

## The ‘Why’ Behind the Lie: Towards a Better Understanding of Health Information Disclosure in the Patient-Provider Interaction

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### Abstract

*In recognizing the prevalence and adverse outcomes of patients withholding health information from physicians—including medical errors, misdiagnoses, and economic burdens—we draw attention to the need for an enhanced understanding of this behavior. The paper offers an overview of the existing antecedents-privacy concerns-outcomes (APCO) model of information disclosure and proposes an adapted model that incorporates construal level theory to account for unique factors within healthcare settings. The new model aims to provide a theoretical contribution by offering a more comprehensive perspective on health information disclosure during physician consultations. Furthermore, it carries practical implications for designing information collection processes, thereby contributing to strategies that reduce patient nondisclosure and its subsequent costs in healthcare.*

**Keywords:** Patient-Provider Interaction, Health Information Disclosure, APCO Model, Construal Level Theory, Patient Nondisclosure

### 1. Introduction

You’re at your doctor’s office for your annual physical, (un)comfortably seated on that crinkly hygiene paper covering the examination table, and your physician has begun the process of medical history taking (Nichol et al., 2022). In less clinical terms, this is the part of the appointment in which the doctor asks a series of probing, personal questions to elicit information about your health behavior that even your closest friends and family may not be privy to, including how much you exercise, drink, smoke, overeat, self-medicate (including with illicit or controlled substances), engage in sexual activity, etc.

Uncomfortable as these questions may be, you are an intelligent person who recognizes that the doctor is asking these questions because they are necessary for them to provide appropriate medical care to you. So, you wisely determine to disclose all the requested

information and withhold nothing. Upon completing the consultation, during which you disclosed information in an incredibly rational way, you proceed with your day, and ultimately live healthily ever after.

If only it ever went that way, right?

Withholding health information from a physician, whether passively (e.g., not bringing something up) or actively (e.g., lying about or misrepresenting the truth) is not only plausible, but common. A US-based national survey recently reported that as many as 81 percent of patients have withheld relevant information from their healthcare provider (Levy et al., 2018). The types of information most commonly withheld included items such as suboptimal exercise and diet habits, nonadherence to a prescription medication regimen, substance abuse, and whether they understood their provider’s treatment instructions.

All the information requested during a medical exam has clinical importance, and attempting to treat a patient without accurate information can lead to medical errors, such as misdiagnoses or prescribing contraindicated medication (Levy et al., 2018; Palmieri & Stern, 2009). Medical errors are the third leading cause of death in the US, following heart disease and cancer (Makary & Daniel, 2016), with misdiagnoses specifically leading to an estimated 80,000-160,000 cases of serious harm annually and an estimated 40,000-80,000 deaths in US hospitals annually (Sharkey, 2019). Additionally, failure to adhere to physician instructions creates an economic burden of \$100-300b/year in disease progression, readmissions, wasted resources, labor burden, and insurance costs (Neiman et al., 2018; Oxitone, 2022).

These are just a few of the adverse outcomes of patient nondisclosure, and yet within IS, healthcare privacy research that focuses on patient-physician consultation interaction (the context in which information withholding behavior is most likely to occur) is scarce. This means that known theories of disclosure that are applied to this interaction are likely subject to blind spots and myths concerning what drives patient disclosure decisions (hint: it’s not privacy concerns).

Our purpose is to propose a revised theoretical model of information disclosure that is specifically concerned with factors influencing the patient-provider interaction. We begin by outlining recent trends in information disclosure research toward more behavioral perspectives of disclosure behavior. We also provide an overview of several key factors that distinguish information disclosure in a healthcare context from disclosure in the more commonly studied consumer context. Upon establishing that the disclosure of health information by a patient to their physician is an important and understudied topic within information disclosure research, we discuss the existing antecedents—privacy concerns—outcomes (APCO) model of information disclosure (Dinev et al., 2015) and how it could be enhanced by the integration of construal level theory (Trope & Liberman, 2010). We conclude with a discussion of how this model could be used in future research.

