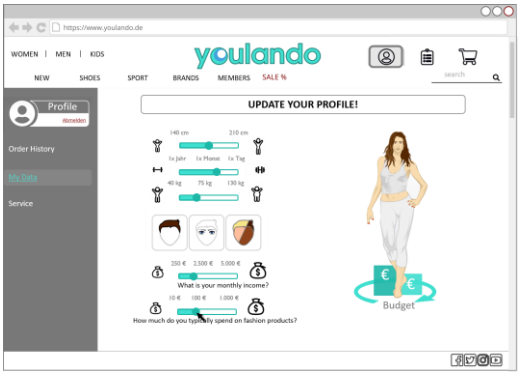
Xu, H., Teo, H.-H., Tan, B. C. Y., & Agarwal, R. (2009). The Role of Push-Pull Technology in Privacy Calculus: The Case of Location-Based Services. *Journal of Management Information Systems, 26*(3), 135–174. https://doi.org/10.2753/MIS0742-1222260305

4.9 Appendices

Appendix D

Scenario of Study 1

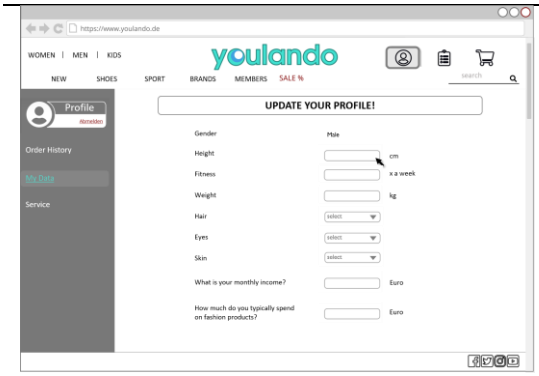
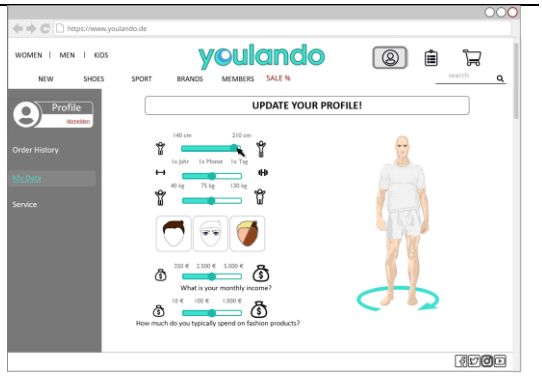
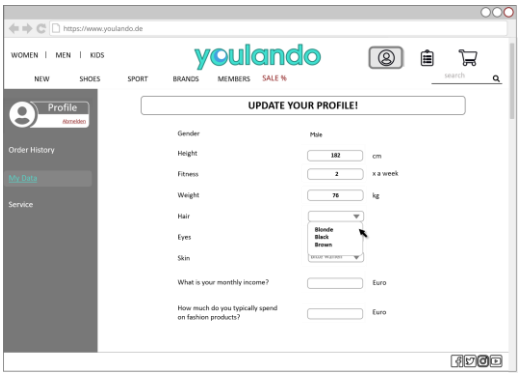
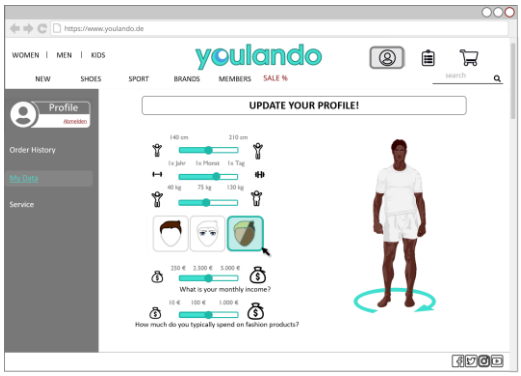
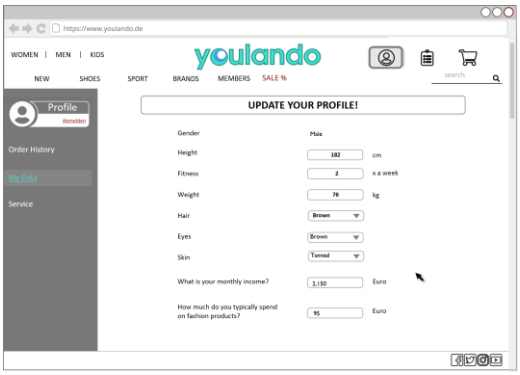
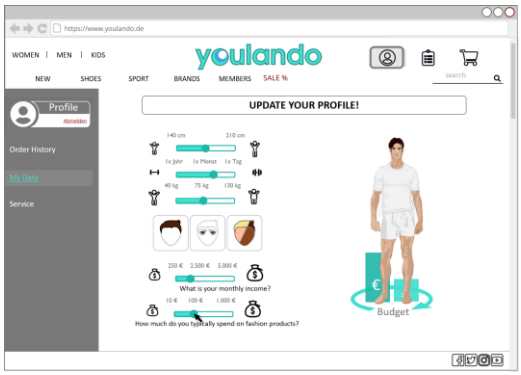
Please read the following scenario carefully and then answer the questions:
You are a registered customer of the online retailer *Youlando* and get asked to update your profile. Youlando promises to use this information in the future to present you with personalized product suggestions and search results.
Please watch the following video. It shows you how to update your profile:

