How to Achieve Ethical Persuasive Design: A Review and Theoretical Propositions for Information Systems

Dennis Benner
University of Kassel, benner@uni-kassel.de

Sofia Marlena Schöbel
University of Osnabrück, sofia.schoebel@uni-osnabrueck.de

Andreas Janson
University of St. Gallen, andreas.janson@unisg.ch

Jan Marco Leimeister
Kassel University, leimeister@acm.org

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Dennis Benner

Information Systems, University of Kassel, benner@uni-kassel.de

Sofia Schöbel

Information Systems, University Osnabrück, sofia.schoebel@uni-osnabrueck.de

Andreas Janson

Institute of Information Management, University of St. Gallen, andreas.janson@unisg.ch

Jan Marco Leimeister

Information Systems, University of Kassel, leimeister@uni-kassel.de
Institute of Information Management, University of St. Gallen, janmarco.leimeister@unisg.ch

Transactions on **H**uman-**C**omputer **I**nteraction

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Information Systems, University of Kassel

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Information Systems, University of Osnabrück

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Information Management, University of St. Gallen

Jan Marco Leimeister

Information Systems, University of Kassel
Information Management, University of St. Gallen

Abstract:

Persuasive system design (PSD) is an umbrella term for designs in information systems (IS) that can influence people's attitude, behavior, or decision making for better or for worse. On the one hand, PSD can improve users' engagement and motivation to change their attitude, behavior, or decision making in a favorable way, which can help them achieve a desired outcome and, thus, improve their wellbeing. On the other hand, PSD misuse can lead to unethical and undesirable outcomes, such as disclosing unnecessary information or agreeing to terms that do not favor users, which, in turn, can negatively impact their wellbeing. These powerful persuasive designs can involve concepts such as gamification, gamblification, and digital nudging, which all have become prominent in recent years and have been implemented successfully across different sectors, such as education, e-health, e-governance, e-finance, and digital privacy contexts. However, such persuasive influence on individuals raises ethical questions as PSD can impair users' autonomy or persuade them towards a third party's goals and, hence, lead to unethical decision-making processes and outcomes. In human-computer interaction, recent advances in artificial intelligence have made this topic particularly significant. These novel technologies allow one to influence the decisions that users make, to gather data, and to profile and persuade users into unethical outcomes. These unethical outcomes can lead to psychological and emotional damage to users. To understand the role that ethics play in persuasive system design, we conducted an exhaustive systematic literature analysis and 20 interviews to overview ethical considerations for persuasive system design. Furthermore, we derive potential propositions for more ethical PSD and shed light on potential research gaps.

Keywords: Persuasive System Design, Gamification, Gamblification, Digital Nudging, Ethics, Ethical Persuasion, Ethical Design

Miguel I. Aguirre-Urreta was the accepting senior editor for this paper.

1 Introduction

Given technology advancements in recent years and the ever-increasing digitalization of our everyday lives, the way people interact with information systems and technology has changed as well (Skjuve et al., 2019). In this context, our environment's continuously increasing digitalization and the continuous influx of novel information technologies and systems have changed the way people interact with increasingly "smart" artifacts. In particular, these developments have influenced individuals' decision-making processes and general behavior due to the new possibilities that service or product providers (e.g., Amazon, Netflix) now have at their disposal (Skjuve et al., 2019). This influence continues to steadily grow with technological capabilities. Considering the rate at which novel technologies such as artificial intelligence (AI) and "smart" technical artifacts (e.g., recommender systems, conversational agents) have risen, changes in the human-computer relationship would inevitably occur (Maedche et al., 2019). For instance, these technologies now can advise users or incentivize certain behaviors for users, which, in turn, can lead to certain outcomes (Maedche et al., 2019), such as convincing users to share their personal information. Enabled by the general digital transformation of human-computer relations and associated decision-making processes, novel designs for information systems (IS) have emerged in recent years with the capability to persuade users. These novel designs can not only simply persuade their users but also more importantly influence users' attitude, behavior, decision making, and, consequently, human-computer interaction (HCI) outcomes (Fogg, 1998, 2003). We can call designs that we can categorize in this way persuasive system design (PSD); these designs have specific characteristics and relate to other similar concepts (Fogg, 2003).

Concepts that relate to PSD also have characteristics that allow these designs to influence users' attitudes, behavior, or decision making. Accordingly, as concepts such as gamification, gamblification, and digital nudging have emerged, three new concepts related to PSD (each having their own persuasive characteristics) have become relevant as they have made their way into IS and become established concepts (e.g., Diederich et al., 2019; Ebermann & Brauer, 2016). We can unify these three concepts under the umbrella term PSD since they can all influence humans' attitudes, behavior, and/or decision making (i.e., which constitute PSD at its core) (Fogg, 1998, 2003). By leveraging the gamification, gamblification, and digital nudging concepts, IS developers and designers have gained the means to design more engaging, motivating, and, hence, more persuasive IS that can influence users' attitude, behavior, and decision making. For example, drawing on gamification or gamblification, IS designers and developers can make it more joyful or gameful and provide exciting (sometimes even exotic) experiences to users (Lichtenberg & Brendel, 2020). Moreover, they can use digital nudging to improve IS transparency, trust, or acceptance and, thus, further influence users' attitude, behavior, and decision making (Acquisti, 2009; Thaler & Sunstein, 2008).

However, although PSD presents a promising approach to motivate and engage users and help them achieve their desired outcomes, many unresolved challenges have emerged. In particular, as novel technologies have risen and PSD for IS has become more prevalent, ethical issues have emerged. As a popular example, cookie banners on websites often come with unethical predefined settings that persuade users to agree to unfavorable terms that can hurt their privacy. Moreover, unethical PSD use can lead to users disclosing their private information on social media, which can lead to severe psychological and emotional damage (Kroll & Stieglitz, 2019). Considering the bigger picture, companies and service providers favor designs that enable them to suck more data out from their users as data presents valuable information that they can use to create more value per customer. From a scientific perspective, we lack conceptual PSD knowledge—especially about ethical designs and policies that one can translate into law to keep data-hungry companies in check (Baldwin, 2014; Dickhaut et al., 2020). Researchers have highlighted this apparent gap for quite some time and pointed out that PSD in its current state may lead to unethical designs and consequently unethical outcomes for users that can negatively affect their wellbeing (Baldwin, 2014; Kim & Werbach, 2016). For instance, gamification and gamblification may lead to addiction that, if monetized, can lead to financial, emotional, and psychological damage and, thus, severely impact users' wellbeing (Brown & Osman, 2020). In general, researchers have found negative effects such as financial losses (Sunstein, 2016), political manipulation (Winkel et al., 2015), and unplanned or unwanted purchase decisions (Ho & Lim, 2018)) on users' wellbeing to exhibit an association with bad designs or, rather, unethical PSD applications. While some policy makers and government institutions (e.g., the Chinese Government) have recognized the existing challenges, threats, and also opportunities (e.g., beneficial behavioral designs for public policy) during the last few years, these issues persist, and we need more research on them (Kuehnhanss, 2019).

Regarding the described issues and challenges for PSD, designs based on gamification and particularly gamblification have caused noticeable outrage among users (e.g., gamers) as game publishers have implemented highly unethical designs. Harmful designs based on, for example, pure chance with rigged mechanics or microtransactions with a non-transparent payment model have led to harmful behavior among players, such as addiction and overspending (Brown & Osman, 2020). In particular, popular game publishers such as Electronic Arts (EA), Blizzard Entertainment, or 2K Games have introduced so-called "loot boxes", treasure chests with uncertain rewards that users can often buy with real money, into their economic systems. Since implementing such gambling design mechanics, these publishers have faced severe backlash as users often perceive them as highly unfair. Indeed, some users have even suffered financial and psychological damage (e.g., addiction) from these unethical PSD elements (Brown & Osman, 2020). However, this development exists beyond the gaming realm as well, and some scholars have voiced their concerns about lacking ethical boundaries in gamification and gamblification that stretches beyond simple games (Lopez-Gonzalez & Griffiths, 2018a, 2018b; Weiss, 2019). Humlung and Haddara (2019), for example, laid out several issues in introducing gamification to the enterprise context because employees may feel exploited and forced to participate and compete (e.g., when introducing leaderboards for employees).

As such, we can see that the current design for persuasive IS does not suffice and that an ethical framework (and, if necessary, appropriate policies and laws) could improve it. The fact that many national laws do not cover persuasive design reinforces the need for better ethical PSD, which China has already realized by introducing laws to limit actors from abusing persuasive design elements (Brown & Osman, 2020). Therefore, in this paper, we raise novel propositions for ethical PSD in IS, drawing on both considerations from literature and considerations from individuals (i.e., users) as an overarching research objective. Thus, we formulate the following two research questions (RQ) to address our objective:

> **RQ1**: What ethical considerations about PSD exist in the IS literature?

> **RQ2**: What ethical considerations do individuals have about PSD?

