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Abstract:

Online companies exploit mindless compliance during users' privacy decision making to avoid liability while not impairing users' willingness to use their services. These manipulations can play against users since they subversively influence their decisions by nudging them to mindlessly comply with disclosure requests rather than enabling them to make deliberate choices. In this paper, we demonstrate the compliance-inducing effects of defaults and framing in the context of a Facebook application that nudges people to be automatically publicly tagged in their friends' photos and/or to tag their friends in their own photos. By studying these effects in a Facebook application, we overcome a common criticism of privacy research, which often relies on hypothetical scenarios. Our results concur with previous findings on framing and default effects. Specifically, we found a reduction in privacy-preserving behaviors (i.e., a higher tagging rate in our case) in positively framed and accept-by-default decision scenarios. Moreover, we tested the effect that two types of justifications—information that implies what other people do (normative) or what the user ought to do (rationale based)—have on framing- and default-induced compliance. Existing work suggests that justifications may increase compliance in a positive (agree-by-) default scenario even when the justification does not relate to the decision. In this study, we expand this finding and show that even a justification that is opposite to the default action (e.g., a justification suggesting that one should not use the application) can increase mindless compliance with the default. Thus, when companies abide by policy makers' requirements to obtain informed user consent through explaining the privacy settings, they will paradoxically induce mindless compliance and further threaten user privacy.

Keywords: Default Effect, Framing Effect, Justifications, Injunctive Norm, Descriptive Norm, Privacy Nudge, Mindless Compliance, Informed Consent, Information Privacy, Decision Making, Photo Tagging, Facebook Application.

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1 Introduction

Companies can easily avoid fines for privacy violations if they obtain informed user consent. In this context, consent refers to a freely given, specific, informed, and unambiguous indication that a user has agreed to allow a company to process the user's personal data (Wolford, 2019). Companies have a major incentive to discourage users from extensively deliberating about privacy during the consent procedure since researchers have found that privacy concerns decrease users' intention to use online services (Pavlou, Liang, & Xue 2007). To this end, some technology companies and application developers have resorted to mechanisms that promote "mindlessness"—a state in which users behave like programmed automatons (Langer, 1989) who do not consciously scrutinize their options (Roberts, Thatcher, & Klein 2007) or generally remain vigilant about their decisions (Sun & Fang, 2010; Thatcher, Wright, Sun, & Zagenczyk, 2018). By obtaining mindless compliance, technology companies not only fulfill their legal requirements but also make it unlikely that users will become alert in terms of privacy, which, thereby, makes users more likely to comply with their request (Johnson et al., 2012; Petre, 2018). These mechanisms rely on the fact that individuals tend to favor compliance when responding to another entity's explicit request (Gilovich, Keltner, & Nisbett, 2010, p. 215).

To induce mindless user compliance and, thus, swiftly obtain informed consent, companies commonly use framing and default effects. Framing effects refer to irrational influences that an option's presentation has on a user's choice (Kahneman & Tversky 1984; Tversky & Kahneman, 1981), and default effects refer to irrational influences that an option's pre-selection has on a user's choice (Samuelson & Zeckhauser, 1988). We consider the compliance that framing and default effects induce mindless compliance because it merely relies on the framing type or default settings rather than a deliberate tradeoff between the risks and benefits of complying. For example, regarding privacy-related compliance, Johnson et al. (2002) and Lai and Hui (2006) independently found framing and default effects to have a significant impact on users' privacy decisions. Johnson et al. (2002) studied participants in a health survey and measured their willingness to receive notifications about other health surveys, while Lai and Hui (2006) studied participants in a website evaluation study and measured their willingness to receive a newsletter from the website. The researchers in both studies presented the decision as a checkbox with a label. They manipulated the framing via the wording on the label: they used "please send me newsletters" as the positive framing and "please do not send me newsletters" as the negative framing. For the default condition, they manipulated both the framing and the checkbox's status (i.e., pre-checked or not): in the positive default condition, when users clicked the "next" button without any changes, they accepted the request; in the negative default condition, when users clicked "next", they would reject it. Both studies found that framing and defaults had a separate and additive effect on users' decisions and that a positive default and/or framing led to higher levels of disclosure than negative defaults and/or framing. These results suggest that companies can use framing and default effects to induce mindless privacy compliance by manipulating user decisions in their own favor.

In order to obtain informed consent, companies often choose to add justifications for the different options they present to users. Social scientists have long established the causal effect that different types of justifications have on compliance in terms of norms (Ajzen & Fishbein, 1980). For example, Cialdini, Reno, and Kallgren (1990) found that people are less likely to litter in an environment with a single piece of litter than in an environment with no litter at all because the single piece of litter will remind them about the injunctive social norm that "one ought not to litter". However, people are more likely to litter in a fully littered environment because the descriptive social norm that "people do litter here" has more salience than the injunctive social norm, which causes a herding effect (Asch, 1956; Huang & Chen, 2006). Researchers have argued that default and framing effects occur because they represent an injunctive social norm (McKenzie, Liersch, & Finkelstein, 2006; Sher & McKenzie 2006). Therefore, analogous to Cialdini et al.'s (1990) findings, one could argue that a *justification* that presents a salient descriptive social norm could potentially override this injunctive social norm with a herding effect. However, researchers have not tested this analogy and, thus, the interplay between defaults/framing and normative justifications. These interacting effects, however, commonly occur when users make decisions about privacy consent online, and we need to explore them to guide user and policy decision making. In our study, we fill this gap by covering social norm-based justifications, but, for comparison, we also add another common type of justification: rationale-based justifications.

In their groundbreaking field experiment on rationale-based justifications, Langer, Blank, and Chanowitz (1978) showed that not only plausible rationalizations (i.e., "Excuse me, may I use the Xerox machine because I'm in a rush") but also placebic rationalizations (i.e., "Excuse me, may I use the Xerox machine because I have to make copies") can help generate compliance (allowing the requester to cut in line for a

copy machine) for small favors (five copies). For larger favors (20 copies), however, rationale-based justifications only result in compliance when they are plausible and not placebic. In this and the following studies, it remained unclear how the absence or presence of such compliance-inducing justifications interacts with framing and default effects on compliance. Importantly, researchers have only studied the effect with placebic justifications—in a justification-assisted privacy decision setting, such justifications are more likely to be incongruent rather than immaterial with respect to the prevailing framing/default. Moreover, researchers have only studied this effect with positive defaults—it remains unclear whether it can also cause compliance with a negative default (and, indeed, with positive and negative framing). We fill these two gaps in this study.

In particular, we address the following research question (RQ):

RQ: Do justifications *override* the mindless compliance effects of defaults and framing as Cialdini et al. (1990) suggest, do they *exacerbate* mindless compliance as Langer et al. (1978) suggest, or does this effect depend on the justification type?

To address this research question, we conducted an elaborate experiment in the context of a self-developed Facebook photo-tagging application. Researchers have often criticized default and framing studies for using hypothetical scenarios. Because such hypothetical scenarios lack real risks and benefits, they might not motivate users to elaborate on their preferences in the first place and, hence, exacerbate default and framing effects. In a privacy context, relying on such results can be more misleading since individuals make privacy decisions ad hoc under a situation's particular requirements (Lederer, Mankoff, & Dey, 2003). The privacy decisions we investigate involve consenting to (automatically) tagging oneself in one's friends' Facebook photos and tagging one's friends in one's own Facebook photos. To ensure ecological validity, users had to log in to their Facebook account through Facebook's official log-in buttons and, hence, perceived that their decisions had real risks and benefits.

Our experiment comprised a 2 x 2 x 5 design. We first introduce compliance biases through established default and framing conditions. To address the impact of justifications, we compared two types of justifications: one with a rationale (information about the possible positive or negative consequences of using the automatic photo-tagging system) and one with a descriptive social norm (fictive information on the percentage of study participants who use the automatic photo-tagging system) against a baseline of no justification. Each justification had a positive (pro-tagging) and negative (anti-tagging) valence condition.

In one aspect, our study uniquely differs from previous studies on justifications: while researchers have studied normative (Cialdini et al., 1990) and rationale-based (Langer et al., 1978) justifications in face-to-face scenarios, we used computer-mediated manipulations in our case. Our findings suggest that the compliance-inducing effects of defaults and framing persist in an ecologically valid privacy decision-making setting. Furthermore, we replicate Langer et al.'s (1978) finding on the compliance-inducing effects of rationale-based justifications. Our results further expand those findings by showing that even a conflicting justification that cautions users not to use the tagging application can increase their compliance with the positive default and that the effect also works to increase compliance with the negative default. Finally, we discuss the effect that normative justifications have on users' privacy decision making. Overall, our results demonstrate the potency of justifications in exacerbating mindless compliant behavior during privacy decision making.

