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From Dark Patterns to Digital Sludging – Mapping the Ethical Debate on Controversial Persuasive System Design

Short Paper

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Abstract

Guiding individual decision-making in digital environments through persuasive system design (PSD) is a powerful tool. While some forms of PSD such as digital nudging are based on libertarian paternalism and mostly considered ethically acceptable, other forms have been criticized for violating user autonomy or disadvantaging users. Such “controversial PSD” has been labelled inconsistently in the literature, for example as dark patterns or (digital) sludging. Thus, Information Systems (IS) research currently lacks a common vocabulary and conceptual clarity which impedes realizing the potential of PSD in research and practice. To address this issue, we present first results of a systematic literature review on controversial PSD. By compiling an overview of prevalent concepts, this study identifies four focal points of the ethical debate on PSD (intentions, strategies, outcomes, process) and derives implications and a research agenda for IS research.

Keywords: Persuasive system design, digital nudging, digital sludging, dark patterns

Motivation and Background

Understanding choice architectures in digital environments that support users in accomplishing tasks is a central aim of design-oriented Information Systems (IS) research. Against this backdrop, it is unsurprising that a variety of concepts under the umbrella term of Persuasive System Design (PSD) have surfaced in related debates. One prevalent concept within the realm of PSD is digital nudging (Lembcke et al. 2020), which refers to the application of nudging principles in digital environments (Weinmann et al. 2016). Nudging originates from the field of behavioral economics and was introduced by Thaler and Sunstein (2008). They describe a nudge as “any aspect of the choice architecture that alters people’s behavior in a predictable way without forbidding any options or significantly changing their economic incentives” (p.6). When applying nudging, Thaler and Sunstein (2008) emphasized the importance of ensuring freedom of choice and user autonomy, which made the concept more ethically and socially acceptable than other forms of PSD; for example as a public policy instrument (Hansen et al. 2016). Digital nudging promises to increase the effectivity and efficiency of decision making within digital environments and thus, improve the design of IS in an ethically acceptable way.

Thaler and Sunstein (2008) based nudging on the idea of libertarian paternalism, that is, influencing behavior while ensuring freedom of choice and considering the user's interests. While the distinction between nudging and manipulation has been debated in the literature, some types of nudges are considered ethically acceptable for influencing behavior (e.g., Hansen and Jespersen 2013; Korobkin 2009). However, some design interventions – despite being labelled as nudging – blur the lines to manipulation, for example by violating the principles of libertarian paternalism and influencing behavior mainly in favor of the designer rather than the user. For example, the use of priming in e-commerce to increase customers' willingness to pay has been described as digital nudging by the authors (Dennis et al. 2020), although this is hardly the interest of the user. We refer to such examples as *controversial PSD*. Controversial PSD is particularly problematic in digital environments, as users often face excessive cognitive overload compared to offline situations, increasing their vulnerability to manipulation (Benartzi and Lehrer 2015; Mirsch et al. 2017), which makes a dedicated ethical debate on controversial PSD in IS imperative.

Frequently encountered examples of controversial PSD are cookie policy designs on websites which employ, for example, default settings, obstruction, and visual cues to steer users towards accepting all cookies and tracking. These examples fail to satisfy the requirements of libertarian paternalism for (digital) nudging as proposed by Thaler and Sunstein (2008). Thus, a different terminology emerged for referring to those examples such as *sludging* (Kollmer 2022; Thaler 2018), or *dark patterns* (Gray et al. 2018). Along with the emergence of new terms for controversial PSD, several scholars have discussed which ethical considerations frame the application of PSD and developed ethical guidelines, for example for digital nudging (Meske and Amojó 2020a, 2020b). Such guidelines highlight the importance of designing for individual (pro-self) or societal (pro-social) goals, for transparency, and for autonomy (Lembcke et al. 2020), for example by selecting nudges which target reflective rather than intuitive thinking (Meske and Amojó 2020b).

The research problem that emerges here is underpinned by two observations. First, the concept of digital nudging is unsuitable to cover controversial PSD. This is because the latter violate the idea of libertarian paternalism, and therefore, are not subject to nudging in its traditional sense. At the same time, however, controversial PSD can easily be labelled to be digital nudging. This might happen intentionally to obfuscate controversial PSD or unintentionally because of a lack of better concepts or understanding. Second, there is a fragmented use of terminology and different focal points in the ethical debate, such as focusing on the strategies for PSD versus the pursued goal which leads to conceptual confusion. This poses a barrier for advancing the debate on controversial PSD as well as acceptable uses of PSD and ultimately, for unfolding the full potential of PSD in IS research and practice. To address these shortcomings, this research-in-progress paper aims to systematically review and consolidate the terminology used to describe controversial PSD as well as to structure perspectives in previous research and IS reference disciplines. Accordingly, we formulate the following research questions (RQ):

RQ1: Which concepts describing controversial PSD have been used in the literature?