generic data disclosure form	*meaningfully gamified disclosure process*
	
	
	

Note: Screenshots taken from the videos

Scenario of Study 2

Please read the following scenario carefully and then answer the questions:
You are a registered customer of the online retailer *Youlando* and get asked to update your profile.
Youlando informs you that you could benefit from personalized product suggestions in the future by updating your profile. All you need to do is give some additional information regarding your looks and budget. Youlando promises to use this information in the future to present you with personalized product suggestions.
The following video illustrates the process of updating your profile:

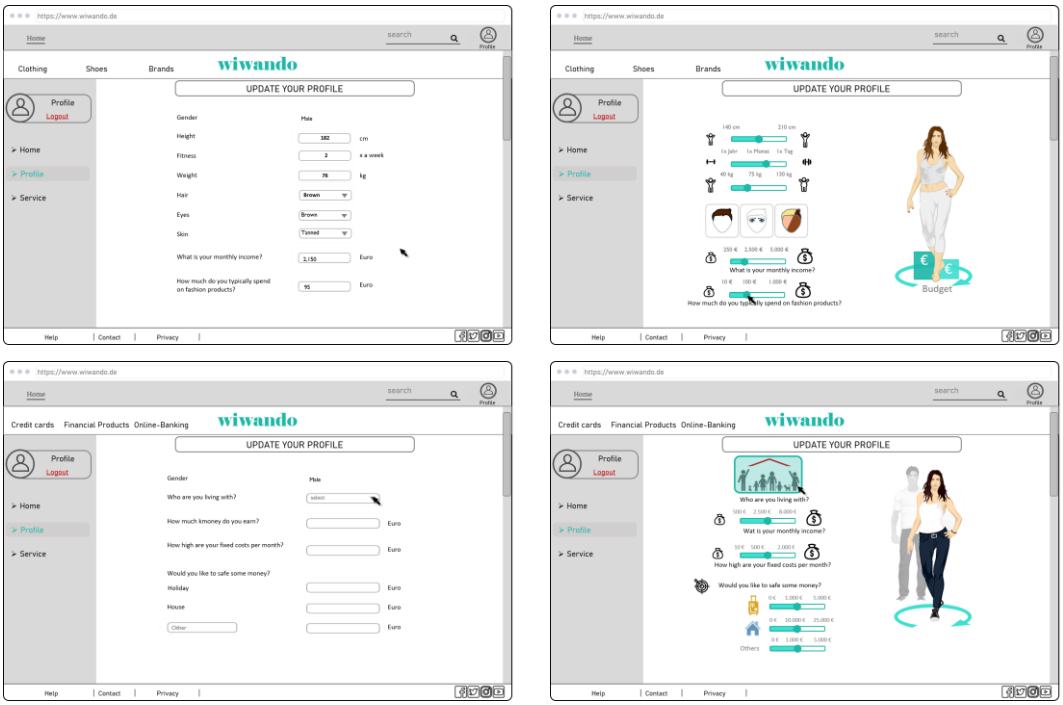
generic data disclosure form	*meaningfully gamified disclosure process*
	
	
	

Note: Screenshots taken from the videos

Scenario of Study 3

Please read the following scenario carefully and then answer the questions:
You are a customer of the online retailer/retail bank *Wiwando* and get asked to update your profile. *Wiwando* informs you that you could benefit from personalized (financial) product suggestions in the future by updating your profile. All you need to do is give some additional information regarding your looks/household makeup and budget.
Wiwando will use this information to provide you personalized product suggestions/ individualized financial products.
The following video illustrates the process of updating your profile:

generic data disclosure form: fashion and retailing bank context	*meaningfully gamified disclosure process: fashion and retailing bank context*