This paper proceeds as follows: in Section 2, we discuss the literature and theoretical background. In Section 3, we describe our experimental setup. In Section 4, we present our results. In Section 5, we discuss our results. In Section 6, we discuss our study's limitations and potential future research directions. Finally, in Section 7, we conclude the paper.

2 Theoretical Background and Research Model

In this section, we first briefly cover related work regarding compliance and privacy decisions on Facebook. Subsequently, we describe how framing and default effects induce compliance and discuss the potential moderating role of justifications.

2.1 Collective Privacy Management on Facebook

Users sometimes overshare information on social media (Agger, 2015), which can have unintended consequences (Rose, 2011). Therefore, Facebook users employ various strategies to manage their interpersonal boundaries: they manage their relational boundaries (e.g., friending and unfriending), territorial

boundaries (e.g., untagging or deleting unwanted posts), network boundaries (e.g., hiding their friends list), and interactional boundaries (e.g., blocking other users or hiding one's online status) (Page, Anaraky, & Knijnenburg 2019; Wisniewski, Islam, Lipford, & Wilson, 2016). Pempek, Yermolayeva, and Calvert (2009) found posting and viewing photos among the top three reasons why college students use Facebook. A particularly interesting part of users' privacy-management practices involves their uploaded photos because they may depict other Facebook users (including their friends) as well. Facebook has a mechanism to explicitly indicate whether a photo contains a person called "tagging". Notably, Facebook users may "tag" not only themselves but also others in their own photos, and they can also tag themselves in others' photos¹.

The photo-tagging concept exemplifies "collective privacy management" (Cho & Filippova, 2016; Jia & Xu, 2016) since it collectively engages users in managing privacy-related information that impacts multiple individuals (Kolter, Kernchen, & Pernul, 2010; Puglisi, Parra-Arnau, Forné, & Rebollo-Monedero, 2015). Research has shown tagging other people in one's photos to be a contentious issue when a user has risqué or compromising photos of their friends in which they would rather not be tagged (Besmer, Watson, & Lipford, 2010; Hampton, Goulet, Marlow, & Rainie, 2012; Stutzman & Kramer-Duffield, 2010). At the same time, though, photo tagging can have beneficial effects: it builds social capital, increases group cohesion, and allows one to express one's identity (Hampton et al., 2012; Mendelson & Papacharissi, 2010; Russo & Nov, 2010; Stutzman & Kramer-Duffield, 2010). The tendency to tag photos also relates to users' perceptions about the tagging feature's ease of use (Kramer-Duffield, 2010), which means that a system that automatically tags photos (e.g., Stone, Zickler, & Darrell, 2008) can have substantial benefits.

We focus on photo tagging on Facebook in this study because it provides a realistic use case for studying compliance. To a large extent, users' preexisting personal privacy preferences govern their personal privacy decisions. In contrast, the interdependent nature of photo tagging decisions likely makes them more amenable to external influences, such as the perceived social norms among a user's friends. As such, framing, defaults, and our proposed moderators have a substantial opportunity to influence user compliance.

2.2 Compliance

As we mention in Section 1, online companies that process their users' personal data must obtain informed user consent to allow them to do so. In this study's context, users express consent through the compliance with the request to (not) automatically tag photos. In this section, we cover two perspectives on compliance: the normative perspective and the mindless compliance perspective. Subsequently, we discuss the compliance-inducing effects of defaults and framing and how justifications can influence this compliance.

2.2.1 Compliance to Norms

Findings in social psychology suggest that people do consider different norms such as personal, social, or situational norms, each of which can either be injunctive or descriptive (Cialdini et al., 2006; Cialdini, Kallgren, & Reno, 1991). These different norms can induce compliance, whether the norm be what the majority of people do (descriptive) or what others find appropriate or acceptable (injunctive) (Shaffer, 1983). Researchers generally agree that, in any given setting, these different norms compete for a person's attention (Higgins & Bargh, 1987). Cialdini et al.'s (1991) norm salience theory suggests that, in the presence of competing norms, people are more likely to comply with the most salient norm. This norm has to be *focal* to influence people's behavior (Cialdini et al., 1991, 1990; Kallgren, Reno, & Cialdini, 2000; Reno, Cialdini, & Kallgren, 1993).

For example, Cialdini et al. (1990) found that people are less likely to litter in an environment with a single piece of litter than in an environment with no litter at all because, they argue, the single piece of litter will make the injunctive social norm that "one ought not to litter" focal. However, they also showed that people are more likely to litter in a fully littered environment because, they argue, the descriptive social norm that "people do litter here" has more salience in a littered environment than the injunctive social norm. Interestingly, the injunctive social norm becomes focal again when someone makes an effort to clean the littered environment, and people's tendency to litter decreases accordingly (Cialdini et al., 1991, 1990).

In the privacy context, the IS literature has shown that both descriptive and injunctive norms can predict privacy behaviors. For example, Ju et al. (2019) showed that users who receive more information about a product's benefits (high injunctive norm) are more likely to grant permissions to a mobile app than users

¹ Tagging does not relate to account or photo ownership, so person A can even tag person B in a photo that person C posts. For the sake of simplicity, we focus on relationship dyads in this work.

who receive less information about its benefits (low injunctive norm). They also showed that participants who learn others share more data than what they do (positive descriptive norm) are likely to grant more permissions to the mobile app.

2.2.2 Mindless Compliance

An alternative view on compliance posits that it mostly occurs outside a user's mindful thought processes. An extensive body of research has investigated drivers for such "mindless compliance". Milgram's (1963) experiments most prominently sparked the discussion on the extent to which commands from an authoritative figure can move people to engage in harmful or potentially even lethal behaviors. Even though researchers have discounted the validity of Milgram's experiments today, Milgram motivated a substantial body of research that investigated compliance-inducing strategies that people can use without the special authority a researcher may enjoy (e.g., salespeople, charities, friends). Companies generally induce compliance through emotional and/or rational appeals.

In the privacy domain, mindless compliance to a disclosure request can adversely affect both organizations and users. For example, in the infamous Cambridge Analytica case, defaults influenced users' decisions to share personal information with rather unfavorable consequences. Facebook lost not only billions of dollars in its net value (Rodriguez, 2018) but also users' trust (Weisbaum, 2018). In fact, many users said that they did not remember giving permissions to the app that Cambridge Analytica used, which further indicates their mindless compliance (Cadwalladr & Graham-Harrison, 2018).

2.3 Inducing Compliance with Framing and Default Effects

In this study, we examine how framing and defaults affect users' compliance to privacy requests. Thaler and Sunstein (2008) have noted that one can use framing and default effects to nudge users in the desired direction. When applied to decisions such as organ donation, healthy eating habits, or energy saving, this "soft paternalistic" approach can lead to great social benefits. Likewise, in the privacy literature, recent work has employed nudges as a means to protect social network users' privacy (Acquisti, 2009; Balebako et al., 2011; Hull, Lipford, & Latulipe, 2011; Wang et al., 2014). However, one can question the ethical validity of nudges (even if they benefit society) since they might not reflect individuals' true preferences and, thus, can be perceived as manipulative. Furthermore, some researchers argue that defaults cause behavioral or cognitive biases, which threaten consumer autonomy (Smith, Goldstein, & Johnson, 2013; Solove, 2013). They consider default and framing effects harmful because, among other reasons, one often cannot avoid them: many (privacy) decisions must have a certain default setting, and a neutral frame does not exist (Thaler & Sunstein, 2008).

To deal with the default effect, one can set the default option to the choices most people are comfortable with (Johnson et al., 2012). However, Smith, Goldstein, and Johnson (2009) have noted that, in most consumer decisions, the desired outcome may differ for different individuals depending on their individual preferences. This criticism applies in particular to privacy decisions, which tend to vary extensively (Westin & Louis, 1991).

Thus, one cannot easily circumvent the fact that framing and default effects may move users away from their "true preferences" (John, Acquisti, & Loewenstein, 2011), and such a deviation between users' true and selected preferences will likely backfire and cause dissatisfaction, especially on social networks (Wang et al., 2011). Thus, in this paper, we focus on the compliance-inducing effects of defaults and framing.