We believe the contributions of this paper will have implications for theory and practice. Theoretically, it provides a detailed overview of how the phenomenon of information disclosure in a healthcare context differs from disclosure in a consumer context, and proposes an adapted APCO model that can more fully account for these differences. From a practical perspective, the proposed conceptual model can guide the design of information collection processes as the psychological processes involved in the disclosure process are better understood and conveyed to designers and practitioners in the healthcare sector. We hope that our contributions in each of these areas will be of use in addressing the broader issue of patient nondisclosure behavior and reducing the costs, both human and economic, that it enacts on our society.

## **2. The Evolution of Information Disclosure Research**

Much of the foundational information disclosure theorizing in information systems is characterized by assumptions of human rationality. A key example of this brand of theorizing is privacy calculus theory (Dinev & Hart, 2006). Privacy calculus theory was adapted from rational choice theory (Glasser, 1999) and the theory of planned behavior (Ajzen, 1991) as a means of explaining information privacy in the age of the Internet (Dinev & Hart, 2006). The basic model of privacy calculus theory predicts a user's disclosure behavior in a given context using a few other constructs: a user's general privacy concerns, trust in the entity they are disclosing to, and the context-specific risks and benefits associated with disclosure (Dinev & Hart, 2006). The greater an individual's

general concern about privacy (irrespective of context), the more risk they will perceive in each disclosure opportunity, and the more reticent they will be to disclose personal information completely and accurately (Culnan & Armstrong, 1999). On the other hand, a desirable, significant, context-specific benefit could override an individual's general and contextual privacy concerns and increase the likelihood of information disclosure (Dinev & Hart, 2006).

This theory has been used extensively to explain disclosure behavior in various contexts such as e-commerce (Dinev & Hart, 2006) and social media use (Cavusoglu et al., 2016). However, its normative assumptions of rationality can be problematic, as humans are not, in fact, without restrictions on their rationality (Ariely, 2009). This is evidenced by the emergence of the privacy paradox—disclosure behavior apparently at odds with privacy beliefs and concerns (Smith et al., 2011).

In response to this breakdown of privacy calculus, scholars began seeking other explanations of information disclosure. Some scholars turned to theories from other disciplines (especially behavioral economics) such as the elaboration likelihood model of persuasion (Cacioppo & Petty, 1984) which suggests that irrational information disclosure behavior occurs because consumers are too busy or distracted at the time of disclosure to realize the full extent of privacy risks (Lowry et al., 2012). Keith et al. (2014) and Keith et al. (2012) utilized prospect theory (Kahneman & Tversky, 2013) to explain how varying levels of risk and reward lead to variation in disclosure behavior. Acquisti and Grossklags (2003) used hyperbolic discounting (Laibson, 1997) to explain how the ordering of when disclosure costs versus benefits will be realized influences a consumer's disclosure decision.

Perhaps one of the most seminal of theoretical advances to come out of this era is the enhanced Antecedents – Privacy Concern – Outcomes (APCO) model proposed by Dinev et al. (2015), which incorporates situational, cognitive, and extraneous factors into the core, normative model of information disclosure. This hybridization of the two perspectives of privacy illustrates an important point—that the two are not exclusive. Privacy decisions can be influenced by normative *and* behavioral factors. Furthermore, context plays an important role in whether disclosure decisions are characterized more by psychological factors or economic factors (Dinev et al., 2015).

## **3. The Role of Context**

These theory building efforts have led to exciting improvements in the study of privacy, and they have

been extensively applied in research, including in organizational, commercial, and healthcare contexts. However, there is relatively little IS privacy research examining patient-physician consultations, and there are many notable ways in which this context differs from traditionally examined contexts.

### 3.1 Differences in the Disclosure Process

There are several salient differences in the process of disclosing personal information in a healthcare setting as opposed to a typical consumer setting. Perhaps one of the most obvious differences is how quickly an individual is expected to respond to an information disclosure request. Consumers may be confronted with flashing ‘act now’ banners or phishing emails informing them that an account has been compromised and requires their immediate attention, but the processing time allowed in these situations is still greater than the span of time between a physician or nurse posing a question to you during a consultation, and how quickly social norms dictate you should respond to it. A pause much longer than a few seconds is likely to be uncomfortable and suspicious, and thus, even if a patient had a complete understanding of all the benefits and risks of answering their provider accurately, they certainly don’t have the time to engage in a proper cost-benefit analysis. This is consistent with Dinev et al. (2015)’s observation that time constraints invoke a lower level of cognitive effort during disclosure decisions.