Note: Screenshots taken from the videos

Appendix E

Measurement Items and Reliability Assessment for Constructs in Studies 1–3

Construct	Statistics[3]	Measurement Items[4]
Intention to Disclose Data Malhotra, Kim, and Agarwal (2004)	α_1 = .97 / α_2 = .98/ α_3 = .98	Specify the extent to which you would engage in disclosing the requested personal data to Youlando. 1.Unlikely/Likely 2.Impossible/Possible 3.Unwilling/Willing
Perceived Benefits of Data Disclosure Dinev, Xu, Smith and Hart (2013)	α_2 = .80 / α_3 = .84	1. Disclosing my personal information to Youlando could help me obtain future product suggestions and content I want. 2. In the future, I could get exactly the product suggestions and content that I want from Youlando. 3. I believe that in the future I could benefit from customized product suggestions and content.
Perceived Risks of Data Disclosure Dinev, Xu, Smith and Hart (2013)	α_2 = .91 / α_3 = .90	1. In general, it would be risky to disclose personal information to Youlando when updating my profile. 2. There would be high potential for privacy loss associated with disclosing personal information by updating my profile. 3. Youlando could inappropriately use my personal information that I disclose. 4. Providing Youlando with my personal information could involve many unexpected problems.
Anticipated Hedonic Engagement Agarwal and Karahanna (2000)	α_2 = .65 / α_3 = .64	1. While updating my profile, I would be immersed in the task I am performing. 2. Time would appear to go by very quickly when I am updating my profile.

[3] The values in this column refer to all studies in which the measure appears; subscripts indicate the relevant study.
[4] For all items, participants indicated their responses on seven-point Likert or semantic differential scales (1 = “strongly disagree,” and 7 = “strongly agree”).

		3. When updating my profile, I would feel in control. 4. I would enjoy updating my profile.
Anticipated Meaningful Engagement Suh, Cheung, Ahuja and Wagner (2017)	α_2 = .94 / α_3 = .93	While updating my profile... 1. …I would be aware of how I could benefit from the update in the future. 2. …I would believe that the update would result in benefits for me in the future. 3. …I would feel that the update is important for me to benefit from personalization in the future. 4. … I would feel I discovered new paths to a personalized shopping experience. 5. …I would feel I knew exactly how to proceed to benefit from personalization in the future.
Anticipated Process Effort Franke and Schreier (2010)	α_2 = .92 / α_3 = .92	Updating my profile... 1. ...would require much effort. 2. ...would be exhausting. 3. ...would be time-consuming.
Involvement Swilley and Goldsmith (2007)	α_3 = .88	1. I have a strong interest in fashion/ financial services. 2. Fashion/ Financial Services is/ are important to me. 3. Fashion/ Financial Services is/ are not relevant for me.
Sensitivity of the Data Xie, Theo and Wan (2006)		Please indicate your perception of the sensitivity of the requested data. Not sensitive at all/ very sensitive

Appendix F

Regression Results for Direct Effects Study 2

	Dependent Variable					
	Anticipated Meaningful Engagement	Anticipated Hedonic Engagement	Anticipated Process Effort	Perceived Benefits of Disclosure	Perceived Risks of Disclosure	Intention to Enter the Disclosure Process
Age	-.16**	n.s.	n.s.	n.s.	n.s.	-.16***
Gender	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Sensitivity of Data	-.19***	-.12*	n.s.	.18***	.34***	-.18***
Data Request Featuring a Meaningfully Gamified Data Disclosure Process	.24*	.32**	.45***	n.s.	n.s.	n.s.
Anticipated Meaningful Engagement				.67***	-.42***	.26***
Anticipated Hedonic Engagement				n.s.	n.s.	.18**
Anticipated Process Effort				-.17***	n.s.	n.s.
Perceived Benefits of Disclosure						.17**
Perceived Risks of Disclosure						-.26***
R^2 (adjusted)						**.60**

Notes: Values show standardized regression coefficients. * $p < .05$; ** $p < .01$; *** $p < .001$.