2.3.1 Framing Effects

Research shows that the way one frames choice options can influence how people judge those options (Levin, Schneider, & Gaeth 1998). For example, people are significantly more likely to purchase a pack of ground beef with the label "75% lean" (positive frame) than if it had the label "25% fat" (negative frame) even though these two options logically equate to the same thing (Levin & Gaeth, 1988). Tversky and Kahneman (1981) first investigated this "framing effect" and explained it in terms of loss aversion: people have a higher tendency to avoid loss than to pursue gain. This aversion would imply that people are more likely to consent to something when one frames it negatively than when one frames it positively. Although some researchers have found results along those lines (Johnson, Bellman, & Lohse, 2002), most findings suggest the opposite (Johnson et al., 2002; Lai & Hui, 2006). This discrepancy may arise because loss aversion explains the effects of *goal framing* (Levin et al., 1998), whereas the framing of consent questions represents *attribute framing* (Lai & Hui, 2006).

One can also explain framing effects as normative effects. Sher and McKenzie (2006) demonstrate that people are more likely to use a positive frame when they have a positive attitude towards something and a negative frame when they have a negative attitude towards it. Conversely, a decision maker may interpret the positive or negative framing of a decision as representing the positive or negative attitude the requester has towards the decision (Sher & McKenzie, 2006). As such, the framing serves as a clue that relates to injunctive social norms (Cialdini et al., 1991, 1990; Kallgren et al. 2000). Injunctive social norms describe what an individual *ought* to do in a certain situation (as opposed to descriptive social norms, which describe what people *do*). Thus, a positive frame suggests an injunctive norm that supports an action, while a negative frame suggests an injunctive norm against an action.

In our study on Facebook photo tagging, attribute framing manifests in whether users have the option to apply the automated tagging procedure or rather the option *not* to apply the automated tagging procedure. Based on existing evidence (Johnson et al., 2002; Lai & Hui, 2006), different frames will induce different levels of compliance. Thus, we hypothesize that:

- H1:** A positively framed tagging request results in higher tagging rates compared to a negatively framed request.

2.3.2 Default Effects

The default option refers to the option that a decision maker will receive if they do nothing. Research shows that people are more likely to accept an option if that option is selected by default. In this regard, researchers have found a positive default to increase pension saving (Madrian & Shea, 2001), insurance signup rates (Johnson, Hershey, Meszaros, & Kunreuther, 1993), and organ donation (Johnson & Goldstein, 2003). Dinner, Johnson, Goldstein, and Liu (2011) present the *effort* of choosing the default as a potential cause for the default effect either in terms of physical effort (changing the default requires action; see Samuelson & Zeckhauser, 1988; Thaler & Sunstein, 2008) or mental effort (changing the default requires making a tradeoff that takes time and cognitive effort (see Tversky & Kahneman, 1974).

Another explanation for the default effect posits that, like framing, individuals perceive defaults as an injunctive social norm (i.e., an implicit endorsement from the requester), which nudges them towards accepting the default option (Dinner et al., 2011; McKenzie et al., 2006).

In our study on Facebook photo tagging, the default setting manifests in whether the Facebook will apply or rather *not* apply the automated tagging procedure if the user simply does not change the current setting. A pre-checked checkbox in the positive framing condition or an empty checkbox in the negative framing condition translates into the user accepting the auto-tagger by default. Conversely, an empty checkbox in the positive framing condition or a pre-checked checkbox in the negative framing condition translates into the user rejecting the auto-tagger by default. Based on existing evidence and given that different default conditions can induce different levels of compliance (Johnson et al., 2002; Lai & Hui, 2006), we hypothesize that:

- H2:** An accept-by-default tagging request results in higher tagging rates compared to a reject-by-default tagging request.

2.4 Justifications as Moderators for Mindless Compliance

During privacy consent decisions, companies often provide additional information about the different options they present to users. Optimistic advocates for the individuals' ability to make informed decisions might propose that educating users with additional information about the choice can mitigate mindless compliance-inducing mechanisms (Gonzales et al., 2013; Levitt, Edwards, Chow, & Bhatia, 2015). For example, Cialdini et al. (1990) show that a salient descriptive social norm can override an injunctive social norm. Hence, a normative justification (e.g., "xx% of people engage in behavior Y") might be able to weaken the effects of defaults and framing. Likewise, descriptive justifications that inform users about a product's quality from other consumers' viewpoint (cf. Duan, Gu, & Whinston, 2005) can trigger social proofing (Cialdini, 1993) or herding (Asch, 1956; Huang & Chen, 2006), which can similarly weaken their effects.

However, this argument suggests that a more salient and contradicting normative or descriptive justification can start a mindful process to mitigate the compliance-inducing effects of an existing norm. In contrast, Langer et al. (1978) suggested that justifications may in fact make compliance less mindful and, thereby, exacerbate the compliance-inducing effects of defaults and framing. In their study, an experimenter asked participants for a favor. In one condition, the experimenter did not provide any justification for the request,

but, in the two other conditions, the experimenter provided either a placebo (“May I use the Xerox machine because I have to make copies?”) or a plausible (“May I use the Xerox machine because I’m in a rush?”) justification. The authors found that, for small favors², the plausible and placebo justifications worked equally well, and both resulted in more people mindlessly complying with the request than the no-justification condition. The authors explained these results by arguing that participants expect the interaction to be mindful and, hence, expect a justification to be plausible rather than placebo. Rather than actively processing the placebo justification, they simply assume that it is plausible. From this perspective, one could argue that justifications (any justification regardless of whether they are congruent or incongruent with the decision’s prevailing framing/default) would likely exacerbate rather than mitigate the mindless compliance that the default or framing induces.

To resolve this theoretical contradiction, in this study, we test the effects of two common types of justifications on mindless compliance: descriptive normative justifications and rationale-based (injunctive) justifications. We then identify how positive (pro-compliance) and negative (anti-compliance) versions of these two types of justifications can influence the compliance that framing and defaults induce. In addition, we compare a justification’s absence versus its presence.

2.4.1 Descriptive Normative Justifications

Descriptive normative justifications (e.g., “xx% of people engage in behavior Y”) provide a social nudge for individuals to either engage in (with a high percentage) or refrain from (with a low percentage) the target behavior. Individuals could perceive such normative justifications—especially the high-percentage ones—as social proofing that confirms the behavior’s validity (Cialdini, 1993), which could induce a herding effect (Asch, 1956; Huang & Chen, 2006). Thus, they can increase the target behavior accordingly.

Given that both framing and default effects introduce an *injunctive* social norm (i.e., what people ought to do) (McKenzie et al., 2006; Sher & McKenzie, 2006), Cialdini et al. (1991, 1990) would propose that a sufficiently salient justification that presents a conflicting *descriptive* social norm (i.e., what people actually do) can reduce or even eradicate the mindless compliance that framing and defaults induce.

However, this argument presumes that people actually attend to and process the justification messages. Langer et al.’s (1978) work on mindless compliance showed that people do not necessarily do so; if they consider the target behavior a small favor, they may possibly consider a justification’s mere presence a good reason for the request (without actually processing the justification) and, thus, comply with it. This logic suggests that the descriptive normative justification exacerbates the compliance-inducing effects of defaults and framing. To acknowledge these competing assumptions, we hypothesize that:

- H3:** Descriptive normative justifications moderate the effect that framing and defaults have on mindless compliance; that is, a descriptive normative justification can strengthen or weaken the effect that framing and defaults have on mindless compliance.

2.4.2 Rationale-based Justifications

Rationale-based justifications (e.g., describing the positive or negative consequences of engaging in a certain behavior) can nudge users’ disclosure by providing a rationalization for choosing one option. As such, one would expect that positive rationale-based justifications increase the target behavior, while negative rationale-based justifications decrease it.

Moreover, rationale-based justifications might constitute an *injunctive* social norm that provides either an endorsement or caution about the target behavior. According to Cialdini et al. (1990), this justification can reduce the mindless compliance that framing and defaults induce provided that it has sufficient salience.

On the contrary, these justifications can serve as rationalization for users (e.g., the app might be good if others also use it) in the sense of Langer et al.’s (1978) work on mindless compliance. In this case, users would not mentally process the rationale-based justifications, which would simply increase their tendency to comply with the request. Given these competing assumptions, we hypothesize that:

² Langer et al. (1978) found that the effect does not extend to bigger favors; in such a situation, only individuals who receive a plausible justification are likely to comply. Arguably, in this situation, individuals are more inclined to actively process justification messages.

