Thinking together, more than thinking twice, makes better data privacy judgements

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Abstract

Many individuals accept data-sharing practices by companies without much concern. Although data sharing is not inherently beneficial or harmful, its acceptability should depend on the context, including the type of data, the recipient, and the intended use. This paper examines the phenomenon of privacy indifference, where people respond to data sharing without regard for these contextual factors. We first measure the extent of this indifference and then evaluate two behavioral interventions designed to reduce it. One approach treats indifference emerging due to inattention, encouraging individuals to reconsider their initial choices. The other emphasizes the social nature of privacy norms and utilizes group deliberation to facilitate social comparison and norm calibration. Across two preregistered in-person experiments (N = 60, N = 58), we presented participants with varied data sharing scenarios and analyzed their privacy preferences. Group deliberation significantly increased contextual awareness compared to individual reflection. Importantly, it did so without leading to conformity, preserving heterogeneity in individual judgments. These results suggest that reducing privacy indifference may depend less on improving individual reasoning and more on building environments that support shared understanding and normative development around data use and consent.

Keywords: data privacy, boost, social norms, deliberation, contextual integrity

Significance Statement

People often claim to care about privacy, yet behave as if they do not - an issue known as the privacy paradox. Today's challenge, however, looks different: people are presented with data-sharing policies, and mostly say yes, regardless of who collects the data or how it will be used. This pattern, which we call privacy indifference, reflects not a paradox, but a lack of sensitivity to important contextual differences. Our experiments show that asking individuals to "think twice" can make them more sensitive to context, but that short peer discussions make a much clearer difference. Our findings suggest it's both timely and efficient to stop treating privacy as an individual responsibility and start treating it as a shared one.

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Introduction

The economic and political importance of data has raised awareness of the wide implications of apparently mundane data-sharing practices by citizens and consumers. Earlier evidence pointed to a gap between general statements of caring and actual behavior - a phenomenon documented and discussed as the "privacy paradox" (Barnes, 2006; Kokolakis, 2017; Norberg et al., 2007). Today, people are increasingly often prompted to read data collection and processing policies by companies, including personal data being used to train AI, without reducing the amount of data being shared. The emerging challenge in supporting individual privacy then appears to be addressing the general indifference to privacy decisions rather than a lack of information.

The issue is not whether data sharing is inherently good or bad, but whether individuals distinguish between what data they share, with whom, and for what purpose. The underlying principle, known as the appropriate information flow principle, emphasizes the contextual nature of privacy decisions (Choksi et al., 2024; Nissenbaum, 2004, 2009, 2018). Yet empirical evidence suggests that individuals often fail to make such distinctions when asked what they find acceptable, showing little sensitivity to contextually relevant variables (Ackermann et al., 2022; Bach et al., 2024; Grande et al., 2022). In this paper, we quantify this tendency toward indiscriminate acceptance - what we refer to as privacy indifference - and evaluate two targeted interventions grounded in different assumptions about its source. One targets individual inattention, aiming to improve contextual reasoning through private reflection; the other targets the absence of shared social norms, providing normative anchors through brief peer discussion.

Importantly, individual and social mechanisms can indeed explain privacy indifference, and eventually combine. First, according to the 'laziness' hypothesis, people are not ready to put much cognitive effort into reflecting on the acceptability of data sharing conditions (Meier et al., 2020). This has been argued to be the reason why the new European rules of data protection and privacy check boxes do not stop people from defaulting to broadly permissive sharing behavior (Beardsley et al., 2020; Knepp, 2018). Moreover, regardless of the presence of privacy policies and consent, convenience (Zhang et al., 2024; Zhu & Zhang, 2025), laziness (Wirth et al., 2021), and habituation of data-sharing decisions (Jankowski, 2021) continue to facilitate people's indiscriminate acceptance of all sorts of even risky or exploitative data-sharing conditions (Larson, 2024). If this 'laziness' hypothesis holds, then asking people to think twice about the acceptability of sharing data, even without necessarily providing more information, could be an effective way to make people more discriminate, and perhaps cautious.

Some support for this perspective comes from research on misinformation, which has increasingly highlighted the importance of cognitive effort and attentional engagement. Pennycook and Rand (Pennycook & Rand, 2019, 2021) have shown that many individuals fall for fake news not because they are ideologically motivated, but because they are inattentive or cognitively disengaged - what they call a "laziness of reason". Simple interventions that prompt users to reflect on accuracy can significantly reduce the spread of misinformation, suggesting that attention, not information, is often the limiting factor. Similarly, the "boosting" framework proposed by Herzog and Hertwig (Herzog & Hertwig, 2009, 2014, 2025) argues that people can be empowered not through structural nudges, but by fostering minimal cognitive routines, such as critical reflection or rule-of-thumb reasoning,

that require no prior knowledge. Finally, van der Linden's psychological inoculation theory (Linden et al., 2021; van der Linden, 2024) demonstrates that forewarning individuals and briefly exposing them to manipulative rhetorical techniques can "pre-bunk" misinformation. These approaches converge on the same common idea as the laziness mechanism we describe above: inattention or cognitive laziness, not ignorance or wrong judgment, is often the root of poor decisions, and that light-touch cognitive engagement can prompt more discerning judgment. Applied to privacy, this implies that prompting brief reflection, without overloading users, may curb impulsive sharing tendencies.