Regression Results for Direct Effects Study 3

	Dependent Variable					
	Anticipated Meaningful Engagement	Anticipated Hedonic Engagement	Anticipated Process Effort	Perceived Benefits of Disclosure	Perceived Risks of Disclosure	Intention to Enter the Disclosure Process
Age	-.01**	n.s.	n.s.	n.s.	n.s.	-01.*
Gender	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Sensitivity of Data	-.22***	-.19*	n.s.	n.s.	.27***	n.s.
Data Request Featuring a Meaningfully Gamified Data Disclosure Process	.25*	.24*	.37***	n.s.	n.s.	n.s.
Anticipated Meaningful Engagement				.62***	-.33***	.43***
Anticipated Hedonic Engagement				n.s.	n.s.	.11*
Anticipated Process Effort				-.16***	n.s.	.11**
Perceived Benefits of Disclosure						.21***
Perceived Risks of Disclosure						-.18***
R^2 (adjusted)						**.58**

Notes: Values show standardized regression coefficients. * $p < .05$; ** $p < .01$; *** $p < .001$.

Conditional Effects of Anticipated Meaningful Engagement at Values of Involvement

Level of Involvement	Effect	SE	LLCI	ULCI
3.6544	.3132	.1592	.0000	.6263
3.7000	.3164	.1590	.0035	.6292
4.0000	.3375	.1610	.0208	.6543
4.3000	.3587	.1680	.0281	.6893
4.6000	.3798	.1795	.0266	.7331
4.9000	.4010	.1947	.0179	.7840
5.2000	.4221	.2127	.0036	.8407
5.2629	.4266	.2168	.0000	.8531

Notes: bootstrap sample size = 5,000; SE: standard error; LLCI & ULCI: lower and upper levels for confidence interval.

Conditional Effects of Anticipated Hedonic Engagement at Values of Involvement

Level of Involvement	Effect	SE	LLCI	ULCI
1.4761	.4285	.2178	.0000	.8571
1.6000	.4194	.2101	.0061	.8328
1.9000	.3974	.1921	.0194	.7753
2.2000	.3753	.1754	.0302	.7204
2.5000	.3533	.1604	.0378	.6688
2.8000	.3312	.1475	.0410	.6215
3.1000	.3092	.1375	.0387	.5797
3.4000	.2872	.1309	.0296	.5447
3.7000	.2651	.1283	.0127	.5175
3.8633	.2531	.1286	.0000	.5062

Notes: bootstrap sample size = 5,000; SE: standard error; LLCI & ULCI: lower and upper levels for confidence interval.

Conditional Effects of Anticipated Process Effort at Values of Involvement

Level of Involvement	Effect	SE	LLCI	ULCI
1.0000	1.0192	.3253	.3791	1.6594
1.3000	.9701	.2996	.3806	1.5595
1.6000	.9209	,2748	.3803	1.4616
1.9000	.8718	.2513	.3774	1.3662
2.2000	.8226	.2294	.3712	1.2741
2.5000	.7735	.2098	.3607	1.1862
2.8000	.7243	.1930	.3446	1.1040
3.1000	.6752	.1798	.3213	1.0290
3.4000	.6260	.1712	.2891	.9619
3.7000	.5769	.1678	.2467	.9071
4.0000	.5277	.1699	.1934	.8621
4.3000	.4786	.1773	.1296	.8275
4.6000	.4294	.1895	.0566	.8022
4.8133	.3945	.2005	.0000	.7890

Notes: bootstrap sample size = 5,000; SE: standard error; LLCI & ULCI: lower and upper levels for confidence interval.

5. General Discussion

Within this dissertation, I sought to answer my overarching research question on how peculiarities of the modern digital landscape influence consumers' cognitive and affective privacy-related decision-making. To answer this question, I investigated modern data disclosure situations in three independent essays. Thereby, essay 1 provides a conceptualization of data disclosure situation as potentially stressful and derives a conceptual model pertaining to consumers' privacy-related decision-making strategies under stress. Essay 2 addresses business network data exchange (BNDE) settings as disclosure situations triggering affective decision-making processes. Finally, essay 3 focuses on the potential of employing gamified approaches to encourage consumers to enter data disclosure processes, by highlighting the objective benefits of disclosure. The following chapters discuss theoretical and managerial implications that can be derived from these three essays. Subsequently, I outline limitations of my dissertation which offer potential for future research before providing a concluding remark.

5.1 Theoretical Contributions

Taking a broader perspective, this dissertation offers three key contributions to consumers' privacy-related decision-making research.