To answer our research questions, we conducted a systematic literature analysis according to rigorous methods for literature reviews from Cooper (1988), Webster and Watson (2002), and vom Brocke et al. (2015). Next, we consolidated current literature to summarize research concerning ethical PSD. Additionally, we conducted 20 interviews with individuals who differed in age and gender to expand our literature results with more practice-oriented findings. Our research contributes to theory by improving the extent to which we understand ethics regarding PSD for IS. Moreover, we contribute to practice by presenting propositions that developers, designers, and/or researchers should consider when applying PSD to ensure that they uphold ethical boundaries. We then conclude our paper by highlighting directions for future research towards ethically conscious persuasive designs.

We structure our paper as follows: in Section 2 we introduce the necessary theoretical background for our research. In Section 3, we present our research approach and applied methods. In Section 4, we present and discuss our results from literature and practice. In Section 5, we propose six propositions for ethical PSD. In Section 6, we discuss our work's implications and directions for future research. Finally, in Section 7, we conclude the paper.

2   Theoretical Background

In this section, we describe the relevant theoretical background and related research for our paper. To do so, we first present persuasive system design and its related concepts before we touch on what potential ethical pitfalls for persuasive system design in information system research may exist.

2.1   Persuasive System Design and Related Concepts

We can define persuasion itself as a means or way to interact or communicate with an outcome-oriented intention to influence humans' attitude, behavior, or decision making (Fogg, 1998; Simons et al., 2001). In the IS context, at its core, PSD refers to any design concept in a particular IS that can influence someone's attitude, behavior, and decision making without using coercion, compulsion, or force of any kind (Fogg, 1998, 2003; Oinas-Kukkonen & Harjumaa, 2009). For instance, one can apply PSD to IS to achieve or promote a desirable outcome that may or may not be ethical (Briñol & Petty, 2009). To achieve persuasion, one implements persuasive design elements (Fogg, 1998, 2003). These persuasive design elements may draw on related concepts such as gamification, gamblification, or digital nudging since all these concepts

have their own persuasive characteristics (Benner et al., 2021; Krath & Korflesch, 2021). Moreover, one can use persuasive dialogue or conversational artifacts that can persuade users directly through dialogue (e.g., conversational agents).

As we note in Section 1, related concepts such as gamification, gamblification, and digital nudging express persuasive characteristics, and one can define them under the umbrella term PSD. On the one hand, these concepts share some common characteristics but, on the other hand, may differ in some ways and, hence, complement each other. For instance, gamification can influence human attitude, behavior, or decision making via so-called game design elements that support user motivation (Blohm & Leimeister, 2013). In general, we can define gamification as using game design elements in any non-game context (Deterding et al., 2011). By using these design elements to create a gameful experience, one can use gamification to positively influence user motivation (Huotari & Hamari, 2017). Moreover, in turn, gamification can lead to higher user engagement in certain tasks or situations that require additional motivation (Koivisto & Hamari, 2019). We can divide motivation into intrinsic and extrinsic motivation. Intrinsic motivation has its roots directly in a task (e.g., joyful experience), while extrinsic motivation relies on an external reward (e.g., a financial incentive) (Deci & Ryan, 2000). Here, gamification can provide a well-established design-oriented solution to support user motivation and engagement in IS that considers the users' psychological needs (e.g., Mekler et al., 2017; Sailer et al., 2017; Xi & Hamari, 2019). For instance, for boring or mundane tasks where individuals do not have much intrinsic motivation, PSD and gamification in particular can help to support the individuals' intrinsic motivation to commit to such a task (Deci et al., 2001).

In this regard, one can describe intrinsic motivation as a function that comprises three components—autonomy, competence, and relatedness—which together facilitate a person's motivation (Ryan & Deci, 2000). First, autonomy refers to feeling free and having free choice. Second, competence refers to the experience of mastery, which one can facilitate by rewarding users via gamification. Third, relatedness refers to a person's need to feel connected or to belong, such as social comparison with one's peers and belonging to a group or environment. This kind of intrinsic motivation can be even more powerful than monetary incentives (Blohm & Leimeister, 2013). Utilizing game design elements, one can use gamification to persuade users by addressing their psychological needs and providing a joyful or gameful experience. Herein, the latter refers to the concept playfulness most human beings inherently experience—the Homo ludens— and hedonic aspects related to using information technology for entertainment (Huizinga, 2009; Sharp et al., 2019). Thereby, users usually become motivated to achieve specific gamification rewards (e.g., achievements or points) or simply to experience an IS itself (i.e., Homo ludens).

The gamblification concept resembles gamification and shares the same roots. Some may even refer to gamblification as an extension of gamification. However, while gamification is primarily skill based or at least effort based, gamblification is purely based on chance and uncertainty (Macey & Hamari, 2020). By providing this rather uncommon or even exotic spin on joyful IS design, gamblification can motivate users in a similar way that gamification does. Due to the increasing liberalization of gambling in recent years, particularly in Western societies (Markham & Young, 2015), and the continuous convergence of gaming and gambling (Lopez-Gonzalez & Griffiths, 2018a, 2018b; Macey & Hamari, 2020), the borders between these two concepts have largely diminished. Loot boxes, small treasure chests with uncertain content and value for users, constitute a prominent gamblification implementation that has gained popularity in recent years (Brown & Osman, 2020). Unlike gamification, gamblification expresses its persuasive character in a slightly different way. Since users do not know a loot box's content—or other gamblification designs—until revealed in some way, these designs introduce excitement that draws on an inherent human basic instinct (i.e., curiosity). Gamification lacks this component crucial to gamblification since the former follows strict rules and descriptions on how to use which kind of gamified component and, thus, omits curiosity and uncertainty entirely. Nevertheless, many scholars define gamblification as an extension of gamification since similarities exist that designers can use in combination (i.e., implementing design elements with gambling characteristics as an extension of gamification) (e.g., Lichtenberg & Brendel, 2020). Thus, we can consider gamification and gamblification closely related but still distinct enough concepts with persuasive characteristics that unite under PSD.

Digital nudging is another concept prominent in IS that features persuasive characteristics. Digital nudging focuses on persuading users towards desired outcomes via small or subtle design modifications (Acquisti, 2009). These small or subtle design modifications influence users' decision making, behavior, and attitude in a predictable way, such as by addressing their subconsciousness (Thaler & Sunstein, 2008). Actors often use this type of PSD to foster desirable outcomes such as better decisions regarding financial awareness, green IS, health-related applications, or privacy (e.g., Schubert, 2017; Houk et al., 2016; Barev & Janson,

2019). While applying digital nudging in this way often relates to beneficial outcomes for users, it can also result in negative outcomes (particularly in the privacy context where actors prominently misuse digital nudging for unethical outcomes) (Barev & Janson, 2019). Regardless, in this way, digital nudging can complement other PSD concepts and influence users' attitude, behavior, and decision making (Barev & Janson, 2019; Barev et al., 2020). Moreover, digital nudging can be particularly helpful in situations where decision making is complex or difficult and may rely on specific knowledge that the user may not possess (Sunstein, 2016; Thaler & Sunstein, 2008). For instance, disclosing personal information or data may or may not be beneficial or even lawful since privacy can become a very complex topic that requires knowledge about the law. However, nudging places some restrictions on the design as nudges shall not forbid any options or significantly alter users' (economic) incentives (Thaler & Sunstein, 2008), unlike gamification and gamblification that allow one to restrict options, change incentives, and even apply strict punishment (e.g., deducting rewards), which may have implications on the effectiveness of particular design elements. Regardless, digital nudging, as Thaler and Sunstein (2008) define it, still respects a person's need for autonomy and self-determination.

Overall, the gamification, gamblification, and digital nudging concepts have certain persuasive characteristics that can complement each other when one uses them to design persuasive IS. For example, gamification can motivate and persuade users and provide joyfulness (Krath & von Korflesch, 2021; Schöbel, Janson, & Söllner, 2020), while nudging ensures a subtle but steady level of information and feedback adding to transparency (Eigenbrod & Janson, 2018). Additionally, Hassan et al. (2019) highlighted parallel issues between digital nudging and gamification, which we do not find surprising given these concepts resemble each other and share the same problems in persuasive design. Gamblification can provide an exotic relief in persuasive systems as it is still a rather uncommon sight in current information systems (Lichtenberg & Brendel, 2020). However, it seems that current PSD and IS designs do not use these design elements effectively and may even use them in unethical ways deliberately.

2.2   Boundaries of Ethics

Persuasive system design (PSD)—as the name suggests—has the potential to persuade humans in their decision making and their attitudes for good or for bad. This persuasive power may or may not result in a beneficial outcome for the people involved. As such, we might ask how we can make sure such designs are more ethical. While many authors (e.g., Mingers & Walsham, 2010; Smith & Hasnas, 1999) have and continue to discuss ethical design as it will remain relevant as long as people interact with each other, circumstances (i.e., PSD) change—hence our paper. However, IS research does not discuss ethical foundations and the psychological background in depth. Instead, IS research discusses ethics with a focus on ethical implications for IS and how to translate ethics into ethical IS (e.g., ethical PSD). Therefore, we follow this general approach to ethical discussions in IS research and establish ethical boundaries in the scope of our research in the PSD context.