- H4:** Rationale-based justifications moderate the effect that framing and defaults have on mindless compliance; that is, a rationale-based justification can strengthen or weaken the effect that framing and defaults have on mindless compliance.

Langer et al. (1978) conducted their study with in-person conversations; however, do not know how users in a tagging application—or any online scenario—would perceive a similar request as the ones they asked. Moreover, Langer et al.'s (1978) experimental scenario (asking for permission to cut in line) does not have a natural complement in terms of default or framing. Their request compares to a positively framed accept-by-default scenario; a negatively framed scenario would be similar to asking for permission not to cut in line (i.e., “Excuse me, may I *not* use Xerox machine?”—a rather uncommon request). On the contrary, privacy decision making scenarios commonly use negative framing. Research suggests that users perceive negatively framed and/or reject-by-default decisions as expressing the requester's negative opinion about the target behavior; therefore, users can perceive them as requests *not* to engage in the target behavior (McKenzie et al., 2006; Sher & McKenzie, 2006). In this case, extrapolating Langer et al.'s (1978) findings, one would expect that rationale-based justifications can further exacerbate the negative default and/or framing effect as well (i.e., further reducing disclosure).

Finally, whereas Langer et al. (1978) compared a plausible justification against a placebic justification, we opt to compare a plausible justification with a positive valence (arguing the reasons for the action) against a similar justification with a negative valence (arguing the reasons against the action). If people truly do not process the justification as Langer et al.'s theory suggests, then our comparison may work just as well, but researchers have not tested it until now.

Figure 1 summarizes our experimental model. In Section 3, we discuss our experimental environment and how we operationalized our research questions.

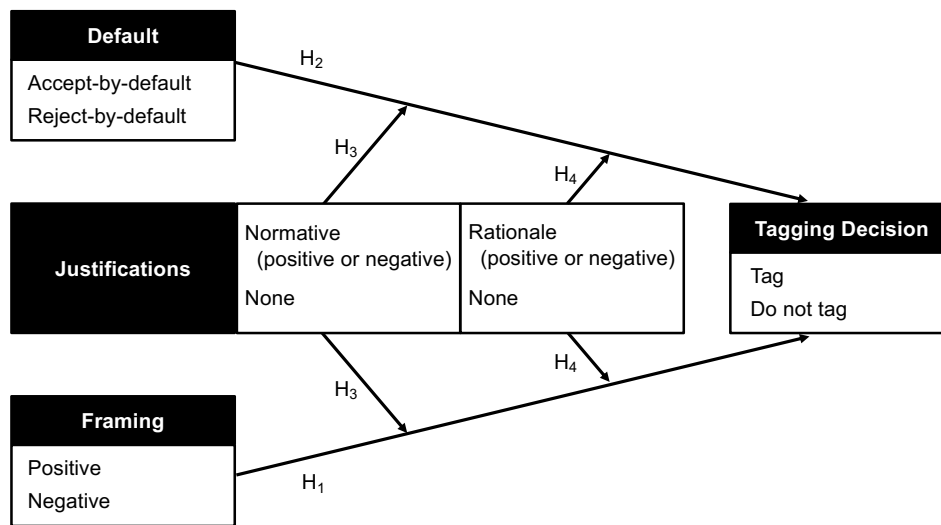


Figure 1. Research Model for the Moderating Effects of Justifications on Mindless Compliance Induced by Framing and Default Privacy Settings

3 Method

To investigate the privacy-related compliance with framing and defaults and the potential moderating effect that justifications have on this compliance, we conducted an elaborate experiment in the context of a self-developed Facebook photo-tagging application. Given the popularity of photo sharing on Facebook, with this study design, we could simulate a realistic privacy scenario that people with a broad range of socio-demographic characteristics could relate to.

3.1 Participants

We recruited 50 participants for a pilot study and 1084 participants for the actual study through online platforms. We paid participants US\$1.30 for their participation. Our platform required users to have an active Facebook account with at least ten friends to participate in the study. On average, our participants had 427 Facebook friends.

3.2 Experimental Setup

3.2.1 Pre-questionnaire

We told participants that we were developing a Face-detection algorithm for a Facebook application that can automatically tag people in photos. We first asked them questions about their Facebook usage such as the time they spent on Facebook and how frequently they used it. We then redirected them to a page where we asked them to log in to Facebook and use the application.

3.2.2 Facebook Application

We asked participants to log in to their Facebook account by giving basic profile and friend list permissions to our app. In the app, as a first task, we asked participants to test the readability of a note that said: “This is a free application being developed by university researchers that can automatically tag the users or users’ friends with high accuracy. Should the app make a mistake, users can still remove the tags.”. A short survey asked comprehension questions about this explanation, and we asked anyone who did not answer the questions correctly to read the note again. With this procedure, we could make sure that every user understood the benefits and consequences of using the application in order to make the eventual decision’s value proposition (see below) unambiguously clear and equal for all participants.

Participants then entered the study’s “training” where they tagged the people in four researcher-provided photos based on a key we provided to them on the screen. Figure 2 shows the first training page.

After four training pages, participants entered the study’s “correction” phase. In this phase, the app displayed photos that the algorithm had ostensibly tagged and asked participants to correct any mistakes. We made sure that participants would have to make no corrections at all: all the tags in these photos were correct. This phase demonstrated to participants the algorithm’s reliability so that they would not have to be worried about algorithmic accuracy in their subsequent decision (see below).

Next, participants entered the study’s “decision” phase where we told them: “Before we continue with the final part of the study, we want to give you the opportunity to actually use our app. Please choose from the options below. Note that whatever you choose will not affect your compensation.”. At this point, we presented participants with the opportunity to use the auto-tagging procedure themselves—a question that we manipulated in terms of default, framing, and justification (see Section 3.3). As the dependent variable, we measured the outcome of the tagging decision (tagging vs. no tagging).

In our pilot study, we provided participants with the opportunity to tag themselves in *all* their friends’ photos and to tag their *all* their friends in *all* their own photos. However, no participant (out of 50) chose to tag themselves or their friends regardless of the default, framing, or justification message: arguably, they perceived the risk associated with this tagging feature as too high. While their choice meant we could not collect useful data, it also demonstrated that they made active, deliberate decisions (i.e., *all* participants in the tag-by-default conditions purposefully acted to change this setting) and that we used a believable experimental setup (if participants had thought that our app was fake, they would have likely been less careful in their decision practices).

To reduce the overall risk of our scenario in our main study, we subsequently reduced the scope of the auto-tagging procedure. Specifically, we added a question in the pre-questionnaire that asked participants to enter the names of three Facebook friends that they regularly interact with. The “decision” phase would then involve a separate page for each friend, which would state that we had “identified” various previously unseen photos that featured the participant together with that friend (in reality, we used a random number between five and 15), and offered participants to tag themselves and/or tag their friend in those particular photos (see Figure 3). After interviewing five graduate students about this new decision scenario, we concluded that our procedure would decrease the overall risk and increase users’ tendency to accept the tagging.

Finally, we debriefed participants about the experiment's purpose and that the auto-tagger had not in fact tagged any of their photos. Figure 4 summarizes the experimental setup.