5.1.1 Peculiarities in modern data disclosure settings.

First, I contribute to previous privacy literature pertaining to the role of situational factors by demonstrating that peculiarities of modern data disclosure situations have a critical impact on consumers' perceptions and decision-making processes. Based on the findings of this dissertation, I agree with previous research on the importance of situational aspects in privacy-related decision-making (Bansal & Gefen, 2010; Dinev & Hart, 2006; John, Acquisti, & Loewenstein, 2011; Li, Wu, Gao, & Shi, 2016). I find that that modern data disclosure situations are characterized by various peculiarities such as time pressure, uncertainty, or

simultaneous engagement in different tasks, all of which impact consumers' perceptions and resulting disclosure behaviors. Essay 1 and 2 highlight the increasingly demanding digital landscape in which consumers are required to disclose data (i.e., under stress or to networks of firms). Essay 3 investigates how technological advances (i.e., data request featuring gamified data disclosure processes) might be employed to inform consumers' decision-making processes. Specifically, results suggest that while technological advancements might constitute challenges for consumers' decision-making processes, they can also be used to help consumers cope with these challenges. Against this background, I advocate for the need to consider situational factors in a more integrated manner to better understand the multiple implications for privacy-related decision-making. Among other things, it may yield interesting results to investigate the interaction of established situational factors (e.g., familiarity with a firm) and peculiarities of modern disclosure situations (e.g., familiar firm engaging in a BNDE network).

5.1.2 Consumers' privacy-related decision-making through two systems.

Second, building on my first contribution, I advance privacy-related decision-making literature by demonstrating that dual-processing models are more appropriate for investigating decision-making in modern data disclosure situations compared to established, purely cognitive approaches (Culnan & Armstrong, 1999; Dinev & Hart, 2006; Li et al., 2016). This contribution corresponds to a call by Dinev, McConnell, and Smith (2015) for research pertaining to the role of both affective and cognitive processing in the privacy domain. Essay 1 proposes that driven by certain characteristics of modern data disclosure situations, stress arises, which in turn hampers cognitive processing (Acquisti & Grossklags, 2005) thereby fostering consumers' reliance on affective processing (Finucane, Alhakami, Slovic, & Johnson, 2000). Affective processing in turn can severely impact consumers' disclosure intentions both directly and indirectly by biasing assessments on the

cognitive processing route. Essay 2 and 3 provide empirical evidence for this conceptualization. Specifically, they unveil the mechanisms underlying consumers' privacy-related decision-making processes though a cognitive and an affective route. While essay 2 introduces an affective processing route as a complementary extension to established cognitive processing, essay 3 demonstrates consumers' decision-making though meaningful engagement, reflecting cognitive processing, and hedonic engagement, reflecting affective processing. Accordingly, this dissertation advances the emerging research stream on affective reactions in privacy-related decision-making (Alashoor, Al-Maidani, & Al-Jabri, 2018; Gerlach, Buxmann, & Dinev, 2019; Kehr et al., 2015; Li, Sarathy, & Xu, 2011; Wakefield, 2013) by emphasizing the need to account for affective processing in modern data disclosure situations. As such, this dissertation opens promising avenues for further research employing a dual-processing perspective. Such investigations might help advance knowledge on the privacy paradox. That is, affective processing could help explain why consumers engage in data disclosure despite their privacy concerns (Acquisti, Brandimarte, & Loewenstein, 2015; Sundar, Kang, Wu, Go, & Zhang, 2013).

5.1.3 The role of contextual cues in privacy-related decision-making.

Third, my dissertation contributes to privacy-related decision-making research by uncovering consumers' susceptibility to contextual cues. Extant research has focused on various contextual cues comprising appeals designed to reduce consumers' risk perceptions (e.g., privacy assurances) (Li & Unger, 2012; Hui, Teo, & Lee, 2007) or increase benefit perceptions (e.g., monetary incentives) (Hui et al., 2007; Hann, Hui, Lee, & Png, 2007). This dissertation expands this range of contextual cues by arguing that consumers in an affective processing mode tend to rely on distinctive properties to inform their decision-making (Janis & Mann, 1977) regardless of whether these properties are related to the focal decision-making task