Another key difference lies in the commoditization of most consumer services and products. If someone is uncomfortable with the privacy policies of a company, there are typically many alternatives and substitutes available (e.g., Google vs DuckDuckGo). But in healthcare, you can’t very well walk out mid-appointment because your doctor asked a question you don’t like, proceed directly to a different ready-and-waiting doctor elsewhere, and immediately pick up where you left off with the last doctor. And even if you could, that doctor will likely pose the same questions due to the standardization of medical history taking processes (Nichol et al., 2022).

### 3.2 Differences in the Disclosed Information

In addition to the *process* of disclosure differing between healthcare and consumer contexts, the *nature* of the requested information is also quite different. Typically, the information collected during a physician consultation is incredibly sensitive—standard topics include a patient’s medical history, family history, social/sexual history, information about a patient’s diet, exercise, drinking, smoking, and

even their illegal drug use, to say nothing of information that becomes relevant as a result of the patient’s presenting complaint (i.e., the reason for the consultation). Additionally, all the data requested in a physician consultation is requisite for the proper delivery of care—your health care provider is not asking about the consistency of your last bowel movement to make small talk. The requisiteness of information disclosure in healthcare contexts is quite different from consumer contexts, wherein companies frequently request more data than would be necessary for them to successfully provide the goods or services requested by the user. This makes non-disclosure in healthcare settings a more troubling issue than simply refusing cookies on your device or choosing not to provide your email to a retailer.

It is also worth considering that the data disclosed to a health care provider is often quite personal and behavioral in nature, resulting in greater potential for embarrassment. Compared with something like a credit card number or email address, which are sensitive but reveal comparatively little about a person, health data is almost exclusively reflective of an individual’s behavior—their habits, values, preferences, choices, and lifestyle can be revealed through the intimate questions posed during medical history taking. Because this information reflects who a person is, and not simply what a person has, it may be more susceptible to judgment from others than the information consumers are typically asked to disclose.

### 3.3 Differences in the Disclosure Outcomes

Finally, there are also key differences in the outcomes of disclosure for a patient versus a consumer. For one thing, there is a great difference in the temporal immediacy of the risks of health data disclosure (e.g., immediate embarrassment and judgement from doctor) versus consumer data disclosure (e.g., eventual spam or publishing of data on the dark web). Prior research has demonstrated that hyperbolic discounting (i.e., the tendency to minimize risks that may occur long into the future) is a form of limited or bounded rationality in decision making (Acquisti & Grossklags, 2003). As a result, risks may not be accurately estimated in traditional consumer contexts compared to healthcare settings. Conversely, the benefits of disclosure are often immediate in consumer contexts relative to healthcare settings—you download an app for driving directions, and you immediately have access to driving directions. That benefit will be realized long before a patient seeking treatment for depression via medication or therapy will see the benefits of their disclosure about their

condition to a health care professional (assuming they see a benefit at all).

There is also an element of causal ambiguity present in disclosure outcomes for consumers that is not present in a healthcare context. It can be difficult to say which of the dozens of websites that are storing cookies on your computer is responsible for that ad you keep seeing, or which of several questionable purchases has led to all the spam emails you're suddenly receiving, but it's not a mystery why your doctor frowned slightly when you admitted to not exercising in the past two months.

### 3.4. Non-Disclosure in Patients vs in Consumers

In the realm of consumers, privacy and security concerns predominantly drive non-disclosure decisions. This arises from questions like, "Will my credit card information be secure with this company?" or "Will clicking on this ad lead to an onslaught of targeted ads?" (Rahman, 2019) This perspective is underpinned by the fact that adverse outcomes of disclosure in commercial contexts often revolve around information privacy and security. Therefore, it is understandable why research efforts in these contexts largely focus on the role of privacy concerns.

In contrast, the dynamics of non-disclosure significantly differ within the healthcare setting. Levy et al. (2018) found that the most common reasons patients withhold medical information from clinicians are not wanting to be judged or lectured, not wishing to hear about the harmfulness of their behavior, and feelings of embarrassment. Additional factors driving non-disclosure can include stigma, especially in cases of highly sensitive issues.

