

## Formation and Consequences of Implicit and Explicit Attitudes Toward IS

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### Abstract

*Attitude is an important construct in several theories used in information systems research, such as Cognitive Dissonance Theory, the Theory of Planned Behavior, and Expectation-Disconfirmation Theory. However, explicit attitude measures in the form of deliberate self-reports are subject to several sources of distortion, including social desirability bias and self-representation bias. Research in psychology has sought to develop implicit measures that tap into an individual's "true", implicit attitude. We aim to provide the IS community with a conceptual introduction to implicit attitudes and introduce the Explicit/Implicit Attitude Consequence (EIAC) framework as a reference on the interactions between explicit and implicit attitudes and potential attitude consequences for future research.*

**Keywords:** Implicit Attitude, Explicit Attitude, Attitude Consequences, IAT.

### 1. Introduction

Attitude is one of the central constructs in its root discipline, social psychology (Eagly & Chaiken, 1993), and in information systems (IS) (Jeyaraj et al., 2006). In IS, attitude has been featured in studies based on the Theory of Planned Behavior (TPB) (Ajzen, 1991), Expectation-Disconfirmation Theory (EDT) (Lankton & McKnight, 2012), and the Technology Acceptance Model (TAM) (Davis et al., 1989).

While IS research has continued to apply explicit measures (e.g., self-report questionnaires), research in social psychology has increasingly turned to implicit measures of attitudes (Greenwald et al., 1998). Such implicit attitude measures (e.g., timed experiments with rapid answers) capture automatic, affective responses that do not go through conscious, deliberate processing (Gawronski & Bodenhausen, 2006). This dichotomous view of explicit and implicit attitudes is inspired by system 1 / system 2 approaches (Kahneman, 2011), which distinguish between “thinking and behavior under optimal versus

suboptimal conditions” (Corneille & Hütter, 2020, p. 225). Under optimal conditions, an individual is able to report their explicit attitude in the form of self-reported, deliberate, propositional evaluations. Under suboptimal conditions, implicit attitude is automatically activated in the form of associative, affective responses. These are usually measured through experiments (Greenwald et al., 1998). The advantages of studying automatically activated, affective responses include the assessment of attitudes that an individual does not want to self-report due to distorting influences, such as social desirability bias and self-representation bias (Serenko & Turel, 2020), or even attitudes of which the individual is unaware (Wilson et al., 2000). The study of implicit attitudes may allow for investigating antecedents of behavior that the individual exhibiting the behavior itself cannot explain (Gawronski et al., 2006), such as in the case of habits (Serenko & Turel, 2019). Implicit attitude measures have been used on a variety of controversial topics, such as racism (Greenwald et al., 1998) and sexual orientation (Charlesworth & Banaji, 2019).

To date, implicit attitudes, which could provide a deeper understanding of the interplay between affective, associative processes and cognitive, propositional processes in the experience of digital technology, have not been fully explored in IS research. In spite of the availability of theoretical lenses (Gawronski & Bodenhausen, 2006; Wilson et al., 2000) and a practical introduction to conducting implicit attitude research in the IS domain using the IAT (Serenko & Turel, 2020), IS research on implicit attitude has been dire, with only 12 publications in high-ranking IS journals and conferences (Table 2).

The dearth of publications may stem from a lack of conceptual clarity regarding the consequences of implicit and explicit attitudes as a result of affective and cognitive processes. This is not surprising, as implicit attitudes seem to remain somewhat elusive, fraught with different conceptualizations and terminology across publications over the past 20 years (Corneille & Hütter, 2020) and various, competing models trying to integrate implicit attitudes, including the Model of Dual Attitudes (Wilson et al., 2000), the

MODE model (Olson & Fazio, 2014), and the Associative-Propositional Evaluation (APE) model (Gawronski & Bodenhausen, 2006). Existing IS research already noted that “researchers have to rely on multiple sources from reference disciplines” (Serenko & Turel, 2020, p. 400), making the methods and concepts developed by researchers in psychology hard to grasp.

The objective of our research is to provide a conceptual introduction to implicit attitude for IS research and to illustrate how it can be used to investigate the influence of affective and cognitive factors in interactions with digital technology. Thus, we derive the following research question:

*RQ: How can implicit attitude help in understanding our experience with digital technology?*

We first provide theoretical foundations on implicit attitude. We explain how implicit attitude relates to explicit attitude, utilizing the APE model. We then introduce the Explicit/Implicit Attitude Consequence (EIAC) framework as a way to examine how explicit and implicit attitudes interact and lead to potential consequences, highlighting applicable theoretical lenses and providing illustrative examples.

## 2. Implicit attitudes

In general, attitudes refer to summative evaluations of beliefs toward an attitude object (Eagly & Chaiken, 1993). Attitude has been described as “a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual’s response to all objects and situations with which it is related” (Allport, 1935, p. 810), intervening between stimuli and responses (Eagly & Chaiken, 1993). Simply put, attitudes influence and shape how we respond – both in thought and in action – to objects we encounter. These attitude objects can be things, people, or concepts.