In general, humans have discussed ethics and humanistic values as far back to ancient times and philosophers such as Plato who described factors such as "the good", "the right", "obligation", "virtue", "moral judgment", or "truth" (Frankena, 1967). Regarding IS, many authors have investigated and discussed ethical technology designs and concluded generally agreed-on ethical factors such as "truth", "rightness", "inclusion" (i.e., of individuals), "virtue", "ethicality", "morals", and/or "moral judgement" (e.g., Banerjee et al., 1998; Mingers & Walsham, 2010; Smith & Hasnas, 1999; Walsham, 1996). Furthermore, to discuss and integrate ethics, IS research has generally focused on identifying relevant aspects of ethics, philosophy, and sociology and combining them. In this way, IS researchers can establish ethical boundaries in IS research to serve as the basis for further investigation into IS topics such as PSD and how to derive propositions for ethical PSD. For instance, Friedman et al. (2013) compiled a list of ethical values that IS design often implicates under the umbrella term value-sensitive design and that the literature has discussed (Spiekermann et al., 2022). This list includes factors such as "privacy", "trust", "autonomy", "informed consent", "accountability", or "sustainability".

In other words, one can describe the issue of ethics as a function and outcome of one party's action that affects another party for good or for bad (i.e., an unethical outcome) (Mason, 1995). Thus, to be ethical refers to a decision-making process or a decision maker who considers ethical procedures and adopts and conducts humanistic values in a moral way to preserve people's dignity (Mason, 1995). Therefore, we follow this general approach to ethical values described above as our ethical boundaries to investigate our presented issues and our RQs on ethically conscious PSD.

2.3   Potential Ethical Pitfalls of Persuasive System Design

Because PSD can influence users' attitudes, behavior, and decision-making processes, one must consider ethical questions since interfering in this way, for better or worse, can negatively impact users' autonomy or self-determination regardless of the outcome. In particular, applying PSD in an unethical way can inhibit autonomy or self-determination; lead to unethical outcomes that result in financial, psychological, or emotional trauma; and, consequently, harm users' wellbeing. Researchers recognize this important and delicate topic and some have argued for an in-depth discussion to develop a potential solution for these issues (Weinmann et al., 2016). General PSD and the related concepts, as we discuss in Section 2.2, can all have their very own potential ethical pitfalls related to their specific characteristics, which we explain next.

Digital nudging functions via small or subtle design features that influence users, usually to their benefit. While the general intention behind digital nudging involves helping users achieve their own goals, many nudges in reality focus on achieving some outcome to benefit a third party, such as the general populace (i.e., "the greater good"), which contradicts the concept's original definition (van den Hoven, 2021). Although such a third party may have good intentions, this circumstance can lead to ethically questionable designs. Moreover, some actors may even deliberately implement unethical nudges designed to specifically trick users into a certain behavior or decision, such as revealing their information, agreeing to unethical terms, or flat out buying something they do not want (Brignull et al., 2015). Researchers have called such an exceptionally unethical and even malevolent design a dark pattern, a type of nudge whose sole purpose focuses on maximizing the outcome of whoever users interact with at their own expense (Brignull et al., 2015; Gray et al., 2018). Most people will have witnessed this design in some form or another, such as cookies and consent options on websites where many default options favor website operators. Such ethically questionable designs can compromise users' information security and privacy (Acquisti et al., 2017). We do not find it surprising that such issues exist given that researchers have made little effort to ethically assess digital nudge design, especially regarding fairness and autonomy (Schubert, 2017).

In contrast to the many popular examples of how digital nudging has gone awry, fewer users may know about gamification. Since gamification has its origins in gaming and video games, the dynamics and potential pitfalls inherent in this domain can partially translate to gamification. For example, some game designers rely on competition and rivalry, which may work in a gaming environment but can become unethical in a professional context (i.e., businesses and enterprises). Applying competitive gamification designs to such a corporate enterprise context and letting employees compete with each other and compare themselves to each other (e.g., using leaderboards) can harm their wellbeing (Humlung & Haddara, 2019). For example, in 2021, Amazon introduced a gamification approach to warehouse logistics in which workers could gather rewards for completing tasks at the warehouse. While the approach worked out for Amazon in the short run, experts have already expressed concerns for workers' wellbeing in the long run (Anderson, 2021). Employees that do not have a competitive personality, underperforming employees, or employees who simply do not wish to participate for whatever reason may feel pressured, undesired, and exploited if they choose not to participate (Humlung & Haddara, 2019). As a result, the employees could develop psychological and emotional issues, reducing their wellbeing. Such a result would also be undesirable from a corporate perspective as unhealthy and unhappy employees can be less productive. Additionally, employees may feel obliged to participate in the gamification efforts and lose focus on their work, which may have negative implications for both employees and enterprises. Furthermore, introducing gamification in a more serious context (e.g., e-government) can share the same ethical pitfalls as we describe above for digital nudging that negatively affects people's autonomy, freedom of choice, and, thus, wellbeing (Hassan & Hamari, 2020).

Unlike digital nudging and gamification, gamblification has attracted little research attention as yet due to its novelty. For instance, studies show that such persuasive design often lacks mechanisms to protect users, which some protective laws or rules in this domain also emphasize (Lopez-Gonzalez & Griffiths, 2018a). Thus, more frequent unethical designs and consequences may result, which means we need more research on ethical considerations so that both designers and lawmakers have guidance for ethical PSD. Regardless, because gamblification closely resembles gamification, they may have similar ethical pitfalls. However, the topic requires more research. Looking at the recent developments in the gaming industry, potential ethical pitfalls may refer to gambling addiction that can result in financial, emotional, and psychological harm similar to more traditional gambling addiction. Prior research has raised similar concerns about gamblification (e.g., Brown & Osman, 2020; Macey & Hamari, 2020). Overall, we can describe gamblification as having similar pitfalls to gamification and actual gambling.

A vivid PSD example that touches ethical boundaries concerns Uber and the way it algorithmically manages its workers (Möhlmann et al., 2021). Due to the nature of its business relationship with its drivers (i.e., independent contractors), employment laws do not bind the company as strongly as a typical organization (Scheiber, 2017). As such, Uber has much more leeway to employ potentially unethical, profit-driven designs that may not be in the best interest of their drivers. For instance, Uber uses both gamification and nudging to persuade their drivers to stay on the road and increase earnings rather than going offline and taking a break or calling it a day (e.g., via highlighting their current earnings or company-set earning goals) (Scheiber, 2017).

Overall, we relied on the relevance of considering ethics in PSD, our paper's ethical boundaries, and design concepts with persuasive characteristics as a starting point to survey the literature that we present in Section 3.

3   Methodology

In this section, we present our research approach and methodology. We used a hybrid approach to answer our RQs and conducted a systematic literature analysis and 20 interviews to describe the status quo of research on this topic before integrating practical insights from our participants to propose a set of propositions that could improve ethical PSD. We present our overall research approach in Figure 1.
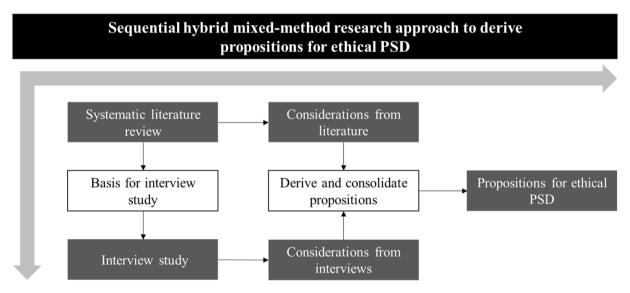

Figure 1. Research Approach

3.1   Systematic Literature Analysis

To answer our research question, we conducted a systematic literature analysis (SLA) since it constitutes an effective and efficient way to compile a knowledge base to overview current understandings and derive novel contributions (e.g., important ethical considerations for persuasive IS design) (vom Brocke et al., 2015; Webster & Watson, 2002). We conducted the SLA according to rigorous and well-established methodology from Cooper (1988), Webster and Watson (2002), and vom Brocke et al. (2015). First, we present the process we followed to conduct our SLA in Figure 2.
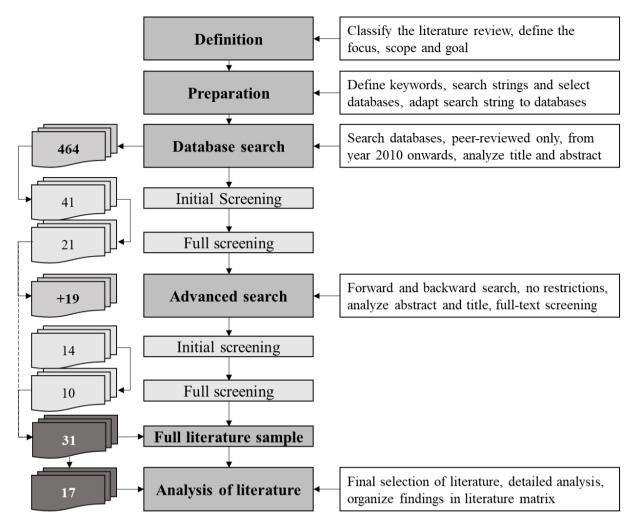
Figure 2. Research Approach

We started our SLA by classifying the review and setting the focus (see Table 1). Since we sought to overview relevant literature and derive propositions for ethical PSD, we focused on integrating the results, shedding light on potential shortcomings, and formulating constructive criticism. Our SLA adopted a selective and explorative scope.