### 3.5. Information Disclosure in Healthcare

Although the contexts in which health information disclosure has been studied are diverse, few studies have specifically focused on the direct disclosure of health information from patients to their physicians or other healthcare providers in a consultation setting. Instead, commonly studied topics include patient-information seeking behavior (e.g., Xiao et al., 2014), engagement and self-disclosure in online health communities (OHCs) and social media (e.g., Kordzadeh & Warren, 2017), and the perception and use of electronic health records (EHRs) and patient portals (e.g., Anderson & Agarwal, 2011), among others. These are all certainly important healthcare contexts in which disclosure plays a significant role and health outcomes can be affected by user behavior, but these contexts may not fully capture

the nuanced dynamics of disclosing medical information while face-to-face with one's doctor.

One of the most relevant studies was conducted by Keith et al. (2022), in which participants were led to believe that their factual answers to questions about their health were necessary, and deceptive answers were identified using mouse-tracking software and self-report measures, but even this study does not go so far as to explain *why* the risks were weighed more heavily than the benefits, nor do they discuss the role of the fear of judgment as the primary driver of patient non-disclosure behavior.

In summary, the patient-physician consultation context is sufficiently distinct from the commonly studied contexts such that privacy and disclosure decisions may need to be theorized afresh. The following sections represent our efforts to contribute to the growing body of 'hybrid' theories of information disclosure that account for both normative *and* behavioral factors, in order to better understand patient disclosure behavior and improve patient health outcomes and healthcare delivery.

## 4. Theory

### 4.1. Overview of the Enhanced APCO Model

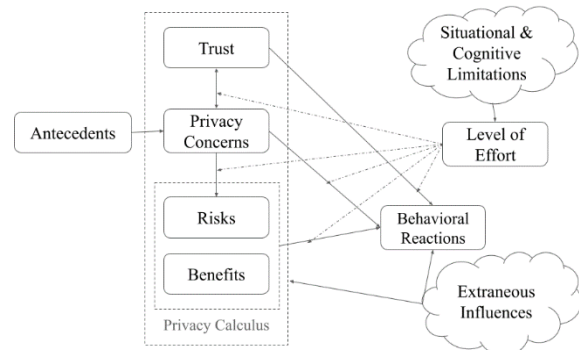


Figure 1. Current APCO model, Dinev et al. (2015)

The original APCO model (Dinev et al., 2015), a product of the normative era of disclosure research, postulated that disclosure decisions were shaped by various antecedents such as demographics, personality, privacy awareness, and privacy experiences. These antecedents influence privacy concerns, which are the apprehensions individuals have about the handling of their personal information by others (Smith et al., 1996). These privacy concerns subsequently influence disclosure outcomes such as full disclosure, withholding, misrepresentation, and non-disclosure. This model was widely accepted within the research community, as evidenced by

several independent literature reviews positing essentially the same relationship (Pavlou, 2011).

Despite the general consensus, these macro models do not account for the nontrivial influence of low-effort thinking, heuristic processes, and biases on decision-making. To address this gap, Dinev et al. (2015) incorporated the 'levels of effort' nomenclature from the heuristic/systematic model of decision-making (Chaiken, 1980) and elaboration likelihood models (Cacioppo & Petty, 1984) into the discourse on information disclosure. They proposed an enhanced APCO model, which added the level of cognitive effort (influenced by factors such as affect, cognitive resources, motivation, and time constraints) and considered extraneous influences from behavioral economics and psychology, including peripheral cues, biases, heuristics, and misattributions (see Figure 1).

The enhanced APCO model proposed that low-effort processing, driven by factors such as reduced cognitive resources, intense emotional states, time constraints, and need-for-cognition traits, can impact the relationships within the APCO model. However, the effects of low-effort processing on these relationships remain largely unexplored. For instance, while strong positive or negative emotions have been found to lead to increased disclosure, gaps between stated privacy concerns and actual disclosure behaviors have also been observed due to nonnormative factors such as cognitive depletion and mood state (Alashoor et al., 2022).

In addition, the enhanced APCO model acknowledges the impact of extraneous influences, such as message framing, loss aversion, default trust, positivity bias, perceived authority of source, anchoring effects, and herding effects. These factors directly influence disclosure attitude and behaviors, unlike drivers of the level of processing used, which influence attitudes and behaviors indirectly.