The second, 'norm uncertainty' explanation holds that what makes data sharing appropriate or not is not supported by strong norms, neither at the level of individuals nor at the level of groups. Individuals' stated preferences for limiting sharing and protecting privacy online, as documented as part of the privacy paradox, have been argued not to reflect genuine concerns (Gerber et al., 2018; Jankowski, 2021; Larson, 2024; Wirth et al., 2021; Zhang et al., 2024; Zhu & Zhang, 2025). Instead, these preferences extend what individuals understand from the non-digital world as generally desirable, i.e., "more privacy is good" (Solove, 2002, 2021). Social norms theory (Bicchieri, 2005, 2016; Halama et al., 2022; Silber et al., 2022) states that people's sense of what is right to do is shaped by both observing what others do (empirical expectations) as well as what others think and say one should do (normative expectations). Empirical expectations are often difficult to form, as digital behavior typically remains unobserved by others. Likewise, normative expectations are infrequently discussed, due to the wide variety of data-sharing contexts and the limited opportunities for interpersonal discussion. Therefore, if there is indeed uncertainty regarding the prevailing social norms, providing individuals with more opportunities to learn about other people's normative preferences and to socially calibrate their judgment should lead to more discriminate and eventually stringent judgments.

We draw on these two plausible explanatory mechanisms to design targeted interventions to improve privacy-related decision making. Our experimental design operationalizes privacy indifference as a lack of contextual sensitivity in privacy judgments and tests both its existence and its malleability. Participants initially rated the acceptability of 16 data-sharing scenarios varying along three normatively relevant dimensions: data type (health, energy, or location), recipient (private company or public entity), and purpose (individual or collective benefit) (Ackermann et al., 2022; Choksi et al., 2024; Gerdon, 2024). These initial judgments were then compared to revised judgments following two interventions. To address individual inattention, we provided participants with an opportunity to reflect privately on their initial privacy judgments. To address social norm uncertainty, we offered participants the chance to calibrate their judgments through open peer deliberation. These interventions allowed us to test whether either pathway - *thinking twice* or *thinking together* - could reduce privacy indifference, provided we could reliably measure it. Crucially, our design distinguishes between two potential effects: a general increase in caution towards data sharing and a more refined sensitivity to contextual differences across distinct types of privacy scenarios.

Across two studies, we replicate the finding that group discussion significantly enhances individuals' sensitivity to contextually relevant features of data sharing, lending strong support to the social norm uncertainty hypothesis. In contrast, individual reflection yields only marginal improvements, suggesting that inattention alone does not explain the lack of contextual discrimination in privacy judgments. These findings offer actionable insights for platform design and data literacy initiatives. Rather than isolating users at the point of consent, platforms could support better privacy decisions by making social norms visible, for example, showing how others respond

to similar data requests, or by enabling lightweight peer interactions. Brief opportunities for discussion or commentary, such as before consenting to data sharing in collective settings like video calls or online gaming, could help anchor decisions in shared norms. Such interventions also reinforce the idea that data privacy is not merely a matter of individual control, but a fundamentally collective concern.

Results

Across two studies, we tested the perceived acceptability of data-sharing in 16 scenarios and two decision stages (see Figure 1A) varying in three essential factors meant to influence data-sharing acceptability differently across contexts: **data type**, i.e., what is shared, **data recipient,** i.e., with whom data is shared, and **data purpose**, i.e., why data is shared. These three factors, with two values each per study, provided eight different contexts, and two scenarios were provided for each context.

Each study consisted of two individual decision stages during which participants rated the acceptability of data-sharing for each scenario (see Figure 1B). The first decision stage included initially rating all 16 scenarios presented in a random order alone (i1). The second decision stage (i2) occurred after two interventions. In the first intervention, participants were asked to 'think twice' and rate again eight scenarios - one per context type - alone. In the second 'think together' intervention, participants discussed and rated the other eight scenarios to reach consensus before rating them again. Ratings were collected on a 7-point Likert scale ranging from 1 (not at all acceptable) to 4 (neutral) and 7 (completely acceptable). We used a hierarchical modelling approach to systematically investigate the effect of the experimental factors (data type, agent, purpose) and decision stages across the two studies (see supplementary results for a full breakdown of the statistical models).

How (in)discriminate are people regarding data-sharing? Measuring privacy indifference.

The analysis of participants' initial acceptability ratings (i1) revealed two findings. First, participants initially found most data contexts highly acceptable. Second, they showed some minimal level of distinction, though unevenly along the three tested dimensions expected to inform on data-sharing conditions (see Figure 2).