Table 1. Systematic Literature Analysis Classification

Characteristic	Category		
Goal	Integration	**Criticism**	Central topics
Scope	Representative	**Selective**	**Explorative**
Focus	**Outcomes**	Designs	Theories
Structure	Historical	**Thematical**	Methodical

While such a scope may seem contradictory, we followed an explorative approach to select topics and research areas, which explains the hybrid scope of our SLA method. Due to our goal, we focused mainly on the designs and outcomes of the analyzed literature. Next, we continued our SLA preparation by selecting databases, defining relevant keywords, and formulating our search string accordingly. Since our SLA adopted a hybrid scope, we decided to search multiple databases, which included those that may not be an obvious choice for traditional IS research. To clarify our choice, ethical PSD concerns the e-health and psychology domains, both of which examine people's wellbeing. Therefore, we decided to also include the PubMed/NCBI database in our SLA. To summarize, we searched the following databases to extensively understand the existing interdisciplinary literature on the topic: AISeL, ACM, IEEEXplore, Emerald, JSTOR,

PubMed / NCBI, ScienceDirect, and SpringerLink. As restraints on our search process, we only considered peer-reviewed publications and papers that appeared after 2010 to provide a timely overview.

As we discuss in previous sections, the gamification, gamblification, and nudging concepts pertain to PSD. Consequently, we included these terms as keywords. Further, we included "ethic" as a keyword in our literature search to account for our core topic of ethical considerations. Here, we opted for this and only this specific keyword because it encapsulates related concepts as we explain in Section 2. Next, we formulated the following final search string, which we adapted to each database's or search engine's unique characteristics (e.g., we included wildcards if supported): "(persuas* OR gamif* OR gambl* OR nudg*) AND ethic*".

Our initial search by title and abstract resulted in 464 potentially relevant papers. In this first step, we kept articles that referred to ethics, values, or morals in either title or abstract, which reflect our ethical boundaries as we explain above in the PSD context. Next, we screened the papers in detail for relevance (i.e., did they include PSD or related concepts and implications relevant to ethical PSD) and conducted a forward and backward search for further relevant literature (Webster & Watson, 2002). Likewise, we screened potentially relevant papers in detail with similar criteria to screening papers by title and abstract. The screened papers needed to discuss ethics, morals, or values in the PSD context. We kept those papers that directly acknowledged and addressed ethical issues on the PSD topic or related concepts (i.e., pointing out issues or proposing solutions). Finally, we organized all relevant literature in a literature matrix (Webster & Watson, 2002) in which we also described the application domain and derived our findings. We coded our results for ethical PSD (see Table 3) according to the described characteristics, concerns, and considerations we found in the literature. Thus, we consolidated the results according to their description and characterization from the literature.

3.2   Interview Study

In addition to the SLA, we also conducted 20 interviews to complement our knowledge foundation with a more practice-oriented perspective and add real-world implications from individuals (i.e., regular people/users). We show the process we followed to prepare, conduct, and evaluate the interviews in Figure 3. In conducting the process, we followed Mayring (2016). To construct our interview guidance and questions, we adapted the methodological suggestions from Gioia et al. (2013).

By supplementing our analyzed literature with interviews, we add important knowledge, such as people's individual attitudes, motivation, personal values, experiences, and expectations (Flick et al., 2019). Adding real-world insights from interviews strongly contributes to our resulting considerations as they provide a more holistic perspective on what ethical considerations for persuasive system design one should account for—an important consideration given that ethical persuasion has yet to receive wide research attention and supporting theory with qualitative research (i.e., interviews) can reveal new knowledge (Flick et al., 2019; Witzel, 2000). To construct our interview manual, we follow the problem-centric approach that Witzel (2000) introduced and suggestions from Mayring (2015) and Mayring (2016). Since we already worked out the area of interest by conducting our SLA, we consequently directly constructed our interview questions along the identified persuasion and ethical factor dimensions. We tested our interview manual with a short pretest before conducting the actual interviews with participants.

With regard to the content and questions of our interview study (see Table A1), we focused on our participants' attitudes and behavior. In the first section about attitudes, we include questions on the expectations, demands, and desires of our users when using or interacting with IS. Further, we questioned our participants on the topics of independence and decision-making as well as social interaction and social pressure. Moreover, we included questions that directly targeted motivation (i.e., PSD with a focus on gamification). For the second section, we focused on security, privacy, and related unethical designs with their consequences. Here, we deliberately chose to include privacy as a use case or scenario as one can expect most people to have gathered negative experiences in this area. Moreover, security and privacy represent a tangible and relatable scenario for users as both topics are omnipresent when browsing the Internet on a day-to-day basis, particularly for younger generations (e.g., digital natives).

In particular, when navigating the digital world (i.e., information systems and the Internet), users confront many dangerous instances in which other actors can misuse their data. Often, an unethical design such as dark patterns can persuade users to disclose data or agree to unfavorable settings (e.g., cookie settings, agree to all). Thus, we use this case as a surrogate to investigate users' perspective on (un)ethical

persuasion including their attitudes, behavior, feelings, perception, and what possible improvements users could imagine or would like to see.
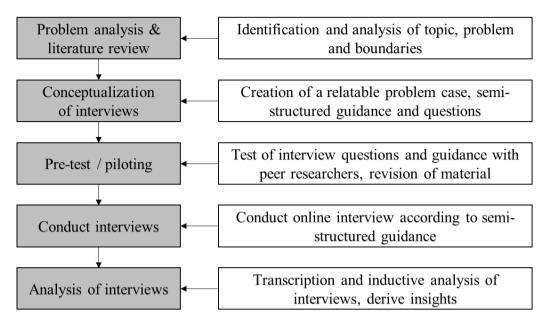
Problem analysis & literature review	←	Identification and analysis of topic, problem and boundaries
Conceptualization of interviews	←	Creation of a relatable problem case, semi-structured guidance and questions
Pre-test / piloting	←	Test of interview questions and guidance with peer researchers, revision of material
Conduct interviews	←	Conduct online interview according to semi-structured guidance
Analysis of interviews	←	Transcription and inductive analysis of interviews, derive insights

Figure 3. Interview Study Process (Adapted from Mayring, 2016)

As for the interview participants, we focused on selecting a diverse set of participants (i.e., similar distribution across demographic factors, which included a roughly equal distribution between younger and older participants) (see Table A2). Further, we focused on gathering roughly 20 participants since this number satisfies the minimum recommended sample size (depending on the source, researchers recommend 10 to 15 participants) for general qualitative interview studies) (Francis et al., 2010; Mason, 2010). Overall, we managed to gather exactly 20 participants. In our sample, we had an equal distribution between both genders (10 males and 10 females); furthermore, on average, our participants were 40.2 years old (population average age is 44.5). Our subjects had diverse backgrounds with regard to their education and occupation, with almost equal distribution between university-educated participants and non-university-educated participants (i.e., high school, job training). We found an occupation bias in the subjects toward trained employees, undergraduate students, and doctoral students. We chose these subjects to reflect users who varied in background and personal experience and, thus, obtain more generalizable results.

The interviews, which we conducted online using popular tools such as Zoom, Microsoft Teams, or Skype (depending on what each subject preferred), lasted for about 30 minutes each. After a short introduction, we asked the subjects the main questions. Afterwards, we used the MAXQDA software to transcribe the interviews, which we analyzed by hand with the goal to work out similarities, significant differences, and overarching topics. We coded the results using an inductive approach. In this regard, we followed Mayring's (2015) approach in which one first generalizes interview material before consolidating it in two reduction steps into resulting statements and insights. To ensure validity, we took detailed documentation and ensured inter-subject traceability (Bortz & Döring, 2016). We also conducted communicative validation (Mayring, 2016) by discussing the results in our research group and with external researchers with expertise in qualitative research. Lastly, we compared these results to the results from our SLA and compiled propositions based on both inputs.

4　Results

In this section, we first briefly describe the status quo from the literature before we go into further detail. We then present ethical considerations from our SLA and insights from our interview study.

4.1　Status Quo in Research

From our SLA, we identified 17 relevant papers (four of which resulted from the forward and backward search process). We display the literature findings in Table 2. We categorized our findings using the related PSD concepts. Additionally, we described each paper's application domain to better overview our results. We consolidated some domains with similar characteristics (e.g., business and economics; information systems and technology). For example, we combined business and economics (including trading and enterprise) domains due to their overall similar characteristics regarding the greater goal to create value even though they differ in characteristics such as scope or scale. Moreover, we included the law and policy (LP) category to help researchers and practitioners who deal with such issues on PSD directly overview relevant studies. Furthermore, we included the major academic focus (AC) category to also distinguish between more practice-oriented and more theoretically oriented research. We did so to highlight a potentially existing gap between academic research and the actual practical PSD applications and real-world issues concerning ethics.