These modifications unquestionably improved the utility of the APCO model, but some unexplained nuances of patient disclosure behavior remain. For instance, it is still unclear why a patient might lie to an authority figure such as a doctor, or why the fleeting risk of judgment might outweigh the significant benefits of good health and longevity. To address these gaps, we propose an adapted APCO model which incorporates concepts of construal level theory (Trope & Liberman, 2010). Our aim is to augment the APCO model's predictive power and enhance its applicability to various patient-related disclosure scenarios.

## 4.2. Construal Level Theory

Trope and Liberman (2010) introduce construal-level theory (CLT) with the assertion, "People directly

experience only the here and now." They proceed to acknowledge that despite this, we constantly transcend ourselves in the here and now to accomplish feats such as making plans, empathizing with others, and learning from the past. CLT proposes that we manage this by forming abstract mental construals of all objects not currently contained in our direct experience. These construals of distal objects and events can be either high-level (abstract) or low-level (concrete). A high-level construal will focus on the superordinate (the *why*) and core features of an object, while a low-level construal of that same object will focus on subordinate (the *how*) and contextualized features (Liberman et al., 2007). For example, a dog could be construed at a higher level (e.g., a mammal) or a lower level (e.g., a poodle). A key method for determining the level of construal of a distal object is by assessing its psychological distance (Trope & Liberman, 2010). CLT identifies four different types of psychological distance:

*Hypothetical* distance refers to the likelihood that an event will occur. A likely event is hypothetically proximal, concrete, or "near" versus an unlikely event that is hypothetically distal.

*Temporal* distance refers to the timing of events compared with the present moment. Events in the recent past or near future are said to be more temporally proximal, while events occurring in the distant past or future are temporally distal.

*Social* distance refers to how much an individual relates to or feels close to another individual or group.

*Spatial* distance is the physical proximity of an object or event. For example, sharing data with a doctor that is going to be seen face-to-face is very spatially proximal compared to losing data to a third party who you will never meet personally (spatially distal). This example also applies to *social* distance.

In addition to identifying these four types of psychological distances, Trope and Liberman (2010) articulated three key aspects of the relationship between construal level and psychological distance:

1. Various types of psychological distances are related to each other (e.g., as temporal distance increases, hypothetical distance increases; as spatial distance decreases, social distance decreases, etc.)

2. These psychological distances both influence and are influenced by construal level (i.e., an object that is construed at a higher level will likely be perceived as more psychologically distant and vice versa; a low-level construal will be perceived as more psychologically proximal and vice versa).

3. Construal level and psychological distance similarly affect prediction, preference, and action (e.g., an object that is psychologically distal will have similarly weak effects on current predictions,

preferences, and behavior as an object with a high-construal level).

### 4.3. Relevance of CLT in Privacy Research

The use of CLT in IS research is increasing, including among privacy researchers (e.g., Bandara et al., 2018; Cloarec et al., 2022; Hallam & Zanella, 2017; Singh et al., 2018). Two in particular have examined CLT in a healthcare disclosure context: Singh et al. (2018) proposed research on healthcare data breaches using a CLT lens, and more recently, Butori and Miltgen (2023) demonstrated the moderating effect of construal level on perceived disclosure risks and benefits. One key finding reported in their study was that concrete risks (but not abstract ones) led to reduced patient information disclosure.

There have also been several studies of disclosure behavior in which CLT was not explicitly used, but the researchers analyzed how altering a dimension of psychological distance (such as time or space) affected disclosure behavior. For example, Xu et al. (2009) found that geographic proximity to a potential benefit of allowing location tracking positively influenced participants' willingness to provide their location data. Multiple studies on hyperbolic discounting confirm that decreasing the temporal distance between disclosing personal information and receiving a benefit increases disclosure behavior (Acquisti & Grossklags, 2003; Acquisti et al., 2016).

Another reason to assume that CLT would be a relevant addition to information disclosure theorizing is because it is our construal of objects, and not the objects themselves, that inform our choices and

preferences (Trope & Liberman, 2010). By this logic, individuals who engage in paradoxical disclosure behavior are reacting to subjective (and possibly ill-conceived) perceptions of the risks and benefits of disclosure, rather than the actual risks and benefits. Furthermore, the psychological proximity, or level of construal at which an individual conceptualizes a risk or benefit can be affected by situational factors (Vallacher & Wegner, 1987). We assume that if the risks of disclosure are perceived as more psychologically proximal than the benefits, people will choose not to disclose their personal information, even if the benefits are more important and impactful than the risks (as is the case when disclosing health information to a physician). Conversely, in disclosure scenarios with salient benefits and comparatively vague risks, individuals will surrender personal information, even if the benefits are trivial.