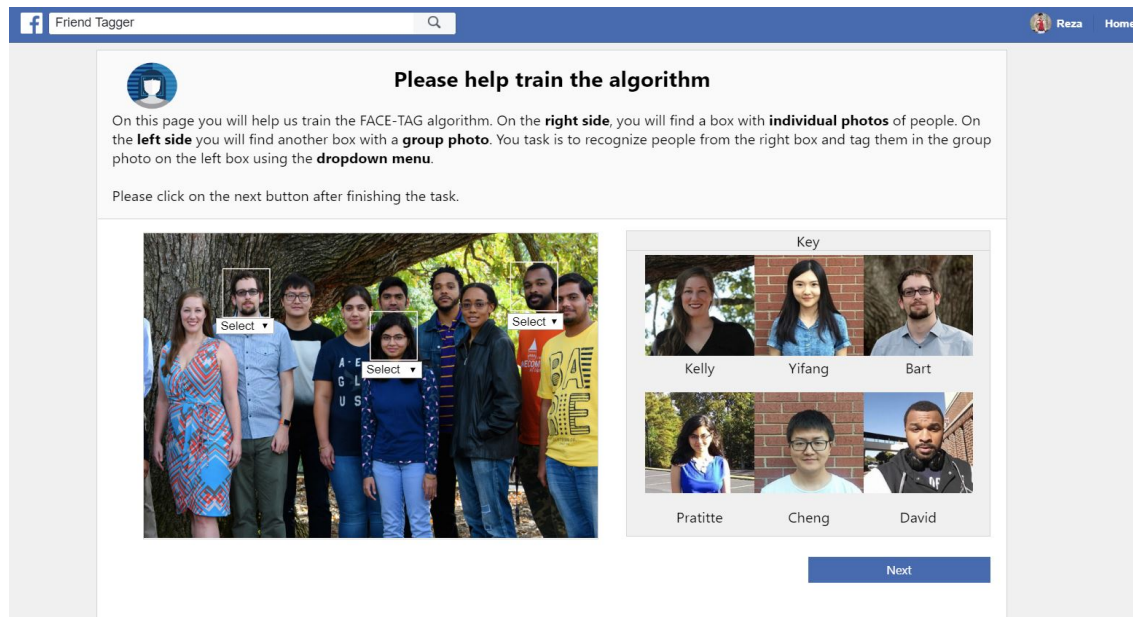


Figure 2. The “Training” Phase

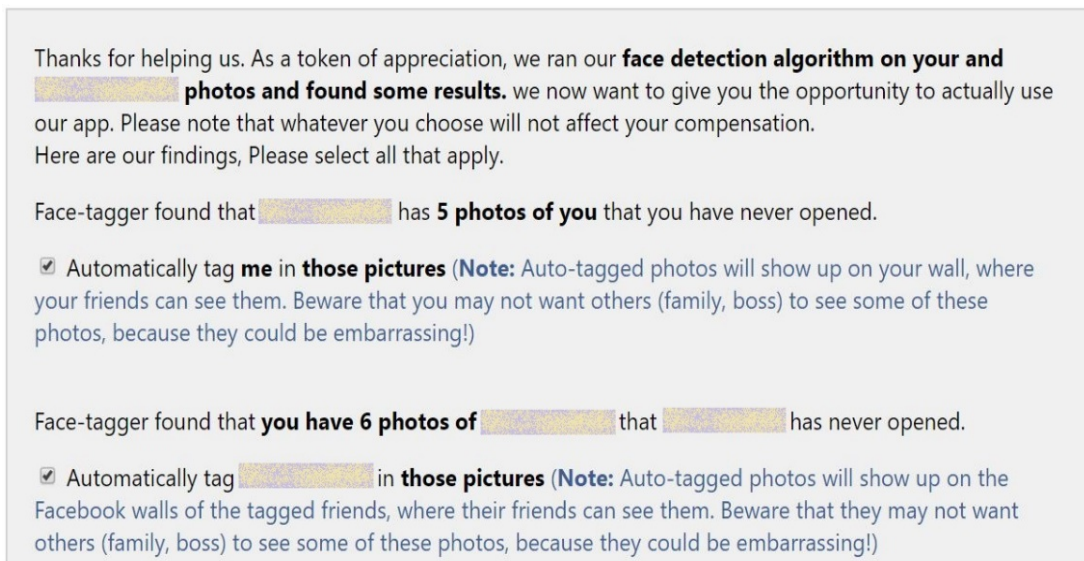


Figure 3. An Example Experimental Condition (Accept by Default, Positive Framing, Negative Rationale-based Justification) in the “Decision” Phase

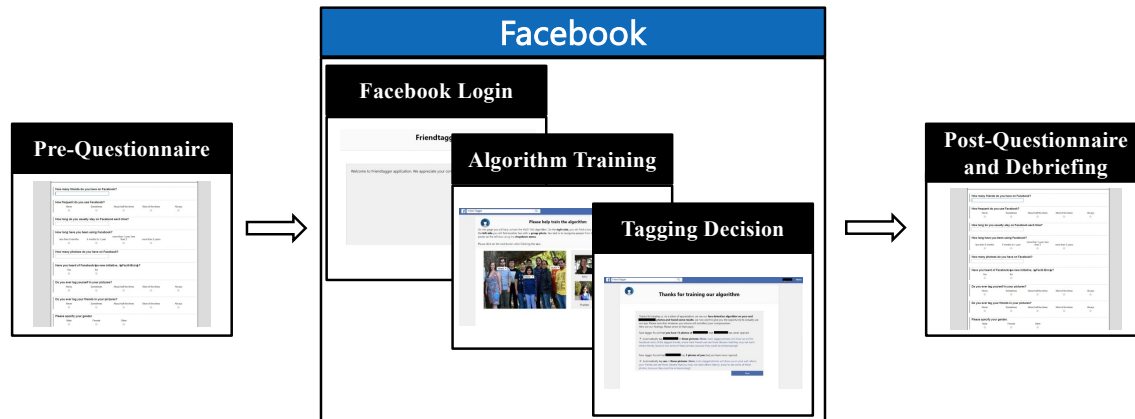


Figure 4. An Overview of the Experimental Setup

3.3 Manipulations

We followed a $2 \times 2 \times 5$ between-subjects design, and we randomly assigned participants to one of the conditions. Like most existing studies on defaults and framing, we combined a default setting manipulation (accept versus reject) with a framing manipulation (positive versus negative). We show this 2×2 design in Table 1. We also added a “justification” manipulation with two rationale-based justifications (one with a positive valence and one with a negative valence), two normative justifications (likewise, one positive and one negative), and a condition without any justification. As such, one can see the justification manipulation as an interaction between “justification type” (none, rationale-based, normative) and “justification valence” (positive, negative) where the “none” baseline condition has no valence.

Table 1. Presentation of the Default and Framing Manipulations

Presentation	Default	Framing
<input checked="" type="checkbox"/> Automatically tag me in those photos.	Accept	Positive
<input type="checkbox"/> Automatically tag me in those photos.	Reject	Positive
<input checked="" type="checkbox"/> Do NOT automatically tag me in those photos.	Reject	Negative
<input type="checkbox"/> Do NOT automatically tag me in those photos.	Accept	Negative

Our descriptive social norm justification indicates that either a small minority (i.e., 3%) or a large majority (i.e., 97%) of all other participants chose to use the automated tagging procedure. To operationalize the rationale-based justification, we conducted a focus group with five graduate students in which we discussed the potential messages to use so that others would infer whether they “ought to” use the application or not. We concluded that talking about tagging’s positive aspects (“tagging may increase your social bond”) would elicit a positive rationale, while talking about negative aspects (“the tagged photos could be embarrassing”) would elicit a negative rationale. Figure 3 shows an example scenario with a positive framing, a positive default, and a positive rationale-based justification. In total, we used the following manipulations:

Default (see Table 1)

- 1) Accept (tag) by default
- 2) Reject (do not tag) by default

Framing (see Table 1)

- 1) Positive (“automatically tag my friends in my photos”)
- 2) Negative (“do NOT automatically tag my friends in my photos”)

Justification

- 1) Negative descriptive social norm-based (“normative”) justification
 - “(Note: 3% of our study participants chose to tag themselves or their friends)”

- 2) Positive normative justification
 - “(Note: 97% of our study participants chose to tag themselves or their friends)”
- 3) Negative rationale-based justification
 - “(Note: auto-tagged photos will show up on the Facebook walls of the tagged friends where their friends can see them. Beware that they may not want others (parents, boss) to see some of these photos, because they could be embarrassing!)”
- 4) Positive rationale-based justification
 - “(Note: auto-tagged photos will show up on the Facebook walls of the tagged friends, where their friends can see them. This will strengthen your friendship and let your friends relive the good times they had with you!)”
- 5) None

3.4 Dependent Variable: Tagging Rate

We recorded the participants' decision to tag or not to tag themselves (or their friends) as a dependent variable. In our analysis, we refer to this variable as the “tagging rate”. A higher tagging rate in a positive framing or default condition and a lower tagging rate in a negative framing or default condition indicate more mindless compliance. In these instances, people are more likely to simply follow the apparent cues rather than engaging in elaborate thought.