Table 2. Descriptive Literature Results

Author (year)	PSD topic				Domain of application						
	ND	GF	GB	LP	BE	AC	EG	HS	GG	TS	SP
Brown & Osman (2020)		X	X	X					X		
Hassan & Hamari (2020)		X		X		X	X				
Ho & Lim (2018)	X				X						
Humlung & Haddara (2019)		X			X	X					
Kim and Werbach (2016)		X				X					
Lades (2014)	X							X			
Lembcke et al. (2019)	X					X					
Lopez-Gonzalez & Griffiths (2018a)			X	X	X						
Macey & Hamari (2020)		X	X			X					
Meske & Amojo (2020)	X					X					
Pilaj (2017)	X				X						
Renaud & Zimmermann (2018)	X			X						X	X
Schubert (2017)	X				X			X			
Selinger & Whyte (2011)	X					X					
Sunstein (2016)	X					X					
Weiss (2019)		X				X					
Winkel et al. (2015)	X			X		X	X				
Total (*n* = 17)	10	6	3	5	5	10	2	2	1	1	1

ND = nudging, GF = gamification, GB = gamblification, LP = law or policy on PSD ethics (includes ND, GF, GB)
BE = business, economy, trading, enterprise; AC = strong academic focus; EG = e-government; HS = e-health, sustainability; GG = gaming, games; TS = information technology and systems; SP = security and privacy.

Concerning the PSD topics (i.e., concepts), studies most frequently referred to the ethics of digital nudging (n = 10) followed by gamification (n = 6); only three papers referred to gamblification, which suggests it has received little research attention and recognition (n = 3). Of the analyzed literature, we observe that more literature focused on policies or laws of ethical PSD (n = 5) than gamblification, while the latter has led to noticeable reactions, including bans from countries such as China. As such, we may see a potential rift between academic research and the real world, particularly about gamification and gamblification. Looking at the distribution of literature regarding the application domain reinforces this impression. Most studies we analyzed (n = 10) had a strong theoretical and academic focus (AC), whereas practical or at least context-related research represented the minority in our sample. Among these domains, the business, economy,

trading, enterprise (BE) domain emerged as most prominent result apart from AC. We can also observe that, in the BE category, digital nudging seems to play an important role. Similar to BE, digital nudging also seems to be the most prominent topic in the AC category with gamification coming in as the second most prominent PSD topic.

4.2 Ethical Considerations from Literature

In this section, we present condensed considerations that we derived from the analyzed literature (L#), which we show in Table 3. We structure these findings based on their central statement or essence and a description on which we will elaborate. In the analyzed literature, we found seven distinctive considerations or core topics on PSD ethics.

We can define the first finding (L1) as what we would call consciousness of intent. This finding refers to the intentions behind the implemented persuasion and addresses the ethical responsibility of being aware of the ethical implications of intentions. For instance, when persuading investors towards a specific behavior (e.g., Pilaj, 2017)—even for their own or general society's wellbeing—the intention must be clear and weighted against ethical standards, such as the investors' autonomy (i.e., the individual's autonomy). Thus, when implementing persuasive measures, designers should question their own intentions under the lens of ethical boundaries.

Next, as a second finding (L2), we describe how many PSD components a concept involves. This finding refers to the degree to which PSD is implemented in an IS and, thus, potentially impacts users' autonomy (e.g., freedom of choice), the IS's transparency, and the overall outcome for users. More precisely, overly aggressive PSD implementations may impose on users' needs (e.g., autonomy) in a way that may lead to unfavorable and unethical outcomes (Pilaj, 2017; Sunstein, 2016). Therefore, the extent to which an IS implements PSD should remain at an ethically acceptable minimum to balance factors such as autonomy, transparency, and the outcome for both user and provider (e.g., service providers such as Amazon or Netflix). Thus, when applying PSD, one should align it with ethical boundaries to not extend too far and potentially negatively impact users.

As the third finding (L3), we describe opt-in design, which also relates to anonymization. Due to the aforementioned encroachments on the users' needs, developers and designers should potentially consider an opt-in approach for PSD (e.g., Humlung & Haddara, 2019; Renaud & Zimmermann, 2018). By offering an opt-in design that transparently discloses its full intention and lets users autonomously decide to participate or not, they respect users' ethical boundaries and do not force or coerce them into complying with a task or situation. Such a design could be particularly useful when dealing with competitive PSD elements such as gamification in a professional environment where users may not want to participate or, at the very least, stay anonymous (Humlung & Haddara, 2019). Therefore, assuring anonymity and the possibility to opt out can have a positive effect on users' wellbeing as they can simply stop whenever they feel they may experience harm. While we argue that L3 pertains the most to gamification and, thus, likely also to gamblification, L3 also offers guidance for other persuasive design concepts. For instance, one could implement nudging elements as an opt-in choice and in scenarios where users may want to be nudged. As an example scenario, we imagine that e-health applications such as digital detox or sport applications could feature an opt-in nudge for users that want to receive additional persuasion to achieve their desired outcomes (e.g., using their smartphone less, doing more exercise).

The next finding we observe refers to ethical outcomes (L4), which considers the outcome for an individual and describes the need to keep the individual's outcome in mind even when using PSD for a greater good (e.g., sustainability) since one should consider outcomes even for single individuals (Hassan & Hamari, 2020; Renaud & Zimmermann, 2018; Sunstein, 2016). For instance, when using PSD to incentivize citizens' e-participation (i.e., e-government), one should consider the outcome for each individual citizen as such important decisions may prove detrimental to the individual's outcome if the individual gets persuaded to make an unfavorable decision.

Our fifth finding concerns potential exploitation (L5), which refers to designers' and developers' responsibility to not exploit their users. In the PSD context, exploitation can become an issue, especially with gamification, as users may perceive badly designed or implemented game mechanics as "unfair" and, consequently, negatively impact their wellbeing (Kim & Werbach, 2016; Winkel et al., 2015). Moreover, if designers implement monetarization as well, users may try to regain a level of "fairness" (i.e., level the "battleground") by financial means, which again presents a highly unethical design that can harm users' wellbeing. This theme is one ethical pitfall that may directly translate from the gaming world, where many publishers use

the so-called "pay to win" (P2W) method to exploit their customers for purely economic motives. In such a case, underperforming players who want a quick and easy solution may pay with real money to buy themselves an advantage in the game, which can prove problematic on multiple levels. For instance, the player buying such a P2W advantage could face financial and even psychological harm if the P2W solution does not work out as they expected. This could then lead to a vicious spiral where players double down in their investments to receive even more advantages but, in the process, inflict financial and potentially also psychological harm on themselves. Additionally, players who face P2W players may also perceive them as "unfair" and, in return, try to level the battlefield themselves by also paying real money, which continues and worsens the vicious cycle. Such a behavior induced by unethically designed PSD can ultimately lead to moral decay and, thus, to L6 (consideration for negative morals).

The consideration for negative morals (L6) relates especially gamification and gamblification. Because these PSD mechanics can rely on characteristics from gaming and gambling, potentially immoral outcomes may occur (Kim & Werbach, 2016; Macey & Hamari, 2020). For example, badly implemented PSD may lead to immoral and unethical gambling behavior in forex trading (Lopez-Gonzalez & Griffiths, 2018a). In this regard, L6 differs from L3 in the way that the situation described is entirely voluntary from the beginning. Consequently, PSD should not foster such immoral behavior. Circling back to the P2W case we introduced in L5, exploiting users may introduce the described vicious cycle and will ultimately lead to a complete moral decay, which cannot only cause financial and psychological harm but also remove any user restraints (e.g., recall the gambling behavior in forex trading case that we describe above). With a complete decay of morals, users could gamble without constraints, which could lead to severe financial consequences, particularly when users gamble with either reserve money or money that they do not own. Thus, designers should apply PSD in a way that does not lead to moral decay.

Lastly, we find that asymmetrical power dynamics (L7) between PSD designers or developers in IS and their user base exist (Hassan & Hamari, 2020; Winkel et al., 2015), which can become an ethical issue as the designers and developers can influence users' attitudes, behavior, and decision-making without being able to object in many cases.

Table 3. Results from Literature on Ethical PSD

No.	Name	Description	Source
L1	Consciousness of intent	When applying PSD, designers should question their intentions and be conscious of the implications. Thus, they should align their intent with ethical boundaries.	Pilaj (2017)
L2	Extent of ethics and PSD	Designers should consider the extent to which the design persuades the user and how it extends to ethical implications. Thus, they should seek a balance that ensures PSD outcomes and ethical boundaries.	Pilaj (2017) Sunstein (2016)
L3	Opt-in design, anonymization	A PSD may include competitive elements (i.e., gamification), which can demotivate noncompetitive users. Therefore, we recommend designers implement an opt-in design to not force users into an unethical coercive situation.	Humlung & Haddara (2019) Renaud & Zimmermann (2018)
L4	Ethical outcomes	PSD must keep users' desired outcomes in mind when persuading them towards a specific (third party) outcome (e.g., sustainability, politics).	Hassan & Hamari (2020) Renaud & Zimmermann (2018) Sunstein (2016)
L5	Exploitation	PSD must not abuse its persuasive effects to exploit users (e.g., financially or emotionally). Ethical boundaries should be ensured.	Kim & Werbach (2016) Winkel et al. (2015)
L6	Negative morals	Due to PSD's characteristics, a badly designed implementation can induce moral decay and foster potentially harmful habits (e.g., fostering a gambling culture in forex trading)	Kim & Werbach (2016) Lopez-Gonzalez & Griffiths (2018a) Macey & Hamari (2020)
L7	Asymmetrical power dynamics	Persuasive IS designers must be conscious of the power they hold to influence users' decision-making process and the implicit paternalism.	Hassan & Hamari (2020) Winkel et al. (2015)

4.3   Insights from Interviews

Compared to our results from literature, we found that some considerations matched with what our interviews revealed while others did not. Moreover, on a general level, we found a difference between age groups in that the age groups perceived some aspects as equally important but others are not. We summarize our general findings and the most important insights from the interviews (I#) in Table 4. These findings represent common themes that we derived from our interviewees and range from higher-level general concerns (e.g., I1) to specific concerns (e.g., I5). Note that, because the original statements are in German, we have condensed the translated quotes into representative quotes that highlight their original essence.