or not (John et al., 2011; Kehr et al., 2015; Tang, Hong, & Siewiorek, 2011). Based on a literature review, essay 1 uncovers consumers' susceptibility to visual cues (John et al., 2011; Kehr et al., 2015), message framing (Chaiken, 1980; Tversky & Kahneman, 1981; Angst & Agarwal), and herding effects, which refer to consumers' tendency to mimic behaviors of others (e.g., previous downloads of a mobile application) (Keith, Babb, Furner, Abdullat, & Lowry, 2016). Essay 3 finds empirical support for such susceptibility. Specifically, results reveal that consumers presented with a video of a gamified data disclosure process during a data request are more likely to engage in the disclosure process. This effect can be traced back to the fact that consumers could more easily understand—by visual perception—how they could benefit from engagement (i.e., enjoyment and personalization). As such, the video as a contextual cue informed their decision-making process by fostering both cognitive evaluations regarding future benefits and affective processing pertaining to their expectation of enjoyment. Future research could provide further evidence on consumers' tendencies to inform their privacy-related decision-making with contextual cues. Findings could help design privacy-related situations to yield favorable outcomes for both firms and consumers.

5.2 Managerial Implications

From a managerial perspective, the findings of my dissertation offer valuable insights for firms basing their business models on consumer data.

5.2.1 Understanding the challenges of consumers' decision-making in the digital landscape.

Findings from this dissertation help firms understand how consumers evaluate and behave in modern data disclosure situations. Specifically, results suggest that peculiarities of modern disclosure situations impact consumers' decision-making processes. Thus, managers should be aware that prior experiences with consumers' acceptance and behavior in less demanding disclosure situations

(e.g., dyadic disclosure settings, disclosure without interference of stress) cannot be transferred to more demanding disclosure situations (e.g., BNDE disclosure settings, disclosure under stress). When designing their management activities, managers always should acknowledge the peculiarities their activities might bring into consumers' decision-making process—keeping in mind consumers' innate limited cognitive capabilities. For example, time pressure or ambiguous information might severely impact consumer behavior. Thus, acknowledgement of these challenges helps managers create strategies counteracting unfavorable effects of those peculiarities, as I detail in the following.

5.2.2 Managing consumers' affective reactions.

Consumers' affective reactions and reliance on those reactions to inform decision-making constitute a critical factor in modern data disclosure situations, as this dissertation demonstrates. In particular, I find that managers of data gathering firms must be considerate of the affective reactions their disclosure requests are likely to trigger. These affective reactions will likely be negative in most disclosure situations, as consumers highly value their privacy and perceive peculiarities of modern disclosure situations to impede on their ability to manage their privacy. Managers could counteract these negative perceptions in various ways. Based on the findings from essay 1, for example, I advise managers to design data disclosure request to foster consumers' perceptions of the situation as a challenge rather than a threat to privacy. Compared to perceptions of threat, perceptions of the data disclosure situation as a challenge elicit positive affective reactions, leading to more favorable behavioral intentions. Moreover, managers need to understand that consumers' reliance on affective reactions (i.e., affective processing) fosters susceptibility to peripheral cues and heuristics. While some affective processing strategies, such as the herding effect, seem to elicit positive outcomes for data-gathering firms (i.e., data disclosure), long-term effects pertaining to the consumer-

firm relationship are likely to be negative, because consumers will feel tricked into disclosure.

5.2.3 Providing resources to foster cognitive processing.

In addition to managing affective reactions, managers should also try to foster consumers' decision-making through the cognitive processing route. In order to successfully emphasize the objective risks and benefits of data disclosure, managers should provide sufficient resources, thereby mitigating consumers' reliance on affective processing. In particular, managerial activities should seek to design data disclosure situations to include sufficient, unambiguous information pertaining to future data handling, thus providing consumers with the opportunity to assess the risks and benefits in an elaborated manner. As results from essay 3 suggest, employing visual cues to demonstrate the potential for future benefits, results in more favorable privacy-related behaviors. However, I caution firms to not employ activities designed to artificially limit consumers' time for decision-making in an effort to hinder consumers' risk assessments, as time pressure foster affective processing resulting in long-term negative effects.

5.3 Limitations and Further Research

My dissertation makes valuable contributions to research on consumers' privacy-related decision-making. Yet, it also has some limitations that provide avenues for further research.

First, this dissertation focuses of the importance of situational factors in privacy-related decision-making (Dinev & Hart, 2006; Martin & Murphy, 2017). Individual characteristics which are known to play a crucial role in decision-making (Bansal & Gefen, 2010; Taddicken, 2014), were only conceptually considered in the context of individual coping resources in essay 1. Continued research might investigate the interplay of individual characteristics and situational factors to provide a nuanced understanding of modern data disclosure situations for different

consumer groups. For example, resilient consumers might be better able to cope with stressful disclosure situation in a cognitive manner (Beasley, Thompson, & Davidson, 2003).