4 Results

On average, our participants were 39 years old and checked their Facebook once a day. They spent more than 30 minutes and less than one hour on Facebook in each session. Each participant in our study made six yes/no decisions: for each of the three listed friends, they indicated whether they allowed the auto-tagger to tag their friend in their photos and whether they allowed it to tag themselves in their friend's photos. We conducted the analysis using a maximum likelihood and weighted least square mean and variance estimator in Mplus V 7.4. We used a generalized linear mixed effects model for our analysis: a multilevel logistic regression with a random intercept to account for repeated measurements per participant. We used the decision to allow or prevent the auto-tagger (i.e., the tagging rate) as our dependent variable and the default, framing, and different justifications as the independent variables. In our analyses, we considered justification as an interaction between “justification type” (none, rationale based, normative) and “justification valence” (positive, negative) with no distinction in valence in the baseline (no justification) condition.

4.1 Main Effects of Defaults and Framing

We first analyzed the framing and default effects regardless of other manipulations. Table 2 shows the outcome of our analysis with centered framing and default effects. In line with previous work, we found that framing had a significant main effect; we estimated participants to have 1.967 times higher odds to allow the auto-tagger to tag the identified photos in the positive framing condition than in the negative framing condition ($p < 0.001$). Thus, we found support for H1.

Table 2. The Outcomes of the Multilevel Logistic Regression with Random Intercept Testing the Effect of Framing and Defaults on Participants' Tagging Rate

	Odds ratio	P-value
Intercept	0.428	
Default (tag vs. do not tag)	2.436	< 0.001
Framing (pos. vs. neg.)	1.967	< 0.001
Default x framing	1.023	0.929

Note: n = 1084, intercept = overall odds; p-value denotes two-tailed significance.

Likewise, we found that defaults had a significant main effect: participants had 2.436 times higher odds to allow the auto-tagger to tag the identified photos in the accept-by-default condition than in the reject-by-default condition ($p < 0.001$). Hence, we also found support for H2.

Finally, in line with previous work, we found no interaction effect between defaults and framing ($p = 0.929$). Figure 5 displays the framing and default effects and that their effects were additive (no interaction effect).

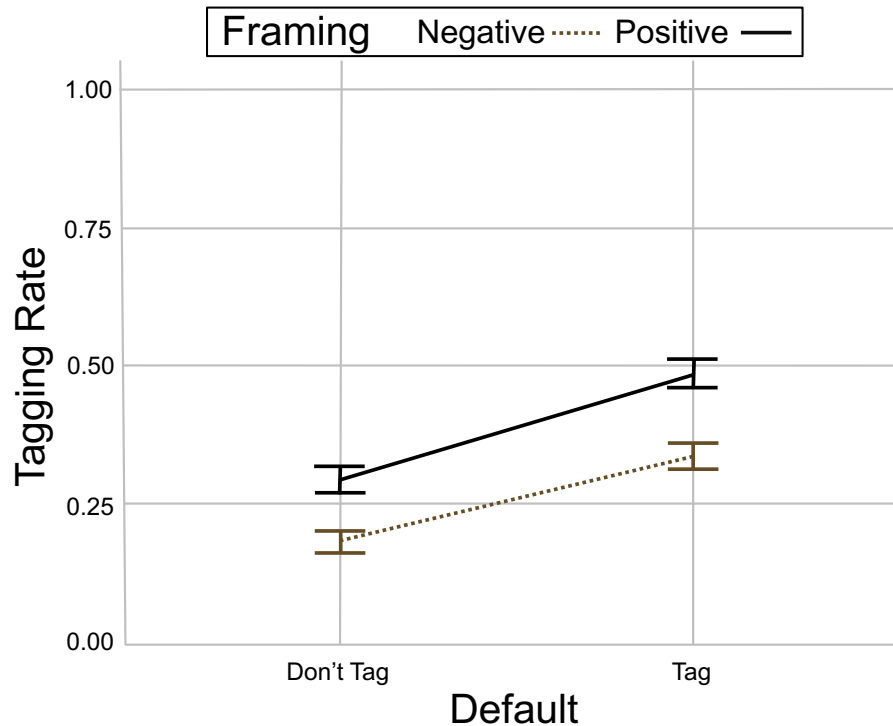


Figure 5. A Plot of the Main Effects of Defaults and Framing on Participants' Tagging Rate

4.2 Justifications as a Moderator

To investigate H3 and H4, we tested whether normative and/or rationale-based justifications significantly moderated the effect of framing and/or default-induced compliances. To this end, we ran separate factorial models for framing and defaults. We present the results below.

4.2.1 Justifications as a Moderator of Framing Effects

We first ran a factorial model with framing, justification type, and valence. We centered framing and justification valence but dummy-coded justification type with “none” as its baseline. Table 3 shows the outcome of this analysis, and Figure 6 depicts the results. Note that justification valence had no main effect or two-way interaction with framing because the baseline condition (no justification) had no valence. Hence, justification valence only makes sense as an interaction with justification type.

We first ruled out any main effects of justifications. Table 3 shows that neither the normative justifications ($p = 0.265$) nor the rationale-based justifications ($p = 0.128$) had a main effect on participants' tagging rate. Furthermore, positive and negative normative justifications were not significantly different ($p = 0.093$), nor were positive and negative rationale-based justifications ($p = 0.429$).

We then considered whether the justifications moderated the framing effect. In the “no justification” condition, framing did not have a significant overall effect ($p = 0.166$). We found no significant overall interaction between framing and justification type ($p = 0.312$ and $p = 0.851$) or between framing, justification type, and valence ($p = 0.202$ and $p = 0.642$). Hence, in contrast to H3 and H4, we found normative and rationale-based justifications did not moderate the framing effect.

Notably, when combined with a positively framed request, we found participants had 1.335 times higher odds to allow the auto-tagger to tag the identified photos with the positive normative justification compared to the negative normative justification ($p = 0.027$), whereas we found more or less equal odds for the negatively framed request ($p = 0.814$, see Figure 6).

Table 3. The Outcomes of of the Multilevel Logistic Regression with Random Intercept Testing the Effect of Framing and Justifications on Participants' Tagging Rate

	Odds ratio	<i>p</i> value
Intercept	0.541	
Justification type (vs. none)		
Normative	0.812	.265
Rationale based	0.747	.128
Justification type x valence		
Normative	1.382	.093
Rationale based	1.180	.429
Framing	1.561	.166
Framing x justification type		
Normative	1.459	.312
Rationale based	1.075	.851
Framing x justification type x valence		
Normative	1.636	.202
Rationale based	0.823	.642

Note: $n = 1084$, intercept = overall odds in the no-justification condition; *p*-value denotes two-tailed significance

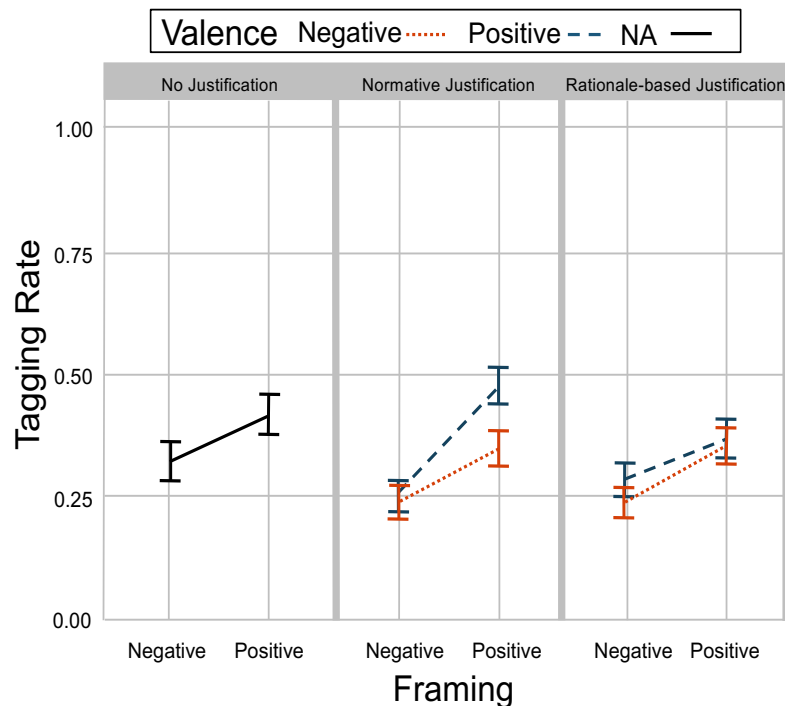


Figure 6. A Plot of the Tagging Rates Split by Framing and Justification (Type and Valence)

4.2.2 Justifications as a Moderator of Default Effects

To investigate the effect that justifications and valences had on default-induced compliance, we ran a similar factorial model with defaults, justification type, and valence. Table 4 shows the outcome of this analysis, and Figure 7 depicts the results.