Table 4. Insights from Interviews

No.	Name	Description	Subjects
I1	General skepticism	Participants showed a general skepticism towards IS and the Internet. PSD should reassure safety, security, transparency, and autonomy to weaken skepticism	All
I2	Autonomy, free decisions	Participants expressed their need for autonomy and particularly freedom of choice regarding their informational self-determination and decision making	All
I3	Motivational affordances	Some participants voiced they would like ethical motivation in some form or shape, particularly for boring tasks for which they may easily lose motivation	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 17, 20
I4	Presentation	Some participants expressed their need for visual aesthetics and concisely presented information (i.e., transparency)	1, 2, 3, 4, 5, 6, 8, 9, 10, 17, 18, 19
I5	Transparent aid	Many participants expressed their desire to receive aid for complex decision making under the presumption that the decision architecture is fully transparent	1, 3, 5, 10, 14, 15, 16, 17, 18, 19, 20
I6	User awareness	Many users recognized providers' or companies' need for data and information. They also expressed a willingness to comply if the companies ethically respected their needs	1, 3, 4, 5, 6, 8, 9, 11, 13, 14, 15, 16, 17
I7	Concern for wellbeing	Some users have described negative impact on their wellbeing due to unethical PSD that have affected their emotional and psychological state	3, 5, 6, 20
I8	Social persuasion	Some participants described their need for social comparison and acknowledged that social factors can persuade them but also described their fear for unethical misuse of social factors	1, 2, 3, 4, 6, 7, 8, 9, 11, 12, 13, 15

The majority of our participants described having a rather vigilant, cautious, and skeptical attitude towards digital environments where persuasion may occur (I1). Participants expressed that, due to their past experiences (e.g., broken security, privacy not respected), they have grown to become very skeptical when interacting with IS and especially the internet. Both older and younger participants in our sample expressed having this skepticism, although younger ones also acknowledged that they could let their guard down on big platforms (e.g., Amazon). Since we used privacy as a surrogate and tangible use case, participants emphasized their skepticism in this regard. Many referred to badly designed cookies that persuade users to reveal data.

Furthermore, participants described a perceived lack of autonomy and freedom of choice (I2). In our surrogate use case, they most often described this lack in the context of choice architectures for disclosing personal information or consent forms of any kind. Participants felt severely harmed in their autonomy and self-determination due to limited or unfavorably preconfigured choices. This circumstance also relates to the perceived lack of transparency (I5) that our participants described for choice architectures as well. For example, some participants said that a "preselection of choice would be appreciated; however, oftentimes it is not revealed how the selection is done…, so I assume that it is not to my benefit, and this bothers me" (I1, I3, I7). Such non-transparent designs cannot only be observed in our privacy surrogate context but also in apps or platforms our participants regularly use, such as recommender systems (e.g., recommended content on streaming services). To address the existing issues, our participants voiced their ideas about how designers could implement ethical PSD as many saw the benefits of a mutually beneficial relationship between providers and users (I6). For instance, two subjects (I1, I5) said that "if I can have everything

personalized, structured, and according to my interests…, that would be a gigantic advantage for me" while at the same time acknowledging that companies would most likely require personal data to do so.

While participants realized the benefits they could receive when collaborating with a provider, they remained skeptical due to past experiences with unethical PSD that harmed their wellbeing (I1, I7). Two subjects specifically described unethical design with regard to instruments that could influence their decision making and said, "If I notice settings, recommendations or other design instruments to get me to do something and influence me, I absolutely dislike that" (I11, I14). They also concluded that "all in all I remain cautious and skeptical because of such problematic designs and preconfigured settings".

In one extreme case, a young participant even expressed emotional and psychological trauma caused by unethical PSD that impaired the participant's autonomy and self-determination (I2). In this context, one subject said that "it is an emotional and psychological burden in my daily life and wellbeing" (I5) while referring to unethical designs in social media and data or privacy topics. While this finding highlights potentially severe consequences for the individual, we also want to stress that only one subject described such severe consequences.

Moreover, many participants described the potential to create a more fun and engaging experience using PSD (I3). The younger participants in particular expressed their desire for an enjoyable experience via gamified elements such as small challenges, competition, or comparison in addition to added visual components. For instance, subjects acknowledged that "sometimes I just need some additional motivation to deal with some topic or task" (I6, I8) and that "of course some gameful design can be really fun" (I2, I3). However, subjects also said that, while motivating design is important, it should not be overwhelming and impede the main task or overload information, which could be very stressful (I2). In contrast to younger subjects who expressed fondness for motivational design, older subjects acknowledged the importance of motivation such as "motivation is very important for me so that I keep doing something and be motivated for the next time" (I11, I15) but did not see benefits in design. For instance, one subject said that "seeing progress is very important to me but such design would make me feel like being externally controlled" (I15).

In this context, most young participants mentioned social comparison or social persuasion (I8) as a consideration for ethical PSD. While this factor can motivate them, they also voiced their concern for unethical misuse and forced social competition. Older subjects in particular expressed skepticism and opposition to social persuasion and said that "such designs lead to herd mentality, which can lead to dangerous results…, and, by the way, I'm also no lemming" and that they "fear social manipulation by others, even if it is my peers" (I11, I12, I13, I15). In contrast, younger participants said that "it could just be that it is essential for our generation to present ourselves online and compare ourselves with each other" (I1, I3, I4). In some cases, participants expressed they feared missing out more than unethical social persuasion. Two subjects even said that "if one of my friends buys something new and shares it online, sometimes I also need to buy that. I do feel pressured, but I also want to stay on par with my friends" (I7, I8).

Moreover, almost all young participants and some older ones expressed their desire for a visually pleasing experience that also should present relevant information as concisely as possible (I4). While neither the literature nor older participants reflected this finding, it could point towards a potential research gap on another PSD dimension that focuses on visual aesthetics (i.e., creating a unique or desirable experience for users). On the one hand, older participants voiced concerns and preferred the design to be kept as simple as possible and that design should be user friendly without pitfalls (I17, I18, I19). Subjects referred to pitfalls as potentially dangerous, unethical, judicial, or otherwise potentially harmful designs or functions that would not be beneficial for them. On the other hand, younger subjects preferred designs that "visually prepare information…and offer interactions" (I2, I3, I6, I8, I10) and "include graphical elements in general" (I10). In general, younger participants voiced a strong preference for visually pleasing experiences. For example, subjects said that "the most important thing is a simple and beautiful presentation…and maybe something special, some special presentation" (I1, I3, I4). While participants emphasized the importance of the design and presentation, many participants could not give specific details.

Summarizing our findings from our interview study, we find that designs with persuasive characteristics can lack autonomy (I2) and transparency (I5) according to the majority of participants, which could produce a tilted outcome that most often results in unethical and undesirable effects for users that can negatively impact their wellbeing (I7). In this context, one subject described emotional and psychological damage. While this finding highlights the potential for persuasion to result in severe consequences, we also want to stress that this finding pertained to only a single subject. Nevertheless, due to the severity, we decided to include this finding in our results.

With regard to our results from the literature, the findings from the interviews highlight the responsibility developers and designers have with the existing asymmetrical power dynamics. However, we could not pinpoint any concerns regarding negative morals of designers or developers from our interviews. A possible explanation could be that we did not push or specifically asked our interviews for this point. It could also be possible that our participants simply lack awareness or interest in designers' and developers' negative morals. Furthermore, we also assume that it resulted from our participants' desires and the fact that they lacked gambling experiences since we derived this consideration from gambling or gamblification mechanics mainly during our SLA. Overall, summarizing these findings, we can safely say that autonomy, transparency, and outcome severely lack balance with bias towards the needs of the provider or vendor (e.g., Amazon, Netflix) as described by both analyzed literature and interviews.

5 Propositions for Ethical Persuasive System Design

In this section, we develop six propositions (P#) for ethical PSD from both our SLA and interview study (see Table 5) to compile results from literature and interviews in a way that integrates both. Thus, some propositions may reflect only findings from literature or interviews, while others may reflect both. We chose this method to include all our derived findings to provide a more extensive set of propositions for researchers and practitioners.