RQ2: What are focal points in the ethical debate that can be identified from the literature addressing these concepts?

To answer these research questions, we conducted a systematic literature review. The analysis provides the IS community with an overview and demarcation of the commonly used terms within the controversial PSD literature as well as an increased awareness for the role of different perspectives in the discussion of ethical considerations of PSD. We present a guiding framework for research and practice that categorizes different approaches as unethical, controversial, or acceptable to derive implications for PSD. Additionally, we develop a research agenda to stimulate further research on the topic. Our findings will help to structure and kindle the ethical debate on controversial PSD by clarifying prevalent terminology, providing distinct starting points for discussion (focal points), and highlighting directions for future research. We build on the cumulative tradition of nudging and the concepts that have become prevalent in IS research and contribute to strengthening the role of IS as a discipline that bridges between reference-disciplines such as behavioral economics and computer science.

Research Design

To gain an overview of concepts revolving around controversial PSD, we conducted a Systematic Literature Review (SLR) based on the recommendations by vom Brocke et al. (2015). We adopted these guidelines as

they provide distinct steps for this bibliographic method and help to build a theoretical foundation for an emerging research field (Webster and Watson 2002). The research aim is to mark a first step towards identifying terms, definitions, and conceptual inconsistencies about controversial PSD. In accordance with the research questions, we proceeded sequentially, following the steps of (1) searching, (2) analyzing and synthesizing, followed by (3) writing (vom Brocke et al. 2015). There are several disciplines that investigate PSD such as computer science, behavioral economics, law, and IS. For this short paper, we use IS outlets as a starting point to understand how the cumulative tradition of this literature evolved in this field. The reference collection focused on comprehensive literature so that a wide range of terms and definitions is covered. In terms of search techniques, we followed a keyword search across titles, keywords, and abstracts but limited the timeframe to later than 2008 (Thaler and Sunstein's 2008 seminal work). We decided to include both databases specified to journal articles as well as conference publications because in fast-moving fields such as IS, conferences are crucial in the research dissemination process. Consequently, we selected basket "M" on litbaskets.io, which covers 51 essential Journals (Boell and Wang 2019). The keyword search was then carried out via Scopus. In addition, we included the Association for Information Systems eLibrary (AISEL) database and limited the search to conferences.

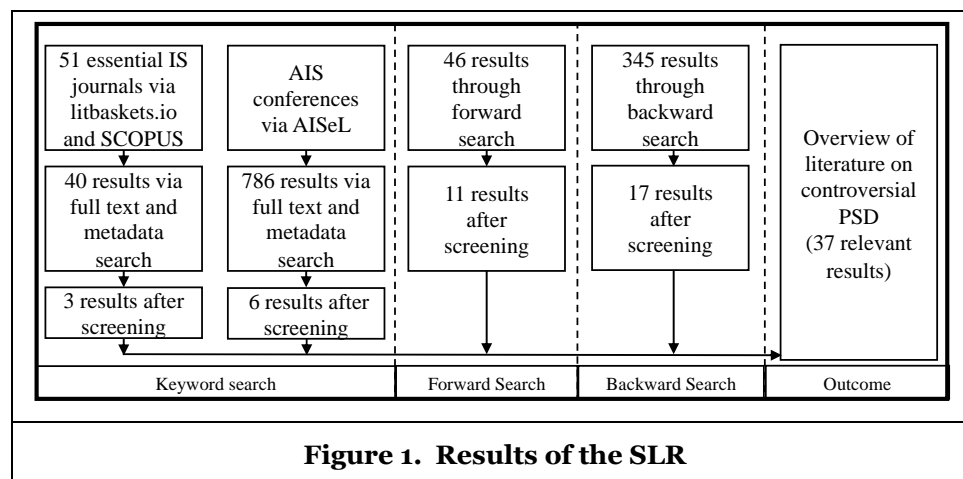
We defined the initial keywords by scanning the existing literature using the database Scopus. The pre-identified keywords resulted in the following search string: ("persuasive system design ethics" OR "dark patterns" OR "dark nudging" OR "sludge" OR "sludging"). As suggested by vom Brocke et al. (2015), we were open to add keywords and adjust the search string over the course of our literature search. Subsequently, we performed backward and forward searches, which allow the identification of further relevant articles referenced by the initially found sources. In this research-in-progress paper, the forward and backward searches are limited to one iteration, that is, we screened the citations on Google Scholar (forward) and the reference lists (backward) of the relevant papers we found through the keyword search. Table 1 summarizes the search scope of this SLR (grey=included in this study).