Table 4. The Outcomes of the Multilevel Logistic Regression with Random Intercept Testing the Effect of Defaults and Justifications on Participants' Tagging Rate

	Odds ratio	p value
Intercept	0.550	
Justification type (vs. none)		
Normative	0.779	.177
Rationale based	0.706	.067
Justification type x valence		
Normative	1.446	.055
Rationale based	1.202	.376
Default (tag vs. do not tag)	1.162	.635
Justification type x default		
Normative	2.119	.043
Rationale based	2.780	.007
Default x justification type x valence		
Normative	0.983	.967
Rationale based	0.789	.571

Note: n = 1084, intercept = overall odds; p-value denotes two-tailed significance

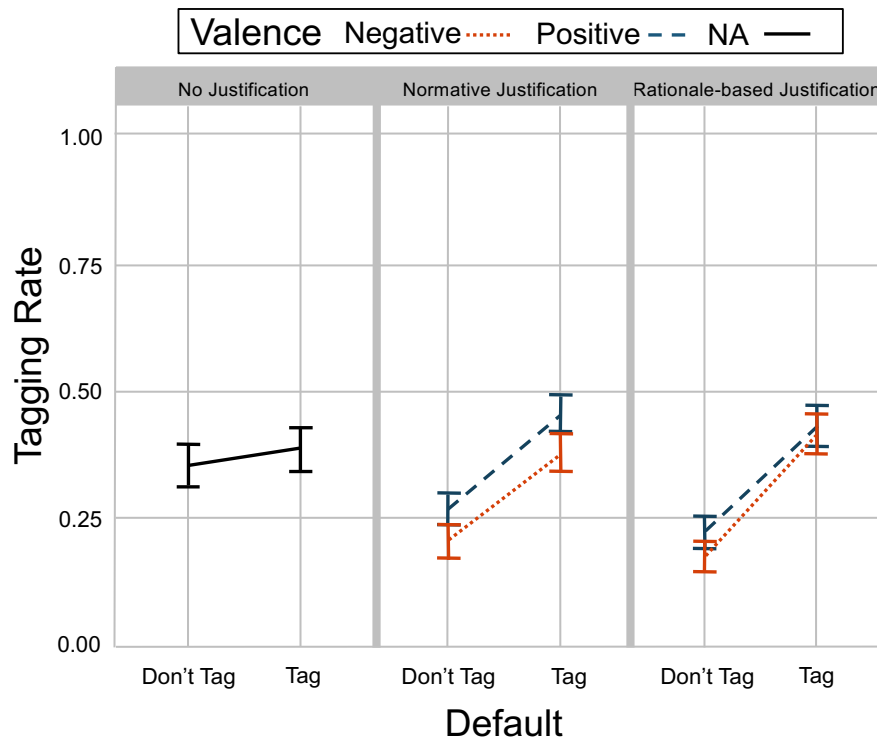


Figure 7. A Plot of the Tagging Rates Split by Default and Justification (Type and Valence)

We found that justification type and its interaction with valence had the same main effect as in the previous model, so we do not reiterate the discussion at this point.

In the “no justification” condition, we found participants had 1.162 times higher odds to allow the auto-tagger to tag the identified photos in the accept-by-default condition than in the reject-by-default condition. However, this effect was not significant ($p = 0.635$). Figure 7 suggests that the default effect was stronger alongside a justification. Particularly, compared to the no-justification condition, default had a 2.119 times stronger effect alongside a normative justification ($p = 0.043$) and a 2.270 times stronger effect alongside a rationale-based justification ($p = 0.007$). Interestingly, we found no three-way interaction between defaults, justification type, and valence ($p = 0.967$ and $p = 0.571$), which suggests that justifications had a default-exacerbating effect regardless of their valence. Indeed, Figure 7 shows that the default effect was more pronounced alongside both positive and negative normative and rationale-based justifications. Thus, we found partial support for H3 and H4.

5 Discussion

In this study, we investigate the moderating effect that justifications have on framing- and default-induced mindless compliance in the context of privacy decision making. To this end, we developed a realistic scenario in which we introduced normative and rationale-based justifications to different framing and default scenarios. We tested the moderating effect that these justifications had in a $2 \times 2 \times 5$ between-subjects experimental setting and summarize the results in Figure 8.

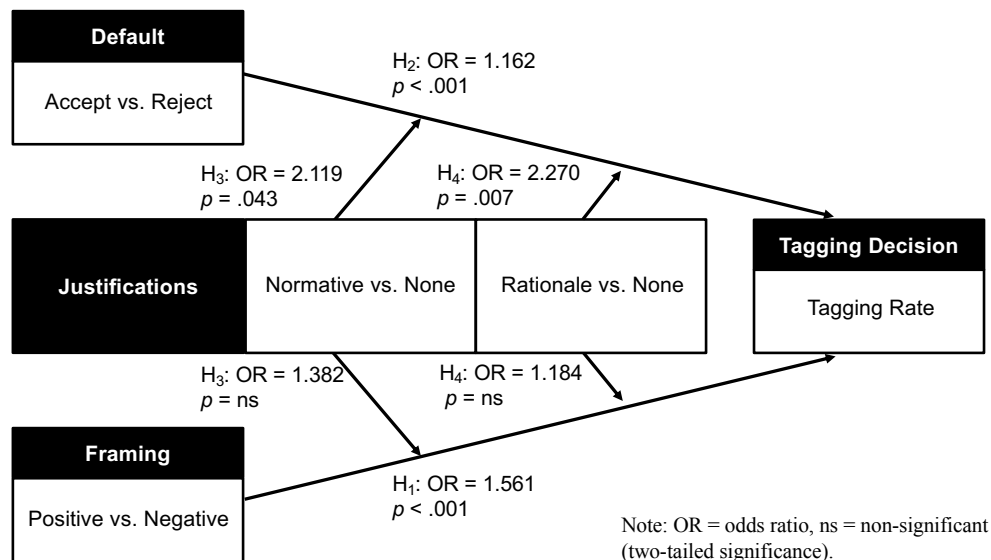


Figure 8. Summary of our Findings

Regarding the main effects, we replicated the existence of framing (H1) and default (H2) effects in the photo-tagging context on Facebook. Companies commonly leverage these effects to nudge users to comply with their privacy requirements. In line with existing research, we found that positive framing led to higher tagging rates than negative framing. Similarly, we found that accept-by-default settings led to higher tagging rates than reject-by-default settings. In contrast to previous work, we conducted our experiment in a realistic environment. Hence, we confirm corporate assumptions that default and framing effects do not occur only in studies with unmotivated participants: these effects transfer to scenarios with perceivable real-world consequences. Indeed, the remarkable results from our pilot study suggest that participants definitely paid attention.

The prevalence and pervasiveness of framing and default effects in our study suggest that users do not purely determine their preferences a priori but that they construct them (at least to some extent) in a given situation (Bettman, Luce, & Payne, 1998). Since default and framing effects can induce compliance, online applications can use them to strongly and significantly nudge users to choose certain settings. Indeed,

Figure 5 shows that compliance in our study rose from 19 percent in the negative defaults, negative framing condition to 49 percent in the positive default, positive framing condition.

Regarding the main effects of the newly introduced justification, neither normative justifications nor rationale-based justifications yielded a significant main effect on the tagging decision. We examined the moderating effect that normative and rationale-based justifications had on the compliance-inducing framing and defaults (H3 and H4). Normative justifications did not significantly moderate the compliance-inducing effect of framing ($p = .325$). However, Figure 6 shows a notable difference between the positive and negative normative justification for positive framing ($p = 0.027$) but not for negative framing ($p = 0.814$).

Previous work explains the framing effect as an injunctive social norm (McKenzie et al., 2006; Sher & McKenzie, 2006), and Cialdini et al. (1990) argue that a sufficiently salient descriptive norm can override such an injunctive norm and, thereby, cause a herding effect (Asch, 1956; Huang & Chen, 2006). While we did not find that the descriptive normative justification overrode the injunctive norm of framing, we did find a herding effect when both the framing and descriptive norm were positive. This finding suggests that participants did not see framing as an injunctive norm but rather as a vantage point from which to consider the descriptive norm. In this case, a herding effect may require congruence between framing and descriptive norm.