The first proposition mainly originates from L7. We repeatedly found comments in the literature that designers and developers should be aware of the implications of their design choices, particularly because of the existing asymmetrical power dynamics, as highlighted in recent research (Hassan & Hamari, 2020; Winkel et al., 2015). Indeed, some interview participants who recognized PSD's potential benefits and revealed their information in our scenario noted this power asymmetry and how providers/designers seem to be not fully aware of it. Thus, we raise our first proposition (P):

P1: Designers and developers that use PSD should be aware of the existing asymmetrical power dynamics that enable them to influence users' attitude, behavior, and decision making, and, thus, ultimately impact their outcomes and potentially harm their wellbeing. Therefore, responsible and ethical PSD requires constant awareness of these asymmetrical power dynamics.

Table 5. Propositions Overview

No.	Name	Short description	Origin
P1	Awareness	Importance of developer and designer awareness for applying PSD	L1, I1, I7
P2	Outcomes	Alignment of outcomes with ethical and individual concerns and needs	L2, L4, L5, I1, I5, I8
P3	Choice	Consider users' needs when designing the choice architecture	L7, L4, L5, I1, I5
P4	Autonomy	Provide freedom and autonomy, use opt-in design	L3, L5, I2
P5	Transparency	Balance transparency between users' needs and PSD effects and effectiveness	L2, I1, I2, I4, I5, I6
P6	Motivation	Choose PSD elements that do not foster immorality but provide aesthetically motivating design	L6, I3, I4, I6, I8

In the real world, one cannot implement L1 in any system. Instead, P1 refers to the development stage when one applies PSD to a system or designs one. Therefore, designers or developers who want to apply PSD should consider P1 in their design or development process and be aware that their actions can have significant consequences for users. Therefore, designers/developers should consider this asymmetrical power dynamic during the design or development process.

From the literature, we found that PSD is inherently outcome oriented as PSD itself can help users achieve their desired outcomes. However, we also found that providers can misuse PSD in unethical ways for their own benefit (e.g., economic outcomes) at the expense of users' outcomes and wellbeing. We confirmed this finding from the literature as our participants repeatedly voiced their concerns about unethical misuse at their expense. For instance, we found research that used PSD to facilitate ethical financial investment decision (e.g., Pilaj, 2017). While using PSD in this way may constitute an honorable venue for the greater good (i.e., outcome for society), the individual may not achieve the desired outcome (i.e., high returns on their investment), which raises questions about ethical outcomes. Therefore, we present our second proposition:

P2: Outcomes should be aligned with ethical boundaries in general but also on an individual basis. Therefore, a fair approach to PSD should be kept in mind that does not exploit users regardless of context—not even for the greater good.

Looking at the literature, properly set ethical boundaries can be especially important in scenarios where designers use competitive PSD elements that users could perceive as exploitive as they may feel coerced to participate. Therefore, PSD should be kept within generally agreed-on ethical boundaries. Such boundaries could be aligned with the ethical boundaries we have established in Section 2.

Another very important finding from both literature and interviews concerns the need for autonomy and freedom of choice. We found overwhelming support for this sentiment in research (e.g., Kim & Werbach, 2016; Thaler & Sunstein, 2008; Winkel et al., 2015), which our interview participants also confirmed since both themes emerged consistently in their answers. However, our interviews revealed that users would also willingly forfeit some autonomy and freedom of choice if they can profit from it. For instance, when presented with complex decisions, many users expressed openness to having fewer choices if they could understand why and how that happens. Accordingly, we present the following proposition:

P3: Provide sufficient autonomy to the user to ensure self-determination and freedom of choice. However, be as concise as possible and potentially narrow down choices that align with users' needs and communicate the process to them even if that means limiting autonomy in the process.

While this proposition applies in general, how much autonomy one provides to users may depend on the context or application area. For example, formal settings may not allow for high autonomy by design due to certain rules and security measures. In contrast, an informal setting (e.g., personal use, sport, entertainment) may not have strict limitations and allow for high autonomy. Therefore, when considering P3, one should consider the application area as the possible degree of autonomy depends on the context in question.

Furthermore, both literature and interviews also revealed that users may value anonymity and the freedom of choice in the sense that they may wish to not engage in PSD-related activities by default. Nevertheless, the option to engage at a later point should be present. Therefore, we present the following proposition:

P4: Implement PSD as an opt-in design to give users free choice to engage in the persuasion. Moreover, anonymity can support this design by letting users remain unrecognizable until they choose otherwise.

Many researchers emphasize the need for more transparent PSD (e.g., Pilaj, 2017; Sunstein, 2016). Lembcke et al. (2019), for example, argue that designers should disclose nudges, or, in this context, persuasive design. Results from our interview study heavily support this finding as practically all participants voiced their desire for more transparency, particularly when they needed to make complex decisions. This can become a problem as we find a paradox. On the one hand, users demand more transparency because, otherwise, they can lose trust in the IS and grow to become increasingly skeptical towards PSD and IS. On the other hand, the literature suggests that transparency can hurt PSD's outcome orientation, which includes beneficial outcomes for users (Friestad & Wright, 1994). Carried to the extreme, awareness of persuasion can even lead to negative effects and reverse outcomes such as negative attitudes towards products or services that may not be harmful but sometimes even beneficial for users (van Reijmersdal et al., 2010). As consequence, we present our next proposition:

P5: Ensure a sufficiently high transparency level for users to understand the underlying PSD mechanics (e.g., choice architecture trough PSD), but do not reveal unnecessary details, as too much transparency may negatively prevent ethical persuasion from helping users achieve their goals.

This proposition can help providers to gain their users' trust. In turn, users would be more willing to provide necessary information or data and receive benefits in turn that still respect ethical boundaries. Moreover, an instantiation of P5 (i.e., describing mechanisms) could be complemented with P4 (i.e., let users choose mechanisms). Explainable AI represents one such application that could gain importance in the future. For example, considering advanced decision-support systems, we can expect AI to play an increasingly important role in the future. However, given that AI constitutes a black box, users may perceive it to lack transparency.

Motivation emerged as another consistent theme in both the literature and interviews. Our participants described motivation as an important factor, and our interview participants stated that they sometimes wished for additional motivation, especially for boring or unlikeable tasks. These statements concur with our findings from the literature. Both findings emphasize the motivational characteristics and benefits of PSD concepts such as gamification. Some interview participants even described what mechanics they would appreciate (e.g., progress, challenges, comparison). Moreover, participants (especially the younger ones) indicated they would appreciate a visually pleasing and aesthetic presentation, which would further motivate them to engage with an IS. From an ethical perspective, we find that fairness and the risks of inducing negative morals pose major ethical issues. Therefore, we propose the following proposition:

P6: In order to motivate users, PSD should be fair, not foster negative morals, and present users with adequate mechanics (e.g., progress) in a visually pleasing and aesthetic fashion

6 Discussion

Circling back to the beginning and our RQs, we can conclude that ethical issues and consideration for PSD in IS constitute a relevant topic in current research streams. These streams cover various domains (e.g., finance, health) but seem to still exhibit bias towards purely academic research, according to our SLA. Here, we intended to present additional value by including interviews to cover the perspective of individuals who use IS that feature PSD.

Our study reveals that, while literature and interview results match, some rift between the academic and real world may still exist. For instance, our interview participants repeatedly noted that they could understand the provider or corporate perspective but, due to bad experiences with unethical PSD implementations, have become rather skeptical. We did not find any mention in our examined literature or any other source that the corporate world recognizes this circumstance. Furthermore, we observed that our propositions all more or less relate to the autonomy and transparency concepts. Looking at these results from a theoretical lens, conceptual approaches such as the needs-affordance-features perspective (Karahanna et al., 2018) may prove useful to develop grand theories for ethical PSD in IS. We assume that future research will address this point.

In this context, we also highlight potential research gaps and future directions for ethical PSD. Our interview study revealed some significant differences between different age groups in our participant sample. Therefore, we suggest that future researchers should investigate demographic-specific factors for ethical PSD design. They may examine age as we did but also gender or cultural background, which we did not investigate in our study. Additionally, while research on ethical PSD continues and contributions including frameworks and design guidelines emerge, we still require more work that empirically validates existing frameworks and guidelines (Meske & Amojo, 2020). Furthermore, empirically validating the results and creating novel, ethical PSD artifacts using our propositions may be a worthwhile research project as doing so would strengthen our results from literature and interviews with empirical results. Therefore, future research should not only focus on theoretical contributions but also translate those contributions into practice and evaluate them accordingly.

As with any study, our research has limitations. First, in our SLA, we may have missed some relevant literature. For example, we did not specifically include conversational agents or any AI-related research in our search process, which can have some persuasive characteristics. While we acknowledge the significance of these topics and equally existing ethical issues, we argue that these topics fall outside our scope here. Nevertheless, future research should take a detailed look at the persuasive characteristics of conversational agents and how these systems could have unethical implications for their users. Furthermore, we only included "ethics" as a search term in our SLA, while other terms may also refer to ethical issues. Thus, we may not exhaustively cover the literature on related concepts such as "values" or "morals". However, as we explain in Section 2, ethics refers to a common concept with a shared understanding and, thus, should cover the most relevant research, which we also extended by conducting a forward and backward search.