Process	Sequential		Iterative
Sources	Citation indexing services	Bibliographic data bases	Publications
Coverage	Comprehensive	Representative	Seminal works
Technique	Keyword Search	Backward Search	Forward Search

Table 1. Search Scope of the SLR based on vom Brocke et al. (2015)

Preliminary Findings

In total, we identified 37 relevant publications by using the outlined search process. A graphical representation of the search process and its results is provided in figure 1.



The keyword search yielded a total of 826 results, of which 9 articles were relevant. The high number of initial results was mainly due to the keyword search in AISEL (conferences) as this database typically yields a high number of results. We limited our screening process to a maximum of 100 results per keyword on each database, sorted by the “relevance” tab. The forward search of the 9 relevant articles resulted in 11 relevant sources. The backward search of the 9 relevant results yielded another 17 relevant results. The total number of relevant results was 37. The rationale for the selection was conceptual, i.e., papers were assessed based on their focus on describing ethically controversial phenomena revolving around PSD. This was done to be able to gather prevalent conceptual approaches, identify focal points of ethical conduct in PSD, and derive a research agenda for IS research. Subsequently, after reading the final sample of relevant results, we mapped them across their time of publication to scope the development of this research. We found that most of the results stem from recent years, with 21 publications published in 2020 or 2021 (see Table 2).

Search strategy	<= '10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21
IS Journals											2	1
AIS Conferences					1		1				1	3
Forward Search											1	10
Backward Search	1	2				1	1	1	3	3	4	1

Table 2. Relevant references across search strategy and year of publication

From the 37 relevant publications, we extracted several concepts that deal with controversial PSD. Table 3 lists those concepts and provides a description, related concepts, as well as examples of supporting literature. All remaining relevant publications that are not referenced in the body of this paper are provided in the reference list.

Concept	Description	Focus	Examples of supporting literature
Dark patterns	Designs elements that are <i>intentionally</i> created to lead to user behavior that goes against the user’s best interests and towards those of the designer (Lukoff et al. 2021) Related concepts: Dark strategies (Bösch et al. 2016); dark design (Gray et al. 2021); deceptive interfaces (Brignull 2011); bright / light patterns (Gray et al. 2021)	Intention	Brignull 2011; Lukoff 2021; Gray et al. 2018; Gray et al. 2021; Luguri and Strahilevitz 2021; Narayanan et al. 2020
Digital Sludging	Design elements that create friction (e.g., introduce costs, difficulty, delays) in a user interface (Mathur et al. 2021) ...and that are excessive / unjustified and lead to negative outcomes (e.g., experience, access to goods) for people (Sunstein 2020) Related concept: Antiusability (Lenarcic 2014)	Strategy Outcome	Thaler 2018; Sunstein 2020; Mathur et al. 2021; Mager and Kranz 2021
“Dark side” of PSD	Design elements that have <i>unintended</i> negative (side) effects (Barev et al. 2021), for example causing cognitive and emotional strains (e.g., demotivation), or behavioral strains (e.g., obsessive tendencies) for individuals (Rieder et al. 2020) Related concept: Anti patterns (Gray et al. 2018)	Outcome	Barev et al. 2021; Liu et al. 2016; Rieder et al. 2020

Table 3. Identified terminology around controversial PSD

Besides the heterogeneous terminology for controversial PSD, we noticed that the description of different types of PSD, especially digital nudging, often contradicted prevalent definitions or conceptual roots.

Specifically, while digital nudging is generally distinguished from manipulation (e.g., Meske and Amojo 2020b, Susser et al. 2019), some authors place nudging and manipulation in the same context. For example, Curley et al. (2021) state that, “*nudging is one of the most common digital manipulation strategies used to mislead users into bad decisions*” (p.2). Additionally, we observed that several papers used the term “nudging” as a synonym to “influencing” or “steering behavior” and thereby contribute to a poor demarcation between concepts. For example, Luguri and Strahilevitz (2021), “*identified the dark patterns that seem most likely to nudge consumers into making decisions that they are likely to regret or misunderstand*” (p.44). We also observed the emergence of even more adventurous terminology such as “ethical dark patterns” (Parilli and Hernandez-Ramirez 2020).