Overall, in study 1, the initial acceptability rating across conditions remained high at 5.46 (std = 1.67). Notably, participants found sharing energy data significantly more acceptable than health data ($b = 0.53$, CI [0.36, 0.69], $p < 0.001$) but neither distinguished between data recipients ($b = 0.14$, CI [-0.04, 0.31], $p = 0.12$) nor data-sharing purpose ($b = 0.13$, CI [-0.04, 0.30], $p = 0.14$).

Study 2 replicated most of these results. Participants were, in their initial ratings, again very accepting of sharing data across conditions. The acceptability rating average in i1 was 5.51 (std. = 1.66). As in study 1, participants were sensitive to data type, this time finding sharing geolocation data significantly more acceptable than sharing health data ($b = 0.54$, CI [0.37, 0.71], $p < 0.001$). They did not distinguish between sharing purposes ($b = 0.10$, CI [-0.07, 0.27], $p = 0.26$). Unlike study 1, participants also marginally distinguished sharing data with different data recipients, rating

sharing data with private companies slightly more acceptable than sharing with data with public governments (b = 0.19, CI [0.01, 0.36], p = 0.04).

Together, these results provide a nuanced support for the idea of privacy indifference: initial ratings are generally high (contrary to the privacy paradox expectation that, at the level of judgement, people would be stringent) and reflect some contextual distinctions, mainly in terms of data type, but not really in terms of recipient and purpose.

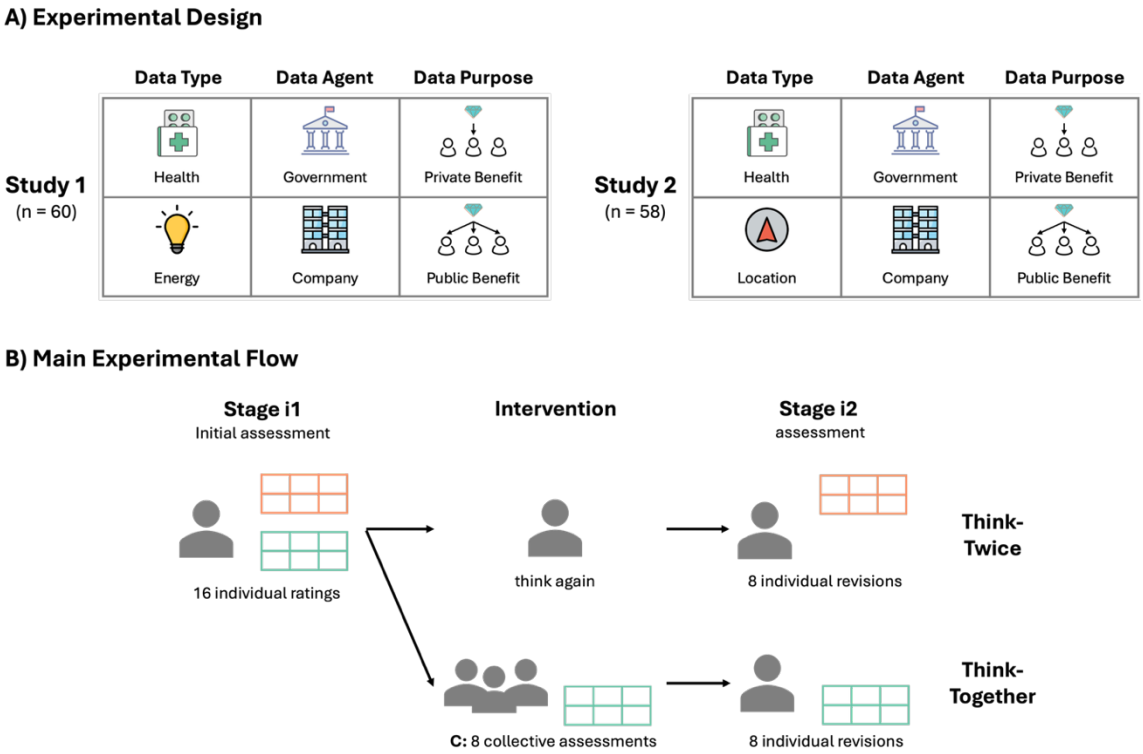

Figure 1. A. *Experimental design. We conducted two contrastive vignette studies varying in three experimental conditions: data type (health vs energy vs geolocation), data agent (government vs company), and data-sharing purpose (private vs public benefit), resulting in eight unique vignette combinations.* ***B.*** *Experimental flow. We created two versions of each vignette combination. Selected at random, one version (orange) was assigned to the think-twice intervention and presented only during decision stages i1 and i2-think-twice, whereas one version (turquoise) was assigned to the think-together intervention and presented during the group discussion, stages i1 and i2-think-together.*

Does 'thinking again' change people's privacy judgements?

Giving participants the opportunity to 'think again' had two moderate effects. First, it led to an overall slight decrease in acceptability ratings. For study 1, ratings in i2 after 'thinking twice' were marginally lower than in the initial i1 (b = -0.15, CI [-0.32, 0.01], p = 0.074; suppl. model 2). Study 2 found a slightly stronger overall drop in acceptability. Here, acceptability ratings were significantly lower in i2 after 'thinking twice' compared to the initial ratings in i1 (b = -0.26, CI [-0.42, -0.10], p = 0.001; suppl. model 3).