The latter argument would suggest that a negative normative justification might also decrease the tagging rates when the framing is negative. However, Figure 6 shows that the negative normative justification did not further reduce the tagging rate in the negative framing condition possibly because we presented the normative justification as a lack of support for using the auto-tagger (“3% of others use the system”) rather than as support for *not* using the auto-tagger (i.e., “97% of others do *not* use the system”). Arguably, the latter could have triggered the herding effect in the negatively framed conditions. Future studies can implement this alternative justification message to test whether the herding effect still occurs when the justification addresses what the majority does.

Whereas neither of our justifications significantly moderated the framing effect, we found that normative and rationale-based justifications moderated the default effect. As Figure 7 shows, we found that justifications increased the likelihood that a user would comply with the default setting. Notably, while valence had a small effect for the normative justification ($p = .055$), rationale-based justification had an effect regardless of the valence and even when the justification was incongruent with the default setting. This finding concurs with Langer et al.’s finding (1978) that, for small favors, people do not process the justification but rather accept it at face value.

Our results extend Langer et al.’s (1978) work in three ways. First, we show that their findings extend to an online environment. Second, while Langer et al. compared plausible and placebo justifications, we found that even justifications that were incongruent with a request increase compliance with it. Third, while Langer et al. (1978) did not consider manipulating the default and framing of the request (the request in their study can be considered a positively framed accept-by-default request), we found that a rationale-based justification increased the likelihood that participants would comply with the default option whether that be a positive default or a negative default. The fact that the overall effect of rationale-based justifications and the interaction effect between these justifications and valence were not significant ($p = .376$, $p = .571$) supports this claim: rationale-based justifications did not have an effect other than to exacerbate the default effect.

Table 5 summarizes our results. We found that rationale-based justifications can indeed moderate the mindless compliance that defaults induce. However, rather than motivating people to think and, thereby, overcome the default effect, rationale-based justifications are instead used as a means to save cognitive effort: people seem not to process these justifications and instead assume that they support the default option. As such, our rationale-based justifications *increased* rather than decreased default-induced compliance. Similarly, our results suggest that normative justifications exacerbate default-induced compliance as well. The additionally marginally significant effects of the valence of normative justifications indicate that people may process their meaning to some extent but not to the extent that they reduce (let alone overcome) default-induced mindless compliance.

Policy makers who require organizations to seek informed consent for their data-collection practices may find value in this result. Our results show that, rather than reducing existing biases, informing users with justifications actually exacerbates their mindless compliance and, thereby, endangers their privacy. Furthermore, companies should be careful when implementing warning messages. If users mistake a

warning message for a justification, it could nudge them towards mindless compliance rather than a cautious choice.

Table 5. Study Findings on the Effect that Defaults and Justifications Have on Participants' Tagging Rate

Hypothesis	Decision
H1: Positively framed options result in higher tagging rates compared to negative framed options.	Supported
H2: Accept-by-default conditions result in higher tagging rates compared to reject-by-default conditions.	Supported
H3: Descriptive social norms justifications moderate the effect that framing and defaults have on mindless compliance.	Partially supported
H4: Rationale-based justifications moderate the effect that framing and defaults have on mindless compliance.	Partially supported

6 Limitations and Future Work

One must consider our study's contributions in the light of its limitations, which also provide a basis for future research. First, we cannot generalize our findings beyond Facebook applications and the U.S. population. Bélanger and Crossler (2011) criticize information privacy research for heavily depending on U.S.-centric student samples. While we partly acknowledged this criticism by recruiting from a nationwide, non-student sample, we did restrict ourselves to a U.S.-based population. The universality of default and framing effects suggests that we can generalize our results to other populations, but we need future work to provide conclusive evidence about our results' robustness.

Likewise, considering that privacy decisions depend on the situation (Lederer et al., 2003), we need to acknowledge that, in our study's baseline condition, only approximately 25 percent of participants opted in to using the auto-tagger, and over 50 percent of participants opted out. In combination with our pre-test results (where everybody opted not to use the auto-tagger), this finding suggest that participants were rather skeptical about our app's proposition to begin with. Our effects occurred despite this fact, and situations with lower privacy stakes would not likely have exacerbated them.

In addition, since we conducted our study on Facebook, some users may have assumed that Facebook moderates apps for safety reasons. Consequently, their trust in the app might correlate with their trust in the platform. Future work should examine if users presume providers to exert moderating control and whether such an effect can influence trust and disclosure.

Furthermore, we suggest that future studies consider additional variables. To test for justifications' general efficacy, future research must include a neutral default and framing condition (e.g., by asking users to write "yes" or "no" if they want to participate or not) to ultimately assess justifications' main effects. In a similar vein, future work can also consider the opposite normative justifications (xx% of others do *not* use the system) to test if it would cause a herding effect toward the negatively framed option.

Finally, we conducted our study in a static environment. To analyze whether framing and default effects dissipate over time, future research could apply a longitudinal approach with repeated decisions.

7 Conclusion

According to Venturini and Rogers (2019), the Cambridge Analytica scandal had at least one merit: it generated significant discussion around people's expectations about how organizations use social media data. The scandal also pushed Facebook's executives to explore how they can prevent parties from misusing data that social media platforms collect (Venturini & Rogers, 2019). Although Facebook claims that it collects data based on users' own choices, individuals who used the app in the Cambridge Analytica case essentially gave mindless consent by default (Schroepfer, 2018) rather than by actively opting in to its data-collection practices.

Users care about protecting their individual privacy (Wisniewski et al., 2016). Framing and default biases threaten individuals' privacy by subconsciously nudging them to comply with disclosure requests and, thus, disclose private information they may not actually want to share. To test the effect that justifications had on framing- and default-induced compliance, we set up an experiment that offered users the ability to give up

some collective privacy (identifying oneself or friends in a photo) in return for gratification (creating a shared social experience around these photos). Our justifications did not affect the framing-induced mindless compliances and, far from reducing default-induced mindless compliance, we found that rationale-based justifications further increased the default effects.

These findings provide considerable contributions to human decision-making research and the research on defaults, framing, and justifications in particular. Importantly, we note that our work demonstrates that framing and default effects persist in realistic decision scenarios. Moreover, our decision scenario moves work on defaults and framing to the essential domain of social privacy and particularly to collective privacy management (Jia & Xu, 2016). Tagging oneself in one's friends' photos includes those photos on one's timeline, makes them more easily accessible to one's friends, and establishes a relationship between oneself and the friends who posted the photos. Likewise, tagging one's friends in one's own photos will associate oneself with that friend and make oneself accessible to all friends of the tagged friends. The interdependent nature of privacy management regarding tagged photos means that both users' personal preferences and the social norms that they perceive the individuals whom their decisions affect to have (i.e., their friends) likely influence their privacy decisions about tagging.

Likewise, our work expands on previous work about various types of justifications. Regarding rationale-based justifications, we expand Langer et al.'s (1978) work on "mindless compliance" by demonstrating that even a rationale-based justification that is incongruent with a request can induce compliance with it arguably because people forego processing the justification and instead simply assume that any justification will support the default. We further observed that Langer et al.'s (1978) findings do not only hold up for a positive default but also apply to a negative default.

Regarding normative justifications, we observed the anticipated herding effect (Asch, 1956) only in the positive framing condition, which suggests that herding requires a congruent framing to work. However, this effect was only marginally statistically significant and cannot confirm Cialdini et al.'s (1990) general theory that a sufficiently salient descriptive social norm overrides an injunctive social norm.

Our findings point towards the dangers of using justifications in combination with established biases that may induce users to make heuristic decisions. We found that justifications do not eliminate these heuristic influences but may, at times, even exacerbate them. Policy makers must carefully consider our findings when requiring platform managers to justify their data-collection practices lest they accidentally urge users to disclose their personal information against their will. Also, our results serve to warn users to mind these effects when making privacy decisions.

Finally, Bélanger and Crossler (2011) call for more IS research on design and action. Hirschheim (2019) discusses the need for theoretical work to develop practical solutions that directly pertain to problems in industry. We developed our experiment as a design and action study in which we designed an environment and empowered users when making a privacy decision by introducing interventions to reduce mindless compliance. That our interventions had an opposite effect evidences that such design and action research serves an extremely important role for society. Our work also closely ties to industry since we conducted our experiment on Facebook, the world's most popular social media platform, and examined a significant issue it and many other organizations face (i.e., privacy).

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