Discussion

The literature analysis yielded four focal points of interest for future IS research on controversial PSD. The focal points are the intention behind PSD, PSD strategies, the actual outcome of PSD, and the PSD process. In the following, we illustrate each focal point with relevant examples from the reviewed literature and discuss implications for the PSD process (table 4). We then derive a research agenda from our findings for IS research on PSD.

Focal Points in the Ethical Debate on Controversial PSD

The first focal point frequently discussed in the literature is the **(1) intention behind PSD**. Scholars generally suggest that for ethical PSD, the intent should be ethical (Benner et al. 2021) and place human values at its center (Voigt et al. 2021). Often, scholars consider PSD in the interest of the user as ethically acceptable while PSD in the interest of the designer or the designing institution is at the very least controversial (e.g., Benner et al. 2021, Gray et al. 2021). Thereby, pro-social or “other-regarding” PSD for collective welfare is often considered acceptable as well (Thaler and Sunstein 2008; Renaud and Zimmermann, 2018; van der Hoven, 2020). However, pro-social intentions might be derived from flawed or incomplete evidence (e.g., lack of knowledge of the designer) or fail to account for cultural differences and biases, raising the question of how well-founded the knowledge about “better choices” needs to be to warrant pro-social PSD (Renaud and Zimmermann 2018).

Second, some authors dive deeper into the **(2) PSD strategy** (i.e., *how* the influence is exerted) for the evaluation of (un-)controversial forms of PSD. Important distinguishing factors between strategies are the transparency and whether the user is encouraged to make an active choice. Transparent PSD strategies where the user is aware of being influenced and can therefore (at least in principle) choose differently or behave differently than encouraged by the design are considered more acceptable and demarcated from manipulation (Hansen and Jespersen 2013; Mathur et al. 2021; Meske and Amojo 2020b; Sunstein 2017; Susser et al. 2019). Further, transparent PSD strategies that target slow and deliberate thinking (system 2) are considered more acceptable than those PSD strategies targeting automatic thinking (system 1) (Meske and Amojo 2020b). Yet, it appears that both transparency and facilitating deliberate choices are particularly relevant if it is uncertain whether the intentions behind PSD (see focal point 1) actually correspond to the user’s own goals. Thus, the ethical evaluation of PSD strategies is closely connected to the alignment of PSD with the user’s goals. Lastly, when choosing a PSD strategy, designers should be mindful of the cognitive burden they inflict upon users with PSD targeting system 2, as they might impose a “cognitive tax” on users by requiring them to invest time, energy, and attention to make a choice (Mathur et al. 2021) and increase cognitive load and decision fatigue. As there is no universal answer to the question which biases or faults in judgement *should* be addressed (Selinger and Whyte 2011), steering users towards active choices should be justified.

The third ethical focal point concerns the **(3) actual outcome of PSD**. In some cases, the intended outcome of using PSD might be good and aligned with the user’s interests, but the actual outcome has negative (side) effects for the individual or society (Renaud and Zimmermann 2018; Selinger and Whyte 2011). For example, an individual might be influenced to buy more fruits but end up throwing them away because the decision was not based on a genuine preference to increase fruit consumption (Renaud and Zimmermann, 2018). Further, PSD can cause negative emotions which inhibit rational decision making and thus, reduce the individual’s ability to make a reflective choice (Barev et al. 2021). When using PSD in a health context, Rieder et al. (2020) found that PSD can cause emotional and cognitive strains (e.g., anger, demotivation) and behavioral strains (e.g., harsh, and unsustainable behavior changes). An extensive use

of PSD might also prevent individuals from learning to make good choices and reduce their willingness to take responsibility for their choices' outcomes (Selinger and Whyte 2011).