Second, the decrease in perceived acceptability for sharing data came with a slight increase in contextual differentiation. In study 1, the participants distinguished between data types even more, rating sharing health data by 0.66 points less acceptable than energy data in i2 after 'thinking twice'

(b = -0.66, CI [-0.9, -0.42], p < 0.001) – compared to 0.54 points in i1. Like in the initial ratings i1, participants neither discriminated in their perceived acceptability between data recipients (b = 0.19, CI [-0.05, 0.44], p = 0.13) nor between data-sharing purpose (b = 0.06, CI [-0.19, 0.31], p = 0.64). Study 2, again, replicated these results. Giving participants to opportunity to 'think twice' increased the overall difference in perceived acceptability of geolocation over health data from 0.54 to 0.86 points (CI [0.61, 1.1], p < 0.001) as well as nearly doubled the overall difference in perceived acceptability of sharing data with companies over governments from 0.19 to 0.35 points (CI [0.09, 0.6], p = 0.01). Participants remained indifferent regarding the data sharing purpose (b = 0.1, CI [-0.16, 0.36], p = 0.45).

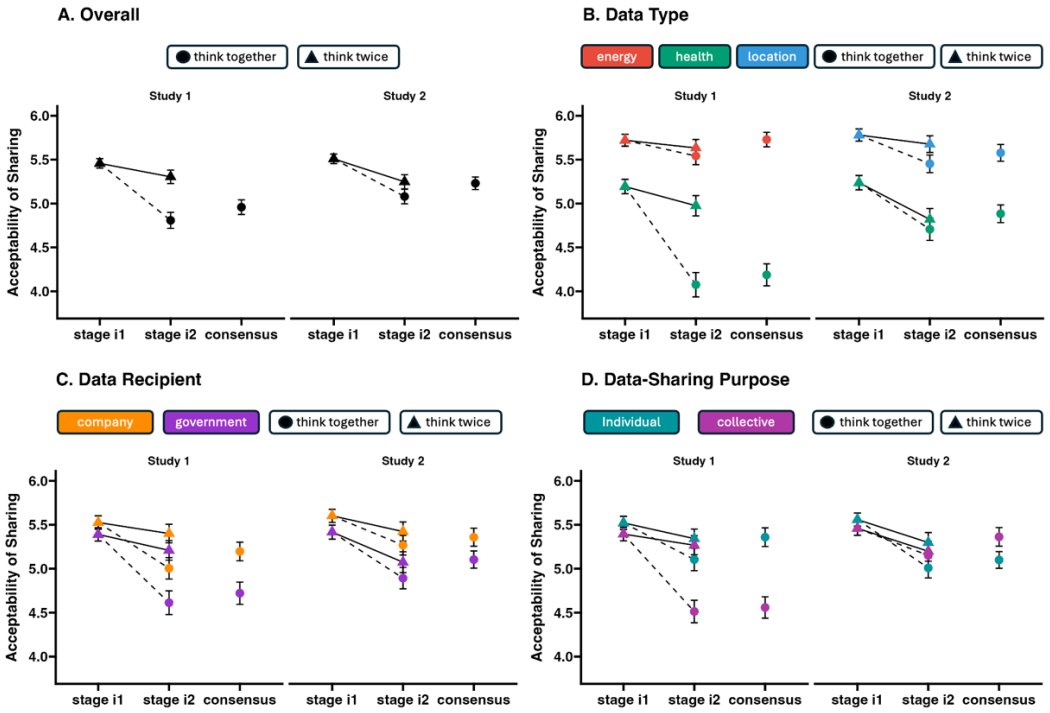

Figure 2. Individual acceptability ratings. *Plotted are mean averages and standard error of the mean across decision stages for study 1 and 2.* ***A. Overall****. Individuals become more critical of data sharing in stage i2. This effect is stronger for discussed (stage i2-think-together) than non-discussed scenarios (stage i2-think-again).* ***B. Data Type****. Individuals found sharing health data less acceptable than energy and geolocation data. Across studies, both interventions strongly influenced acceptability ratings - with the strongest effect for health data.* ***C. Data Recipient****. Data-sharing with governments was seen as less acceptable than sharing with companies. The effect was strongest for group discussion and stage i2-think-together.* ***D. Data-Sharing Purpose****. No consistent pattern emerged.*

Does 'thinking together' change privacy judgements more than thinking twice?

Comparing participant ratings across decision stages reveals that participants' acceptability ratings decreased substantially during and after group deliberation, following more stringent consensual acceptability judgements of data-sharing conditions across all contexts (see Figure 2A). Compared to the initial acceptability rating in i1, consensual ratings during group deliberation in C for study 1 were lower than ratings in i1 (b = -0.50, CI [-0.67, -0.33], p < 0.001). The ratings were also overall

significantly lower after discussion in i2 (b = -0.65, CI [-0.82, -0.48], p < 0.001) – more than three times the reduction as in i2 after 'thinking twice' alone (b = 0.15, CI [-0.01, 0.32], p = 0.07).