Second, while essays 2 and 3 provide first evidence for the influence of peculiarities of modern data disclosure situations and resulting decision strategies which I identified in essay 1, further research is still needed. Specifically, among all the identified peculiarities and decision strategies, I only investigated uncertainty in the context of BNDE disclosure situations, and peripheral cues in the form of videos featuring meaningfully gamified data disclosure processes. Continued research on distinct peculiarities of modern disclosure situations and their impact on consumers' decision-making would add further valuable insights. Among other things, it may be interesting to investigate consumers affective processing strategies in more detail, differentiating between susceptibility to peripheral cues, biases and heuristics.

Third, my findings originate from a literature review (essay 1) and self-report data in the context of artificial data disclosure situations (essays 2 and 3). While this approach offers the advantage of controlling conditions to reveal the causal relationships at interest without the interference of exogenous variables (Aguinis & Bradley, 2014), it did not uncover the actual economic impact the investigated disclosure situations would have in the field. Thus, further research could investigate field data to uncover the objective economic impact of such disclosure situations.

5.4 References

Acquisti, A., Brandimarte, L., & Loewenstein, G. (2015). Privacy and Human Behavior in the Age of Information. *Science, 347*(6221), 509–514. https://doi.org/10.1126/Science.aaa1465

Acquisti, A., & Grossklags, J. (2005). Privacy and Rationality in Individual Decision Making. *IEEE Security & Privacy, 3*(1), 26–33. https://doi.org/10.1109/MSP.2005.22

Aguinis, H., & Bradley, K. J. (2014). Best Practice Recommendations for Designing and Implementing Experimental Vignette Methodology Studies. *Organizational Research Methods, 17*(4), 351–371. https://doi.org/10.1177/1094428114547952

Alashoor, T., Al-Maidani, N., & Al-Jabri, I. (2018). The Privacy Calculus under Positive and Negative Mood States. *Proceedings of the 39th International Conference on Information Systems*, San Francisco, CA, USA.

Angst, C. M., & Agarwal, R. (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. https://doi.org/10.2307/20650295

Bansal, G., & Gefen, D. (2010). The Impact of Personal Dispositions on Information Sensitivity, Privacy Concern and Trust in Disclosing Health Information Online. *Decision Support Systems, 49*(2), 138–150. https://doi.org/10.1016/j.dss.2010.01.010

Beasley, M., Thompson, T., & Davidson, J. (2003). Resilience in Response to Life Stress: The Effects of Coping Style and Cognitive Hardiness. *Personality and Individual Differences, 34*(1), 77–95. https://doi.org/10.1016/s0191-8869(02)00027-2

Chaiken, S. (1980). Heuristic versus Systematic Information Processing and the Use of Source versus Message Cues in Persuasion. *Journal of Personality and*

Social Psychology, 39(5), 752–766. https://doi.org/10.1037//0022-3514.39.5.752

Culnan, M. J., & Armstrong, P. K. (1999). Information Privacy Concerns, Procedural Fairness, and Impersonal Trust: An Empirical Investigation. *Organization Science, 10*(1), 104–115. https://doi.org/10.1287/orsc.10.1.104

Dinev, T., & Hart, P. (2006). An Extended Privacy Calculus Model for e–Commerce Transactions. *Information Systems Research, 17*(1), 61–80. https://doi.org/10.1287/isre.1060.0080

Dinev, T., McConnell, A. R., & Smith, H. J. (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. http://dx.doi.org/10.1287/isre.2015.0600

Finucane, M. L., Alhakami, A., Slovic, P., & Johnson, S. M. (2000). The Affect Heuristic in Judgments of Risks and Benefits. *Journal of Behavioral Decision Making, 13*(1), 1–17. https://doi.org/10.1002/(SICI)1099–0771(200001/03)13:1<1::AID–BDM333>3.0.CO;2–S

Gerlach, J., Buxmann, P., & Dinev, T. (2019). "They're All the Same!" Stereotypical Thinking and Systematic Errors in Users' Privacy–Related Judgments About Online Services. *Journal of the Association for Information Systems, 20*(6), 787–823. https://doi.org/10.17705/1.jais.00551

Hann, I.-H., Hui, K.-L., Lee, S.-Y. T., & Png, I. P. L. (2007). Overcoming Online Information Privacy Concerns: An Information-processing Theory Approach. *Journal of Management Information Systems, 24*(2), 13–42. https://doi.org/10.2753/MIS0742-1222240202

Hui, K.-L., Teo, H. H., & Lee, S.-Y. T. (2007). The Value of Privacy Assurance: An Exploratory Field Experiment. *MIS Quarterly, 31*(1), 19–33. https://doi.org/10.2307/25148779

Janis, I. L., & Mann, L. (1977). *Decision Making: A Psychological Analysis of Conflict, Choice, and Commitment*. New York: Free Press.