The last focal point is the **(4) process of PSD** which connects to each of the previously identified focal points and focuses on specifying a PSD processes that foster the development of ethical PSD. For example, PSD outcomes tend to be evaluated with short-term, quantitative metrics (e.g., click-rates) and implications for the perception and experience of the user (Narayanan et al. 2020; Voigt et al. 2021) or the long-term consequences of PSD are rarely evaluated (Susser and Grimaldi 2021; Narayanan et al. 2020). If negative side and long-term effects of controversial PSD were empirically measured as a part of the PSD process, they might outweigh short-term benefits of controversial PSD for the designing institution. Furthermore, establishing PSD processes which favor opt-in over opt-out (Benner et al. 2021), include seeking input from the users and aim to understand *why* a design works (Narayanan et al. 2020) are likely to lead to more ethical PSD.

PSD intention	PSD strategy	PSD outcome
Against the user's interest / only considering the designer's interests	Non-transparent PSD targeting reflective thinking (System 2)	Indirect effects of PSD for the environment or other individuals
(Assumed) user intentions	Non-transparent PSD targeting automatic thinking (System 1)	Emotional, cognitive, or behavioural strains caused by PSD
Pro-social intentions	Transparent PSD targeting automatic thinking (System 1)	Reduced ability to make decisions or reduced willingness to take responsibility for decisions
Known user intentions	Transparent PSD targeting reflective thinking (System 2) if triggering an active choice is justified	
Guidance for more ethical PSD processes		
Involve users in the PSD process (e.g., assess users' intentions prior to applying PSD, allow users to set their own goals in the interface, develop personalized PSD, allow to opt-out of PSD, implement feedback channels, and allow changing PSD goals).	Evaluate the acceptability of different PSD strategies depending on context factors, such as the transparency of and user involvement in PSD intentions. Consider the "cognitive tax" of triggering active choices in the PSD strategy selection.	Conduct multifaceted evaluations of PSD outcomes beyond the targeted and immediate decision outcome. Aim to understand why and how a design works (e.g., long term effects, emotional experience). Weigh possible side effects of PSD against its benefits.
<p>Table 4. Summarizing framework to guide PSD (dark grey = unethical, shaded = controversial, light grey = acceptable)</p>		

Implications and Research Agenda for IS Research on PSD

A common vocabulary is a prerequisite for advancing the debate on ethical concerns surrounding PSD and ultimately, for realizing the potential of PSD in IS research and practice. We identified and described three expressions which are frequently used in papers on controversial PSD: dark patterns, digital sludging, and the "dark side" of PSD. Besides the lack of a uniform definitions for these terms, a central challenge is that there is not always a clear distinction between the normative rationale for the intentions behind PSD and the employed PSD strategy for achieving these goals (Mathur et al. 2021; Mills 2020). Thus, for example, the PSD strategy "setting a default" can be described as a nudge if it steers behavior in accordance with the user's interest, but also as a dark pattern if it steers behavior in accordance with the designer's interest. Moving forward, IS research on ethical use of PSD would benefit from clearly distinguishing between the goals or intentions for which PSD is used (e.g., protecting data privacy) and the PSD strategy that induces a behavior change (e.g., setting a default, stating a social norm). Further, different disciplines use different PSD concepts. For example, the concept of dark patterns occurs mostly in research on human-computer interaction, while sludging occurs primarily in behavioral economics. Moving forward, IS research would benefit from integrating and bridging insights from these fields.

Regarding the intentions for PSD, our analysis highlights several arguments which challenge the legitimacy of using PSD without obtaining information about the individual's preferences in the process (e.g., by asking for their intentions or feedback). Namely, there is no universal agreement or justification for the types of shortcomings in human decision making that *should* be addressed with PSD (Selinger and Whyte 2011), it is unclear how much evidence for a “better choice” is required to warrant using PSD to influence users towards making that choice, and well-intended PSD strategies might not apply equally to all (cultural) backgrounds of individuals who are subjected to them (Renaud and Zimmermann 2018). Further, while intending to encourage an active decision is considered ethically more acceptable (see PSD strategies), it is also debated, as users are already more easily overwhelmed by information in digital environments (Mirsch et al. 2017) and using PSD to increase deliberate consideration can impose a cognitive tax on them (Mathur et al. 2021) and negatively affect their ability to make rational decisions (Barev et al. 2021). Compared to persuasive design in offline environments, the digital realm allows personalizing PSD to the goals of individual users, comparably easy opting-in or -out of PSD, and various opportunities for obtaining feedback from or providing information on PSD goals and strategies to users. Therefore, we encourage IS researchers to further reflect on and specify requirements for (refraining from) involving users in PSD. Possible RQs include:

- What conditions warrant the use of PSD without involving the affected users (e.g., asking for intentions, implementing feedback channels)?
- What factors influence the trade-off between facilitating active choices and depleting cognitive resources with PSD?
- How can we leverage digital features to enable involvement of users in PSD processes?
- Which PSD strategies are culture-specific and might thus have disparate impact on users?