Study 2 replicated these trends: compared to the initial ratings i1, ratings were significantly lower during group deliberation in C (b = -0.28, CI [-0.44, -0.12], p < 0.001) and individually after group deliberation in i2 (b = -0.43, CI [-0.59, -0.27], p < 0.001), nearly doubling the effect than when participants were asked to 'think twice' (b = -0.26, CI [-0.42, -0.10], p = 0.001; suppl. model 3). These results suggest that social interaction influenced participants' perceived acceptability for data-sharing more than individual reflection alone.

Behind this observed decrease in participants' acceptability ratings lies a heightened sensitivity to the data-sharing context during as well as after the discussion (see Figure 2).

For *data types*, the initial difference in i1 was amplified in study 1 leading to an average 1.54 rating point decrease in sharing health over energy data during group consensus in C (CI [-1.78, -1.29], p < 0.001) which persisted after the group discussion in i2 (b = -1.47, CI [-1.72, -1.21], p < 0.001), doubling the effect size of 'thinking twice' without social calibration (b = -0.66, CI [-0.92, -0.4], p < 0.001). A similar pattern emerged for study 2. 'Thinking together' amplified the initial difference between sharing health and geolocation data, although the effects of 'thinking together' and 'thinking twice' remained comparable this time. While 'thinking twice' led to an average 0.86 point decrease in acceptability for sharing health over geolocation data in i2 (CI [-1.11, -0.6], p < 0.001), 'thinking together' led to an average 0.7 point decrease for sharing health data in C (CI [-0.95, -0.44], p < 0.001) and a 0.75 point decrease in i2 (CI [-1, -0.49], p < 0.001).

For *data recipients*, in study 1, neither the initial ratings nor the ratings after 'thinking twice' in i2 showed a main effect (see Figure 2C). However, when deliberating together in C (b = 0.47, CI [0.2, 0.75], p < 0.001) as well as individually after 'thinking together' in i2 (b = 0.39, CI [0.12, 0.66], p = 0.005), sharing data with private companies was rated more acceptable than sharing with public institutions. A slightly different pattern emerged for study 2. Study 2 replicated the overall effect of preferring to share data with private companies over public institutions, already in the initial ratings in i1. However, the effect remained consistent across interventions in i2 with no significant interactions.

For *data purpose*, in study 1, neither the initial ratings nor the ratings after 'thinking twice' in i2 showed a main effect (see Figure 2D). However, when deliberating together in C (b = 0.85, CI [0.58, 1.13], p < 0.001) as well as individually after 'thinking together' in i2 (b = 0.65, CI [0.37, 0.92], p < 0.001), participants rated sharing data for an individual benefit more acceptable than for a collective benefit. Study 2 replicated the null effects for the initial as well as individual ratings after 'thinking twice' in i2. However, unlike study 1, individual ratings after 'thinking together' in i2 also showed no data purpose effect. Only when deliberating together in C participants found sharing data for an individual benefit marginally less acceptable than sharing for a collective benefit (b = -0.26, CI [-0.52, -0.002], p = 0.05).

Does 'thinking together' mean more herding? Assessing the diversity of judgements

One concern about social interactions is possible herding, i.e., the tendency for collectives to align on and conform to a single shared judgment for sometimes only affective reasons or perceived uncertainty (Navajas et al., 2022; Raafat et al., 2009). Comparing the change in between-group

and within-group variance across the four decision stages shows that group deliberation boosted the diversity of opinions overall and retained diversity of opinion individually as well (see Figure 3).

The observed effects were consistent across both studies. In i1 as well as i2 after 'thinking twice', participants' acceptability ratings varied highly within their groups but minimally between groups (study 1: Levene's Test $F = 0.2498$, $p = 0.62$; study 2: $F = 0.02$, $p = 0.87$; see supplementary table S7), showing that individual differences were present and retained within groups by individual reflection. During the group discussion, trivially, participants were tasked to reach a group consensus, leading to a within-group variance of near zero for both studies. There was, however, a substantial increase in the between-group variance (study 1: from 0.68 in i1 to 3.3 during consensus, Levene's Test $F = 47.5$, $p < 0.001$; study 2: from 0.76 to 2.3, Levene's Test $F = 35.9$, $p < 0.001$; see supplementary table S8). Participants within each group agreed, but different groups have developed distinct positions. After discussion, within-group variance rebounded to close to original levels (study 1: 2.19 mean within-group variance in i2 after 'thinking together' vs 2.84 in i1; study 2: 1.79 in i2 after 'thinking together' vs 2.36 in i1) and between-group variance remained comparable to consensus stage levels (study 1: 2.27 mean between-group variance in i2 after 'thinking together' vs 3.31 in group consensus stage; study 2: 1.81 in i2 after 'thinking together' vs 2.3 in group consensus stage).

These results suggest that group discussion facilitated the emergence of distinct group identities (as shown by the sustained between-group variance) but did not reduce individual differences (as evidenced by the recovery of within-group variance).