John, L. K., Acquisti, A., & Loewenstein, G. (2011). Strangers on a Plane: Context–Dependent Willingness to Divulge Sensitive Information. *Journal of Consumer Research, 37*(5), 858–873. https://doi.org/10.1086/65642

Kehr, F., Kowatsch, T., Wentzel, D., & Fleisch, E. (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. https://doi.org/10.1111/isj.12062

Keith, M. J., Babb, J., Furner, C., Abdullat, A., & Lowry, P. B. (2016). Limited Information and Quick Decisions: Consumer Privacy Calculus for Mobile Applications. *AIS Transactions on Human-Computer Interaction, 8*(3), 88–130. https://doi.org/10.17705/1thci.00081

Li, H., Wu, J., Gao, Y., & Shi, Y. (2016). Examining Individuals' Adoption of Healthcare Wearable Devices: An Empirical Study from Privacy Calculus Perspective. *International Journal of Medical Informatics, 88*(1), 8–17. https://doi.org/10.1016/j.ijmedinf.2015.12.010

Li, H., Sarathy, R., & Xu, H. (2011). The Role of Affect and Cognition on Online Consumers' Decision to Disclose Personal Information to Unfamiliar Online Vendors. *Decision Support Systems, 51*(3), 434–445. https://doi.org/10.1016/j.dss.2011.01.017

Li, T., & Unger, T. (2012). Willing to Pay for Quality Personalization? Trade-off Between Quality and Privacy*. European Journal of Information Systems, 21*(6), 621-642. https://doi.org/10.1057/ejis.2012.13

Martin, K. D., & Murphy, P. E. (2017). The Role of Data Privacy in Marketing. *Journal of the Academy of Marketing Science*, *45*(2), 135–155. https://doi.org/10.1007/s11747–016–0495–4

Sundar, S. S., Kang, H., Wu, M., Go, E., & Zhang, B. (2013). Unlocking the Privacy Paradox: Do Cognitive Heuristics Hold the Key? *CHI Extended Abstracts on Human Factors in Computing Systems*, 811–816. https://doi.org/10.1145/2468356.2468501

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. https://doi.org/10.1111/jcc4.12052

Tang, K. P., Hong, J. I., & Siewiorek, D. P. (2011). Understanding how Visual Representations of Location Feeds Affect End-user Privacy Concerns. *Proceedings of the 13th International Conference on Ubiquitous Computing*, Pittsburgh, PA, USA.

Tversky, A., & Kahneman, D. (1981). The Framing of Decisions and the Psychology of Choice. *Science, 211*(4481), 453–458. https://doi.org/10.1126/science.7455683

Wakefield, R. (2013). The Influence of User Affect in Online Information Disclosure. *The Journal of Strategic Information Systems, 22*(2), 157–174. https://doi.org/10.1016/j.jsis.2013.01.003

6. Conclusion

Business models based on consumer data are omnipresent in today's digital landscape. Such business models depend on consumers' willingness to disclose private data, which in turn is highly influenced by the specific data disclosure situation. Such disclosure situations become increasingly demanding, constituting a challenge for consumers' privacy-related decision-making processes, such that consumers' lack the capabilities and resources to evaluate the situation in a purely cognitive manner. Contributing to emerging research in the field of consumer privacy, I highlight the need to account for consumers' affective processing in situations where consumers' opportunities for elaborate, purely cognitive processing are reduced. Investigating consumers' privacy-related decision-making under stress, data disclosure to business networks (BNDE), and meaningfully gamified data disclosure requests, I find that firms need to be considerate of consumers' affective processing to avoid overly negative consumer reactions. Firms can benefit from consumers' susceptibility to affective processing by helping consumers to more easily understand the benefits of data disclosure, leading to favorable outcomes for both consumers and firms. As such, this dissertation offers actionable implications for data-gathering firms and provides fruitful avenues for further research.