Furthermore, considering that the normative rationale for which goals or intentions to adopt can be challenging, IS research should focus on specifying a PSD process that fosters ethical conduct. Regarding evaluation of PSD, existing process models focus on quantitative evaluations of the immediate effect of PSD on decision making, for example using A/B tests (e.g., Mirsch et al. 2018, Schneider et al. 2018). While it might not be feasible to consider all possible (long-term) negative outcomes of altering choice environments in practice and weigh them against the positive outcomes to determine acceptable use cases, as suggested by Susser and Grimaldi (2021), merely focusing on immediate decision outcomes appears to be too narrow. Therefore, we encourage IS researchers to further specify the (evaluation) process of PSD, for example by addressing the following RQs:

- What outcomes, besides the immediate decision outcome, should be considered in the evaluation of PSD (e.g., cognitive, emotional, and behavioral strains)?
- How can we reliably measure such outcomes (e.g., cognitive, emotional, and behavioral strains)?
- Which role does time play for the (ethical) evaluation of PSD?

Conclusion and Next Steps

In this short paper, we were able to map prevalent concepts in the debate on controversial PSD. Moreover, we carved out four focal points in the ethical debate (intention, strategy, outcome, and process) and derived implications and a research agenda for IS research on PSD. This results in a contribution to knowledge as they lay the groundwork for a common vocabulary as well as an awareness and understanding of different perspectives in the discussion of ethical considerations surrounding applied PSD in IS research.

The focus of this short paper was limited to the analysis of literature on controversial PSD. In the next steps of the study, we will (1) extend the literature search by including two or more iterations of backward and forward searches with existing results as well as keywords revolving around general PSD and not only on controversial instances. This will provide some deeper insight into the cumulative tradition of the identified concepts and allows us to incorporate literature that does not explicitly mention concepts of controversial PSD but might reflect upon important ethical issues in the discussion sections. Moreover, we aim to (2) extend our discussion on the identified focal points. With the expanded focus of the SLR, we might identify additional focal points and complement our research agenda. In a final step, we will go back and (3) carve out extensive definitions and uses of the prevalent concepts currently listed in table 3. We will then explain them under consideration of the identified perspectives (i.e., intention, outcome, strategy, and process) to

provide guidance for system designers and a useful terminology to be used to raise more awareness for ethical issues of PSD in IS research and beyond.