Does discussion bring more than social awareness and comparison?

Group discussion may prompt individuals to pay closer attention to features of the cases, much like individual reflection. But it also introduces two distinct sources of information. First, people gain access to others' judgments, enabling social comparison. Simply realizing that one's initial ratings differ substantially from the group, for example, being more permissive or more cautious, can lead to shifts in subsequent judgments. Second, discussion enables interactive calibration: people can exchange reasons, provide examples, and collaboratively reflect on what constitutes appropriate data-sharing.

To find out which aspect of the discussion better explains the effects of the group discussion, we first compared mean ratings changes across decision stages in i1 and i2, and second, constructed two hierarchical models to represent competing theoretical mechanisms. Calculating the mean attitude change from ratings in i1 across subsequent experimental stages revealed a progressive pattern of ratings shift. From i1 to i2 after 'thinking twice', participants showed a modest mean change of 0.212 (std = 1.09). This pattern intensified substantially in the group discussion C, where the mean change from i1 was 0.385 (std = 1.95). Most notably, in i2 after 'thinking together', the mean rating change reached 0.535 (std = 1.66), more than twice the magnitude observed immediately pre-discussion.

These results are confirmed by our two hierarchical models. While model 1 predicted post-discussion ratings by pre-discussion ratings, model 2 incorporated a measure of social awareness of other people's scores (also known as normative expectation) and discussion depth, approximated by scenario-specific discussion word count, to test whether interactive calibration processes contribute additional explanatory power beyond social awareness. Comparing model performance in predicting post-discussion ratings reveals the strength of each mechanism in group

discussion. A likelihood ratio test revealed a statistically significant improvement in model 2 over model 1 ($\chi^2 = 5.01$, df = 1, p = 0.025), indicating that discussion depth contributes meaningfully to post-discussion attitude beyond social awareness alone. This finding was validated by an AIC/BIC comparison, with model 2 demonstrating a moderately superior fit (AIC = 504.78, BIC = 520.46, R2 = 0.56) compared to model 1 (AIC = 507.78, BIC = 520.33, R2 = 0.53), representing a meaningful improvement of three AIC units.

The significant improvement in model 2 provides empirical support for the interactive calibration hypothesis, suggesting that the deliberative process itself, as captured here by discussion length, exerts influence on attitude change that cannot be reduced to simple exposure to other people's ratings.

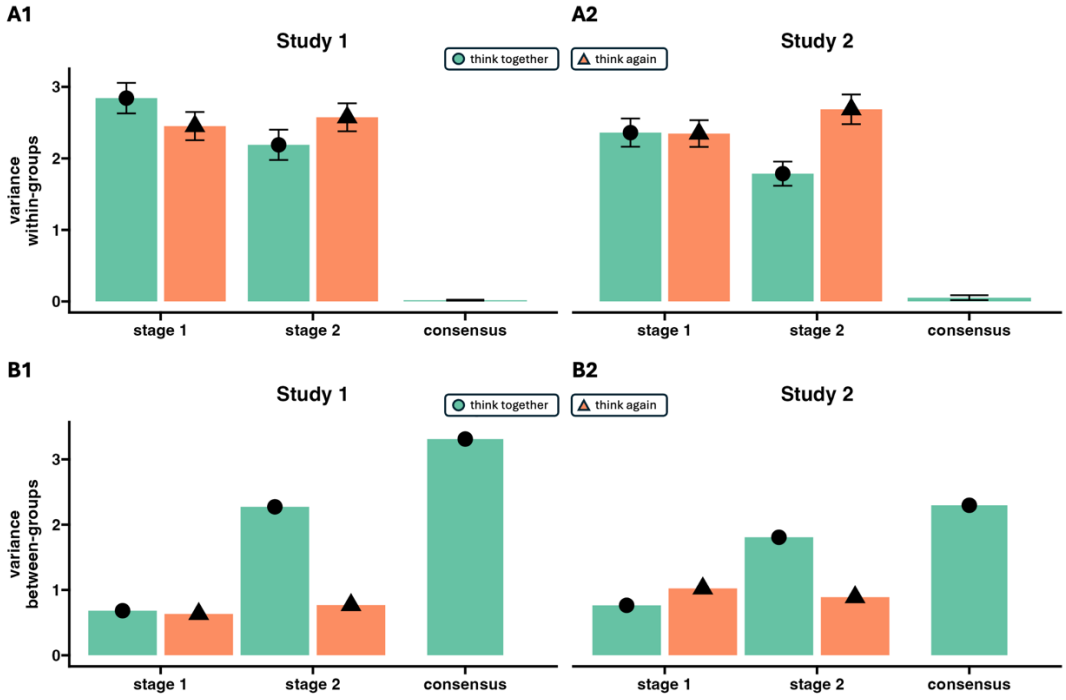

Figure 3 Group Decision Dynamics. A. *Within-group decision variance across decision stages. Plotted are mean variance and standard error of the mean of scenario ratings within a group. The within-group variance for a consensus decision in the discussion stage is as expected (near) zero. Within-group variance was overall stable with a little evidence for hearing in stage i2 after 'thinking together'.* ***B.*** *Between-group variance across decision stages. Plotted are mean variance and standard error of the mean of mean group ratings. Increased diversity of opinion: between-group variance is notably higher for stage 2-deliberation than stages i21 and i2 after 'thinking twice'.*