It is reasonable to predict that disclosure risks in healthcare would be perceived as less abstract, with possible risks including incurring negative judgement, frustration, or disdain from their physician, embarrassment, being lectured about their behavior, or having the information kept in a medical record, to name a few (Levy et al., 2018). With regard to our introductory example of paradoxical disclosure behavior, when an individual is sitting in the waiting room of a clinic, the risk of receiving a lecture or experiencing embarrassment in the near future is likely perceived as far more imminent (temporally proximal) and likely (hypothetically proximal) than the associated benefits of disclosure: good health, which will not be actualized immediately (more temporally distal) and is not guaranteed (hypothetically distal).

### Disclosure Request: *How much do you exercise?*

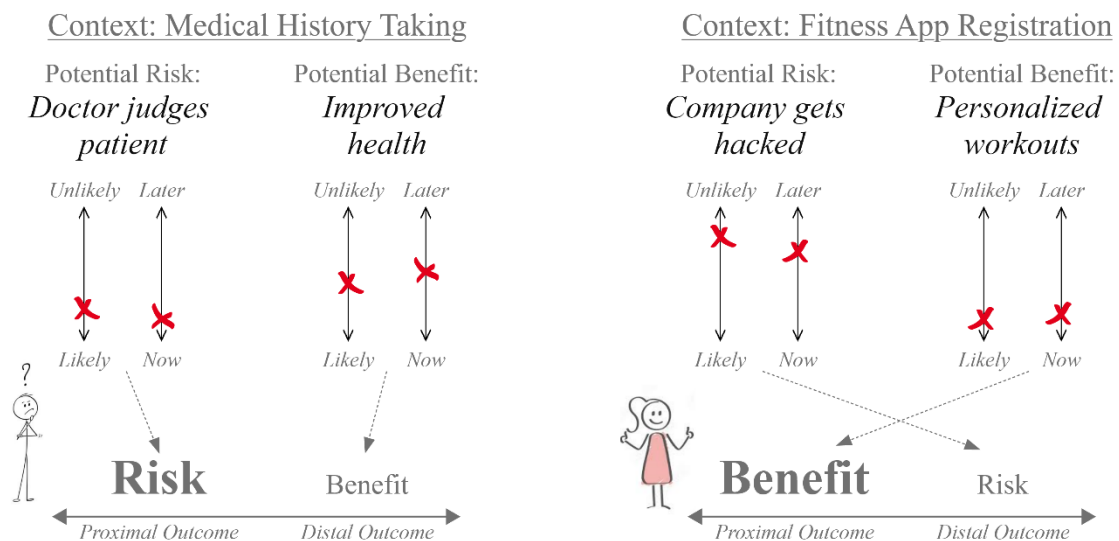


Figure 2. The role of context in the psychological distance and construal of disclosure outcomes

This relative influence of risks over benefits in a healthcare context is likely to be the case in most interactions with a healthcare provider, barring a medical emergency in which the benefits of accurate disclosure include very salient outcomes (such as avoiding death or irreparable injury).

However, the same health information, requested in a commercial context for the purpose of delivering a specific service or product (e.g., a fitness app that provides personalized workouts) is likely to be disclosed without issue, because the benefit of receiving a personalized workout plan is a near-certain outcome (hypothetically proximal) that will happen almost immediately (temporally proximal) following disclosure. Meanwhile, a commonly identified risk of disclosure in consumer contexts (data loss or exposure due to a hack or breach) is assumed to be an unlikely event (hypothetically distal) that may occur on some future date (relatively temporally distal). Thus, we would expect that in a healthcare setting, where the risk is construed to be far more concrete and proximal than the benefits of disclosure, an individual would choose to not disclose this information, while in the mobile app setting, where the benefits are for more concrete than the risks, an individual *would* choose to disclose this information (see Fig. 2 for illustration).

#### 4.5. Theoretical Propositions

We therefore assert that construal level is an important factor in how individuals weigh the costs and benefits of disclosure, and propose that it be integrated into Dinev et al.'s enhanced APCO model.