References

- Barev, T. J., Schwede, M., and Janson, A. 2021. "The Dark Side of Privacy Nudging - An Experimental Study in the Context of a Digital Work Environment," in *Hawaii International Conference on System Sciences*, pp. 4114–4123.
- Bauer, J. M., Bergström, R., and Foss-Madsen, R. 2021. "Are You Sure, You Want a Cookie? – The Effects of Choice Architecture on Users' Decisions about Sharing Private Online Data," *Computers in Human Behavior* (120:7), pp. 1–7.
- Benartzi, S., and Lehrer, J. 2015. *The Smarter Screen: Surprising Ways to Influence and Improve Online Behavior*, New York: Penguin Books.
- Benner, D., Schobel, S., Janson, A., and Syst, A. I. 2021. "It Is Only for Your Own Good, or Is It? Ethical Considerations for Designing Ethically Conscious Persuasive Information Systems Completed Research," in *Proceedings of the Americas Conference on Information Systems*, pp. 1–10.
- Boell, S. K., and Wang, B. 2019. "Www.Litbaskets.Io, an IT Artifact Supporting Exploratory Literature Searches for Information Systems Research," in *Australasian Conference on Information Systems*, pp. 663–673.
- Bösch, C., Erb, B., Kargl, F., Kopp, H., and Pfattheicher, S. 2016. "Tales from the Dark Side: Privacy Dark Strategies and Privacy Dark Patterns," in *Proceedings on Privacy Enhancing Technologies*, pp. 237–254.
- Brignull, H. 2011. "Dark Patterns: Deception vs. Honesty in UI Design," *A List Apart*, pp. 1–18. (<https://alistapart.com/article/dark-patterns-deception-vs-honesty-in-ui-design/>).
- vom Brocke, J., Simons, A., Riemer, K., Niehaves, B., Plattfaut, R., and Cleven, A. 2015. "Standing on the Shoulders of Giants: Challenges and Recommendations of Literature Search in Information Systems Research," *Communications of the Association for Information Systems* (37), pp. 205–224.
- Caraban, A., Karapanos, E., Gonçalves, D., and Campos, P. 2019. "23 Ways to Nudge: A Review of Technology-Mediated Nudging in Human-Computer Interaction," *Conference on Human Factors in Computing Systems*, pp. 1–15.
- Curley, A., O'Sullivan, D., and Gordon, D. 2021. "The Design of a Framework for the Detection of Web-Based Dark Patterns," in *International Conference on Digital Society*, pp. 1–6.
- Dennis, A. R., Yuan, L., Feng, X., Webb, E., and Hsieh, C. J. 2020. "Digital Nudging: Numeric and Semantic Priming in E-Commerce," *Journal of Management Information Systems* (37:1), Routledge, pp. 39–65.
- Gray, C. M., Chivukula, S. S., Melkey, K., and Manocha, R. 2021. "Understanding 'Dark' Design Roles in Computing Education," in *ACM Conference on International Computing Education Research*, pp. 225–238.
- Gray, C. M., Kou, Y., Battles, B., Hoggatt, J., and Toombs, A. L. 2018. "The Dark (Patterns) Side of UX Design," in *Conference on Human Factors in Computing Systems (CHI)*, pp. 1–14.
- Gray, C. M., Santos, C., Bielova, N., Toth, M., and Clifford, D. 2021. "Dark Paterns and the Legal Requirements of Consent Banners: An Interaction Criticism Perspective," in *Conference on Human Factors in Computing Systems*, pp. 1–18.
- Gunawan, J., Wilson, C., Pradeep, A., Choffnes, D., and Hartzog, W. 2021. "A Comparative Study of Dark Patterns Across Mobile and Web Modalities," *ACM on Human-Computer Interaction* (5:1), pp. 1–29.
- Hansen, P. G., and Jespersen, A. M. 2013. "Nudge and the Manipulation of Choice: A Framework for the Responsible Use of the Nudge Approach to Behaviour Change in Public Policy," *European Journal of Risk Regulation* (4:1), pp. 3–28.
- Hansen, P. G., Skov, L. R., and Skov, K. L. 2016. "Making Healthy Choices Easier: Regulation versus Nudging," *Annual Review of Public Health* (37), pp. 237–251.
- van den Hoven, M. 2021. "Nudging for Others' Sake: An Ethical Analysis of the Legitimacy of Nudging Healthcare Workers to Accept Influenza Immunization," *Bioethics* (35:2), pp. 143–150.
- Kollmer, T. 2022. "Exploring the Impact of Digital Sludging," in *Proceedings of the Pacific Asia Conference on Information Systems*, pp. 1–9.
- Korobkin, R. 2009. "Libertarian Welfarism," *California Law Review* (97:6), pp. 1651–1686.
- Lembcke, T. B., Engelbrecht, N., Brendel, A. B., and Kolbe, L. M. 2020. "To Nudge or Not to Nudge: Ethical Considerations of Digital Nudging Based on Its Behavioral Economics Roots," in *Proceedings of the*