Discussion

The privacy paradox refers to the gap between individuals' stated concerns about privacy and their actual data-sharing behavior. In contrast, our findings highlight a different phenomenon: privacy indifference. When faced with specific data-sharing scenarios, participants tend to show high acceptance levels, often mirroring the broad terms commonly proposed by digital platforms. More importantly, their judgments lack contextual nuance. While participants show some sensitivity to the type of data being shared, they respond with far less discrimination to who receives the data and for what purpose it is used.

Improving data-sharing judgments is not simply a matter of reducing (or increasing) overall acceptance, or binary discrimination like what is at stake in, say, distinguishing between fake and genuine news. Here, we suggest that what matters is not whether users say that sharing is right or wrong more often, but whether users discriminate along dimensions that are contextually and personally meaningful, such as who is receiving the data, for what purpose, and whether user preferences align with their values or trust in the entity involved. In our two in-person studies, we found improvements in both ways by measuring context-sensitivity while maintaining diversity in judgments, along with contextual integrity and other recent privacy frameworks (Nissenbaum, 2009, 2019; Susser et al., 2018).

With these measures in place, we tested two interventions drawing on possible mechanisms underlying privacy indifference. While interventions do not always depend on specific causal assumptions, they often reflect implicit diagnoses of what drives the observed behavior. This is true for the two we examined here. If privacy indifference stems from individuals acting as “cognitive misers”, relying on biased, fast, or shallow information processing, then encouraging slower, second-order reflection should improve judgment. Alternatively, if the indifference reflects a lack of clear social norms in navigating novel and evolving data-sharing practices, then social interaction should help individuals make better data-sharing judgements.

Our findings show that prompting individuals to think again modestly improved contextual sensitivity and preserved individual diversity in judgments. However, social deliberation had a significantly stronger effect: it had a higher effect in enhancing context sensitivity, generated greater differentiation across groups, and maintained diversity across individuals, suggesting that privacy indifference is better addressed through collective, rather than purely individual, means. We also could show that, following work on interactive discussions and social norms theory (Bahrami et al., 2010, 2012; El Zein et al., 2019; Tuncgenc et al., 2020), the effects were not only coming from seeing what other people thought was appropriate (sometimes equivalent to “normative expectations”) but also from the discussion and exchanges themselves - what we can call social calibration (Bang et al., 2014; Pescetelli & Yeung, 2020). Crucially, we replicated our results, using health data in each case as a key test condition (Dyke et al., 2016).

Mechanistically, our findings suggest that both cognitive and social factors contribute to privacy indifference. Acting as cognitive misers may explain some of the inattentiveness to contextually important aspects, for instance, the fact that the data is used for public goods. However, our results point to an additional and perhaps more powerful role for the uncertainty regarding the social norm that other people are following. These mechanisms are not mutually exclusive and likely interact in real-world settings.

Practically, the findings demonstrate that effective interventions need not rely solely on individual strategies, here in the form of individual reflection. Peer-to-peer discussions made people more discriminate in their privacy judgements. Such interactions may operate by increasing attention and engagement, but also bring additional social information in situations where uncertainty involves collective coordination problems. Prior work (Halama et al., 2022) explored social information in privacy decisions using simple cues about what other hypothetical users had accepted in terms of privacy or sharing. Our work shows that real-time group discussion can go further than passive social information and aligns with a growing shift in data literacy research that is moving beyond technical skills toward socially grounded engagement with data (Bowler & Shaw, 2024; Cui et al., 2023; Vermeire et al., 2025).

In terms of limitations and future directions, several questions remain open. First, we tested two interventions, and other mechanisms and interventions may contribute to privacy indifference (e.g., habits, as shown elsewhere for misinformation, see (Ceylan et al., 2023)). There are then other targets for improving privacy judgments, and further research is needed to explore these pathways.

A second important point is that the study was deliberately conducted with German participants, a population known for heightened privacy concerns (Prince & Wallsten, 2020; Schomakers et al., 2019). The emergence of privacy indifference in this context is therefore significant, suggesting the phenomenon may be even more widespread in populations with lower privacy sensitivity, and warranting replication across cultural contexts.

A third question concerns the realism of the case scenarios. While our vignettes do not replicate the length or legal complexity of full consent forms, they were designed to approximate the kinds of summaries users encounter through platform interfaces or search engine queries. Moreover, participant debriefings indicated they found the cases both realistic and personally relevant. However, our method involved presenting 16 scenarios in sequence, which likely encouraged participants to make comparative rather than absolute appropriateness judgments. While such comparative reasoning may reflect how people evaluate options in real-world contexts, particularly when faced with multiple services or platforms, they are unlikely to engage in this many structured comparisons at once. This limitation underscores the need to examine how contextual sensitivity unfolds in more naturalistic, time-extended decision environments.