Proposition 1. *The level of construal (i.e. abstractness) employed in assessing perceived benefits and risks of information disclosure moderates the weighting given to these benefits and risks, with the outcome(s) construed to be the most proximal having a disproportional effect on the disclosure outcome.*

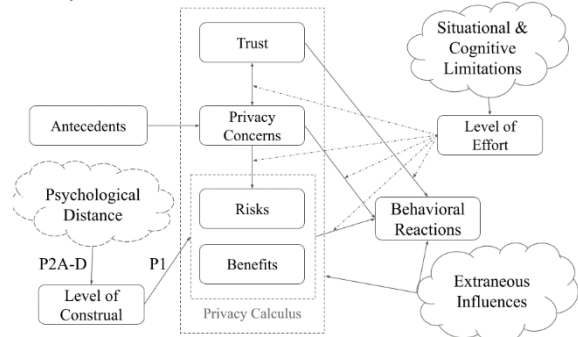
Additionally, as postulated in CLT and illustrated in the figure above, the overall construal of an outcome of disclosure will be heavily influenced by or derived from one or more measures of psychological distance.

Proposition 2A. *Disclosure outcomes that have a high probability of occurring will be construed as more concrete than outcomes that have a lower or unknown probability of occurring.*

Proposition 2B. *Disclosure outcomes that will happen soon will be construed as more concrete than outcomes that will happen in the distant future.*

Proposition 2C. *Disclosure outcomes that will happen to the individual who is disclosing the information will be construed as more concrete than outcomes that will happen to someone other than the individual disclosing the information.*

Proposition 2D. *Disclosure outcomes that will happen in a location that is proximal to the individual who is disclosing the information will be construed as more concrete than outcomes that will happen in a location that is remote from the individual disclosing the information.*



**Figure 3. Proposed APCO model with CLT integration**

The inherent value of Propositions 2A-D lies not just in their theoretical insights but in their pragmatic utility for both researchers and healthcare practitioners. Firstly, they present a structured approach for approximating construal level, offering a tangible metric to what might otherwise be abstract cognitive processes. These propositions can inform expectations of disclosure behavior, as well as provide a starting point for researchers attempting to explain paradoxical disclosure behavior, such as patients misrepresenting medical histories or lying outright. Secondly, these propositions pave the way for more contextualized research. By incorporating the temporal, spatial, social, and hypothetical dimensions inherent in these propositions, researchers are prompted to delve deeper into the multifaceted nature of disclosure in healthcare. This nuanced approach ensures that studies are tailored to the unique dynamics of specific healthcare settings, enhancing their relevance and potential for real-world impact.

## 5. Discussion

### 5.1. Is This an IS Problem?

This is an understandable question—after all, if it has been determined that key drivers of non-disclosure in the healthcare setting have more to do with embarrassment and fear of judgment than traditional privacy concerns, wouldn't these affective influences render this more of a psychological or even sociological question? However, there are a few reasons, both practical and theoretical, that lead to the assumption that this is indeed a research topic that IS scholars can and should take an interest in.

First, while an IT artifact may not play a central role in patient non-disclosure behavior, it can play a central role in addressing it. For example, the advent of AI health technologies (AIHTs) could allow for some of the fear-inducing social interaction to be reduced as medical history taking is performed by a chatbot, robot, or another instantiation of AI.

Second, the importance of affective factors, in disclosure decisions, has been recognized and demonstrated in IS research repeatedly (Alashoor et al., 2022; Dinev et al., 2015; Rahman, 2019; Zhang, 2013) because emotions can guide judgment, information processing, and decision making.

Finally, the assumption that IS research must involve direct interaction with a specific IT artifact or information system can limit our impact and capacity to solve problems we as a holistic field are uniquely situated to address. Because fears of judgment and stigma were unseen when using an IT-centric view of patient disclosure, they were overlooked, thus blinding research efforts to crucial explanatory factors and likely reducing the predictive power of our theorizing thus far (Lowry et al., 2017). Information systems are always and fundamentally comprised of both human and technological elements, and neglecting either component in our research could diminish its utility.