With regard to the interview study we conducted, although we selected a diverse set of 20 interview participants to present generalizable results, we may have a selection bias regardless. Since many participants we selected had an academic background and an occupation related to having an academic background, our sample may not reflect the general populace to the fullest extent. Furthermore, during our interviews, we did not focus on a specific case or context. We followed a case-/context-agnostic approach since we focused on investigating this topic from a general point of view. Moreover, we described the

application domains in our SLA, but, because of our case-/context-agnostic approach, we did not do investigate any domains in depth. Here, specific considerations for PSD may have to be drawn, and we want to encourage researchers to investigate specific domains, contexts, and cases in future research. Nevertheless, we acknowledge this potential limitation and how our results may not apply to a more sensitive case or context (e.g., e-health, finance, e-government). We also highlight that our participants have a Western cultural background and results may vary in a sample with a different cultural background. We argue that work that examined different cultural backgrounds would represent a worthwhile undertaking to help achieve culture-sensitive ethical PSD (Ernst et al., 2016), such as by adapting existing methodologies for developing culture-sensitive IT artifacts (Janson et al., 2022). Similarly, a general demographics-based approach for individualized ethical PSD could be a worthwhile effort for future research.

Concerning the results, we point out that, on the one hand, we found generalizable results based on both interviews with our diverse subjects and findings from the literature. On the other hand, some findings from our interviews may not be generalizable. For instance, one subject described severe emotional and psychological damage from persuasive systems. While such damage can concur with the implications from some former research (e.g., Kroll & Stieglitz, 2019; Baldwin, 2014; Kim & Werbach, 2016; Brown & Osman, 2020), this particular result may have limited generalizability. Regardless, we emphasize that the potential to harm users when PSD does not concur with ethical boundaries can be extensive. Thus, we encourage researchers to consider ethics in their research when employing persuasive design or technology. Practitioners in particular should also remember ethical boundaries when designing persuasive systems.

7   Contributions and Conclusion

Our research makes two contributions to research. First, we provided an overview on the status quo of research on ethics for PSD. For this purpose, we conducted an SLA and presented our results in a concept matrix. We found that current research is strongly driven by and focused on academic concerns that may not fully align with the real world as real-world application domains make up the minority of literature in our review. This misalignment may suggest a potential rift between research and the real world. Moreover, while we found certain application domains, we did not investigate them in depth as it fell outside our scope in this research. Therefore, we encourage researchers to focus on real-world applications and domain-driven research in the future. Moreover, we found an uneven distribution for the PSD topics or concepts that we investigated: digital nudging emerged as the most prominent one, while gamification and particularly gamblification lacked representation in current research on ethical PSD. Considering the potential negative effects of gamification and more so gamblification, future research should address this gap. Moreover, we found few studies investigating the effectiveness of nudging versus gamification and/or gamblification and the implications of potential differences in effectiveness. Thus, based on these findings, we highlight potential research gaps and opportunities for future research in the discussion.

Second, we consolidated the results of our review (RQ1) and our interview study (RQ2) to derive six novel propositions for ethical PSD. In doing so, we addressed our RQs and, thus, address our overarching research goal. To derive our propositions, we first derived existing considerations from the literature and individuals from our interview study. Here, we found that our findings from literature and interviews share a common theme. We then consolidated both findings into our propositions among which five directly relate to design, while P1 concerns the design process. In this regard, P1 emphasizes the need for designers and developers to consciously acknowledge their influence on the design and, hence, individuals' decision making. The design-related propositions P2 to P6 can be translated into features or mechanisms that can be implemented in persuasive IS. We have highlighted potential use cases and examples for such an implementation and hope that practitioners in particular find them useful. From an academic point of view, we hope that fellow researchers can draw on our propositions to further develop the ethical fundamentals for PSD in IS, such as for specific cases, contexts, or application areas.

Overall, we hope our propositions will prove useful for academics and practitioners alike to implement more ethical PSD in IS. We also hope that researchers will use our propositions as a basis for further research towards a generally acceptable gold standard for ethical PSD that could serve as the basis for laws and policies to protect individuals.

Acknowledgments

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Appendix A: Supplementary Material from the Interview Study

Table A1. Interview Script

General
• What is your age and gender? • What is your education & occupation? • Would you describe yourself
1. Attitudes
1.1 Expectations, demands, desires
• How should topics, tasks, etc. that you do not like be presented to you? (i.e., how would you like to be persuaded) • How would you be willing to interact or engage with something more intently? (i.e., how could you be persuaded towards an outcome) • Do you have examples, cases or experiences?
1.2 Independency and decision making
• How important is it for you to be able to do or decide things on your own? • When, where or how would you like to be assisted in your decision making [instead of doing that on your own]? • Do you have any examples, cases or experiences?
1.3 Social interaction and social pressure
• How important is social comparison for you? (by age, gender, performance, etc.) • How often/much do you tend to compare yourself to others private and professional (e.g., on the job, sports, competition, etc.) • How does the behavior of others motivate you? (e.g., you see others succeed and want that too?) • How do you align your own behavior with the people in your social environment
1.4 Motivation and challenges

• Do you have an intrinsic drive to improve yourself (continuously) in a private and/or professional sense? If so, how and where?
• How success-oriented would you consider yourself?
    o How would you define a typical sense of achievement? (motivation)
    o How would you describe you could be motivated to succeed?
    o How important is it for you to receive appreciation/recognition for success?
• How would the possibility to compare yourself to others in a digital environment (i.e., IS) influence your motivation and/or engagement?
• Do you know examples for this?
• How would it influence (demotivate) you to know that your colleagues, friends, etc. perform better than you (soc. comparison) with regard to motivation / engagement?

2. Behavior
2.1 Security

• How carefree do you navigate in the digital world?
• Do you question your behavior and decisions in the digital world?
• What dangers do you recognize when navigating the internet?
    o What specific concerns do you have? (law, ethics, privacy/data?)
    o What does that mean for your personally?
• What makes you to ignore potential dangers? (i.e., unethical designs)

2.2 Unethical designs
• What potentially unethical designs have you observed? • Does the IS, internet sites, etc. that you use make any effort to convey whatever they try to achieve in an ethical fashion? (e.g., hints, highlights, etc.) • How do you personally perceive this and what feelings do you get (positive or negative)? (i.e., from manipulation, motivation, etc.) • What do you think is the intention behind these designs? • What do you think should be done to improve these designs (i.e., make them more ethically acceptable)?

Table A1. Interview Script

Privacy (use case)
• What do you associate with privacy in the digital space? • Do you even think about this topic? If so, how? If not, why not? • Do you think better design (i.e., ethical PSD) could positively impact your behavior and experience in this regard? • What influence do you think transparency has this this regard? • Would you be more willing to disclose more private information if the IS were ethically designed (e.g., PSD, privacy, etc.) and used for better optimization/individualization
Other
• Is there anything else you would like to share? • What do you wish for in the context of the topic for the future?

Table A2. Interview Participants Demographics

Subject	Gender	Age	Education	Occupation
1	F	22	High school	Student
2	F	25	Training	Employee
3	F	31	Master	PhD student
4	F	28	Bachelor	Student
5	F	28	Bachelor	Employee
6	M	25	Bachelor	Student
7	M	31	Master	Employee
8	M	28	Training	Employee
9	M	32	Master	PhD Student
10	M	26	Training	Employee
11	M	53	Training	Employee
12	M	51	Training	Employee
13	M	46	Master	Employee
14	M	40	High school	NEET
15	M	53	Master	Employee
16	F	54	Master	Entrepreneur
17	F	58	Training	Employee
18	F	56	Training	Employee
19	F	59	Training	Employee
20	F	58	Master	Self-employed

About the Authors

Dennis Benner is a doctoral researcher at the chair of information systems at the University of Kassel, Germany. He obtained his MSc from the University of Göttingen, Germany. His research focuses on the design of conversational agents, persuasive systems, digital services, and digital education. His research has been presented at leading information systems conferences such as the International Conference on Information Systems.

Sofia Schöbel is an assistant professor in information systems at the University of Osnabrück. She has written her PhD about gamification in digital learning from the University of Kassel. Her research focuses on persuasive system design, designing smart personal assistants, digital transformation of services, and the design of interactive processes in digital learning. Her research has been published in different outlets such as the *European Journal of Information Systems*, *Communications of the AIS* and in leading information systems conferences such as ICIS or ECIS.

Andreas Janson is a Postdoctoral Researcher at the Institute of Information Management (IWI-HSG) at the University of St. Gallen, Switzerland. He obtained his PhD from the University of Kassel, Germany. His research focuses on service design, smart personal assistants, decision-making in digital environments, and digital learning. His research has been published in leading information systems and management journals such as the *Journal of the Association for Information Systems*, *European Journal of Information Systems*, *Journal of Information Technology*, and *Academy of Management Learning and Education*.

Jan Marco Leimeister is Full Professor and Director of the Research Center for Information System Design (ITeG) at the University of Kassel, Germany. He is furthermore Full Professor and Director at the Institute of Information Management, University of St. Gallen, Switzerland. His research covers Digital Business, Digital Transformation, Service Engineering and Service Management, Crowdsourcing, Digital Work, Collaboration Engineering and IT Innovation Management. He runs research groups and projects that are funded by the European Union, German Ministries, DFG, various foundations or industry partners. Prof. Leimeister teaches in several Executive Programs. He is a co-founder of several companies and serves as board member, consultant, coach and speaker for numerous companies.

Transactions on Human – Computer Interaction