Finally, the intervention tested here involved face-to-face interactions, and there could be difficulties in scaling the intervention. Who will organize peer discussions on data sharing acceptability, except in structured panels? We know that social proximity and non-verbal cues influence communication (Fusaroli & Tylén, 2016; Zajdela et al., 2025), but previous research has shown that group deliberation in online settings, via chat or video, can produce comparable effects on judgment revision (Keshmirian et al., 2022; Navajas et al., 2018, 2019). This suggests that the quality of social interaction, rather than physical co-presence, is the key driver of improved contextual sensitivity in privacy decisions. The reason for preferring individual to deliberation-based interventions in digital environments may then reflect a lack of technological inventiveness rather than a real practical limitation.

To conclude, because privacy feels deeply personal, we often treat it as a problem to be solved individually. Yet our findings suggest the opposite: privacy decisions are profoundly social, and so are the most effective solutions.

Materials and Methods

Participants

We recruited a total of 118 participants across two in-person studies. Participants were recruited via MELESSA (Munich Experimental Laboratory for Economic and Social Science) in groups of four to five participants. Each group was gender balanced. Study 1 had 60 participants with six male-dominant (three male, two female participants) and six female-dominant (two male, three female participants) groups. Study 2 had 58 participants with five female-dominant (two male, three female), four male-dominant (three male, two female), one mostly female group (one male, four female), and two equitable groups (two male, two female). Participants of study 1 were between

19 and 63 years old (mean = 27.63, median = 24, std = 10.1). All participants possessed a university-entrance qualification. 50% of participants held an undergraduate degree or higher. Similarly, participants of study 2 were between 18 and 80 years old (mean = 26.6, median = 24, std = 11.04). All participants possessed a university-entrance qualification. 45% of participants held an undergraduate degree or higher. For both studies, participants received a show-up fee of 10€ and a participation fee of 10€.

Materials

To measure the impact of group deliberation on individual decision-making, particularly data-sharing preferences, we used a multi-stage, in-person experimental design adapted from the 'wisdom of crowds' literature (Dezecache et al., 2022; Herzog & Hertwig, 2014, 2025; Myers & Kaplan, 1976; Navajas et al., 2018; Van Dolder & Van Den Assem, 2017). Using vignettes, we tested how group deliberation affects different dimensions of data-sharing acceptability. In line with the theory of contextual integrity (Nissenbaum, 2009, 2018), we included two parameters assessing contextual information norms (adapted from Gerdon et al. (Gerdon, 2024; Gerdon et al., 2021)): the recipient of information and the attribute or type of information. We also followed Gerdon et al. (Gerdon, 2024; Gerdon et al., 2021) in adding and varying the purpose for data collection. Therefore, we had three experimental conditions (data type, data recipient, data use) with two factors each (see variables for details) - for a total of eight different experimental scenarios. For each experimental scenario, we had two versions sharing the same experimental conditions but different in contextual details for 16 vignettes (see supplementary materials for a full list of vignettes).

Procedures

The experiment consists of two stages, which participants went through sequentially. One participant was paired with four other participants to form a group. In the first individual stage, each participant went through all 16 vignettes individually in a random order, including both versions of the eight experimental scenarios. One minute was given as a time limit for each vignette. If all participants in one group completed their presented vignette before the time limit was reached, they would move to the following vignette. In the second stage, each participant was asked to go through two interventions and provide individual ratings again (i2). The first intervention meant that participants were assigned one version of the eight experimental scenarios to be rated individually again (i2-think twice) and the other version to be rated after a group discussion that needed to reach consensus or compromise (i2-think together). In the group consensus stage C, participants were given two and a half minutes to reach a consensus decision on a particular vignette. Each participant then noted the consensus. In subsequent deliberation, each participant was asked to rate the previously discussed eight vignettes in a random order again, with 30 seconds for one vignette. Moving the ‘think twice’ i2 intervention before the social ‘think together’ i2 intervention importantly minimized any transfer effects. It allowed us to isolate and compare the effect of ‘thinking twice’ alone with the effect of ‘thinking together’ in and after a group discussion.

Analysis

We pre-registered to run multiple linear and ordinal logistic regression models to test our individual hypotheses using the ‘lmer’ and ‘ordinal’ packages (Christensen, 2022). To check for the effect of group deliberation on the perceived acceptability of data-sharing, we used general and condition-specific mixed regression models (see results for details). To check for any individual effects of

group deliberation on the experimental factors of data type, data purpose, and data recipient, we used similar general and condition-specific mixed regression models (see results and supplementary for details). For a more accurate data analysis, we added the random effect of *GroupID* to the pre-registered random effect of *participantID.* We also supplemented the underlying ordinal analysis with linear regression results to communicate the experimental results more effectively. All analyses are available in full in the supplementary material. In addition to the behavioral analysis of perceived data acceptability ratings, we transcribed the recorded group discussions. We used subsequent exploratory sentiment analysis to uncover trends in the underlying group discussion (see results and supplementary material for details).

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