## 5.2. Experimental Evaluation Plans

We recognize that empirically validating our proposed model and propositions will be critical, and we plan to conduct this validation using a mixed-methods approach. We first would undertake a qualitative study in which participants respond to open ended questions about the benefits and risks of disclosing medical information that are most salient to them in either a healthcare or a consumer setting (e.g., signing up for a fitness app). However, qualitative data is subject to certain biases and weaknesses, such as participants inaccurately predicting their disclosure rationality in hypothetical scenarios. Therefore, we would conduct quantitative research (e.g., rating, rank-ordering exercises) to assess the perceived psychological distance of the identified risks and benefits. Ultimately, we would conduct experiments (similar to Keith et al., 2022; Masters et al., 2022) in which patients are asked for personal health data in either a medical or consumer context, and measure the extent to which participants then lie about their data in each context. Potential challenges may include (but are not limited to) ensuring participants' adopt an egocentric view of disclosure scenarios (necessary for CLT research) and receiving IRB approval to deceive participants into believing that there is real risk in disclosing the information.

## 5.3. Implications

Assuming our proposed model is valid, it would be beneficial for administrators and policymakers in the healthcare industry to consider how best to frame the benefits of disclosure so that they are construed as more proximal than the risks and thus have a greater bearing on patient disclosure behavior. A similar approach was taken in security research by Schuetz et al. (2020), in which concretely worded descriptions of the nature and consequences of spear-phishing attacks led to more protection-motivated behavior than abstractly worded descriptions. This would also provide evidence for Dinev et al. (2015)'s proposition on the role of framing effects in disclosure behavior. However, if no amount of manipulation results in disclosure benefits being construed as more proximal than the possibility of a physician's disapproval, IS is uniquely situated to conduct research on removing or reducing the direct interaction between physicians and patients using IT artifacts such as AIHTs. Additionally, if it is established that individuals are less guarded about their disclosure of sensitive health data in consumer contexts, it may fall to legislators to extend health data regulations (such as HIPAA) to organizations beyond the healthcare industry.

We believe there are many areas of privacy research in healthcare that could benefit from the utilization of our proposed framework. For example, extensive research on sharing health information via wearable technology has produced mixed findings in terms of how perceived privacy risks impact disclosure behavior. Examining this issue with the proposed framework could provide insights into how temporally and hypothetically proximal benefits of disclosure (such as affirmation, rewards, etc.) may outweigh the more distal privacy concerns typically associated with sharing biometric and location data.

Additionally, because psychological distance is typically measured in specific contexts, studies utilizing CLT would not ask a research participant to state how concrete or abstract the risks and benefits of disclosing health data are without referring to a specific scenario and specific data elements (e.g. name, address, phone number, weight, alcohol consumption, depression, etc.). However, existing studies that measure the perceived risks and benefits of information disclosure predominantly use high-level Likert-style measures such as, "I believe there would be a lot of risk in sharing data with [company or app name]" (Cherif et al., 2021; Keith et al., 2015). This means that in many contexts, information about perceived risks and benefits of disclosure could be collected (or recollected) and analyzed for apparent



construal level to examine what outcomes are most salient to individuals engaging in disclosure decisions.

#### 5.4. Future Research and Limitations

In addition to the opportunities for research noted in previous sections, we have identified several additional promising avenues for future research. Examining the effects of psychological distance manipulations could be quite informative to both research and practice. For example, researchers could examine the effects of allowing patients to distance themselves temporally or spatially from the reactions of their healthcare providers by meeting virtually or completing an intake form before the appointment.

This paper is not without its limitations. We acknowledge that the integration of construal level theory into the APCO model, while offering a promising avenue of exploration, requires empirical validation. Additionally, our discussion of future research directions is by no means exhaustive, and there are likely many other worthy avenues for exploration not identified here. We encourage researchers to build on our suggestions and continue to push the boundaries of this important field.

#### 6. Conclusion

In conclusion, this study emphasizes the significance of exploring information disclosure in the patient healthcare context. We have discussed the limitations of current models and proposed an adapted APCO model that incorporates the concepts of CLT. This proposed model suggests that the fear of being judged by a healthcare provider might be a stronger deterrent to information disclosure than the desire for better healthcare outcomes. These insights not only contribute to the academic discourse on information disclosure in healthcare but also have the potential to inform medical practice and patient education strategies. We hope future research will continue to investigate this important area, refine our model, and identify new methods for increasing patient disclosure.

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