- European Conference on Information Systems*, pp. 1–17.
- Lenarcic, J. 2014. “Use the Difficulty through Schwierigkeit: Antiusability as Value-Driven Design,” in *Proceedings of the International Conference on Information Systems*, pp. 1–8.
- Liu, C., Gao, G., and Agarwal, R. 2016. “The Dark Side of Positive Social Influence,” in *Proceedings of the International Conference on Information Systems*, pp. 1–14.
- Luguri, J., and Strahilevitz, L. J. 2021. “Shining a Light on Dark Patterns,” *Journal of Legal Analysis* (13:1), pp. 43–109.
- Lukoff, K., Hiniker, A., Gray, C. M., Mathur, A., and Chivukula, S. S. 2021. “What Can CHI Do about Dark Patterns?,” in *Conference on Human Factors in Computing Systems*, pp. 1–6.
- Lukoff, K., Lyngs, U., and Zade, H. 2021. “How the Design of Youtube Influences User Sense of Agency,” in *Proceedings of the Conference on Human Factors in Computing Systems*, pp. 1–17.
- Mager, S., and Kranz, J. 2021. “On the Effectiveness of Overt and Covert Interventions in Influencing Cookie Consent: Field Experimental Evidence,” in *Proceedings of the International Conference on Information Systems*, pp. 1–17.
- Mathur, A. 2021. “Identifying and Measuring Manipulative User Interfaces at Scale on the Web,” in *Proceedings of the Conference on Human Factors in Computing Systems*, pp. 1–5.
- Mathur, A., Kshirsagar, M., and Mayer, J. 2021. “What Makes a Dark Pattern... Dark?,” in *Proceedings of the Conference on Human Factors in Computing Systems*, pp. 1–18.
- Meske, C., and Amojó, I. 2020a. “Status Quo, Critical Reflection, and the Road Ahead of Digital Nudging in Information Systems Research: A Discussion with Markus Weinmann and Alexey Voinov,” *Communications of the Association for Information Systems* (46:1), pp. 402–420.
- Meske, C., and Amojó, I. 2020b. “Ethical Guidelines for the Construction of Digital Nudges,” in *Proceedings of the Hawaii International Conference on System Sciences*, pp. 3928–3937.
- Mills, S. 2020. “Nudge/Sludge Symmetry: On the Relationship between Nudge and Sludge and the Resulting Ontological, Normative and Transparency Implications,” *Behavioural Public Policy*, pp. 1–24.
- Mirsch, T., Lehrer, C., and Jung, R. 2017. “Digital Nudging: Altering User Behavior in Digital Environments,” in *Proceedings of the Internationale Tagung Wirtschaftsinformatik*, pp. 634–648.
- Narayanan, A., Mathur, A., Chetty, M., and Kshirsagar, M. 2020. “Dark Patterns,” *Communications of the ACM* (63:9), pp. 42–47.
- Parilli, Davide, M., and Hernández-Ramírez, R. 2020. “Re-Designing Dark Patterns to Improve Privacy,” in *2020 IEEE International Symposium on Technology and Society*, pp. 1–9.
- Renaud, K., and Zimmermann, V. 2018. “Ethical Guidelines for Nudging in Information Security & Privacy,” *International Journal of Human Computer Studies* (120:4), Elsevier Ltd, pp. 22–35.
- Rieder, A., Lehrer, C., and Jung, R. 2020. “Affordances and Behavioral Outcomes of Wearable Activity Trackers,” in *Proceedings of the European Conference on Information Systems*, pp. 1–16.
- Selinger, E., and Whyte, K. 2011. “Is There a Right Way to Nudge? The Practice and Ethics of Choice Architecture,” *Sociology Compass* (5:10), pp. 923–935.
- Sunstein, C. R. 2015. “Fifty Shades of Manipulation,” *Journal of Marketing Behavior* (213:2), pp. 1–32.
- Sunstein, C. R. 2017. “Nudges That Fail,” *Behavioural Public Policy* (1:1), pp. 4–25.
- Sunstein, C. R. 2020. “Sludge Audits,” *Behavioural Public Policy*, pp. 1–20.
- Susser, D., and Grimaldi, V. 2021. “Measuring Automated Influence: Between Empirical Evidence and Ethical Values,” in *AAAI/ACM Conference on AI, Ethics, and Society*, Association for Computing Machinery, pp. 242–253.
- Susser, D., Roessler, B., and Nissenbaum, H. 2019. “Online Manipulation: Hidden Influences in a Digital World,” *Georgetown Law Technology Review* (1:1), pp. 1–45.
- Thaler, R. H. 2018. “Nudge, Not Sludge,” *Science* (361:6401), pp. 431–432.
- Thaler, R. H., and Sunstein, C. R. 2008. *Nudge*, New Haven: Yale University Press.
- Voigt, C., Schlögl, S., and Groth, A. 2021. “Dark Patterns in Online Shopping: Of Sneaky Tricks, Perceived Annoyance and Respective Brand Trust,” *Lecture Notes in Computer Science* (12783), pp. 143–155.
- Waldman, A. E. 2020. “Cognitive Biases, Dark Patterns, and the ‘Privacy Paradox,’” *Current Opinion in Psychology* (1332), pp. 105–109.
- Webster, J., and Watson, T. R. 2002. “Analyzing the Past to Prepare for the Future: Writing a Literature Review,” *Management Information Systems Quarterly* (26:2).
- Weinmann, M., Schneider, C., and Brocke, J. vom. 2016. “Digital Nudging,” *Business and Information Systems Engineering* (58:6), Springer Fachmedien Wiesbaden, pp. 433–436.