Until the 2000s, most measures of attitude were explicit, collected through self-report questionnaires. However, self-report measures are fraught with distorting influences resulting from deliberate thinking, such as social desirability and self-representation biases. Individuals may even be unaware of their own attitudes. Nonetheless, attitudes still affect their thoughts and actions (Gawronski & Bodenhausen, 2006; Wilson et al., 2000).

Psychological research has developed a number of measures to eliminate bias and tap into the *actual* attitude of an individual. Usually, these measures rely on experiments designed to eliminate deliberate thinking by demanding rapid and timed answers. Tests such as the Implicit Association Test (IAT) and the

Affect Misattribution Procedure (AMP) were developed on the assumption that eliciting rapid responses from participants will prevent them from overriding their initially retrieved, stored attitudes with more socially desirable, appropriate responses (Greenwald et al., 1998; Rydell et al., 2008). Based on early successes, initial models of dual attitude were developed (Wilson et al., 2000), proposing that explicit and implicit attitude are two formally distinct mental representations of an attitude object (dual-representation model). Explicit attitude was posited as a conscious, deliberate measure that is constructed on-the-spot and highly susceptible to new information, depending on the situation the individual finds themselves in, and also influenced by social desirability and self-representation biases. In contrast, implicit attitude was characterized as unconscious, highly stable, acquired through repeated interaction with the attitude object, hard-to-change, and only visible when an individual lacks the motivation or mental capacity to override it. Individuals were assumed to be largely unaware of their implicit attitude (Wilson et al., 2000).

Due to concerns about the unconsciousness (Gawronski et al., 2006), stability (Olson & Fazio, 2001), and lack of susceptibility to contextual factors (Rydell & McConnell, 2006) of implicit attitudes, dual-representation models, which view explicit and implicit attitude as two distinct mental representations, have largely been supplanted by dual-process models, which frame explicit and implicit attitude as the results of different mental processes.

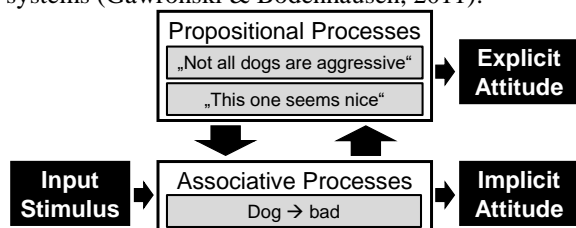
Dual-process models, such as the APE model (Gawronski & Bodenhausen, 2006), and the MODE model (Olson & Fazio, 2014), do not assume the separate storage of implicit and explicit attitudes in memory (Gawronski & Bodenhausen, 2011). Rather, they suggest that two different mental processes influence the decisions and behavior of individuals, contrasting thought processes and behavior guidance under optimal and suboptimal conditions. While implicit attitudes are the result of automatic, associative processes, explicit attitudes are the result of propositional, rule-based, nonautomatic processes (Corneille & Hütter, 2020; Kahneman, 2011).

In addition, dual-system models (e.g., Rydell & McConnell, 2006) propose the existence of two distinct neurological structures (i.e., brain regions) in which the two types of processes occur (Gawronski & Bodenhausen, 2011). System 1, the slow-learning system or associative system, is thought to be “automatic, intuitive, arational, unconscious” (Mandelbaum, 2016, p. 646), based on associations. System 2, the fast-learning system or rule-based system, is thought to be “slow, logical, rational, and

conscious” (Mandelbaum, 2016, p. 647), based on logical representations and deliberate processing.

Both dual-process models and dual-system models fit well with the duality of explicit and implicit attitudes. However, the view of two distinct neurological systems has been questioned (Corneille & Hütter, 2020). Furthermore, psychological research has also used systems 1 and 2 as a simplification. For example, Kahneman (2011) has described the two systems as “fictitious characters” (p. 29).

In the following paragraphs, we describe the Associative-Propositional Evaluation (APE) model (Gawronski & Bodenhausen, 2006). The APE model is largely compatible with the Model of Dual Attitudes (Wilson et al., 2000) used in previous IS research, but does not view explicit and implicit attitude as two distinct mental representations. The APE model distinguishes between associative and propositional processes. These processes are reminiscent of the previously mentioned systems 1 and 2. However, the APE model does not assume distinct neurological systems (Gawronski & Bodenhausen, 2011).



**Figure 1. Associative-propositional evaluation model.**

Associative processes are at play whenever an individual makes an implicit evaluation in spontaneous, affective responses (Gawronski & Bodenhausen, 2006), reflecting the individual’s implicit attitude. Associative processes are activated whenever an individual is confronted with an attitude object, producing a spontaneous, affective response. For an object to trigger an associative process, it must be similar enough to a previously encountered object. However, even unfamiliar objects, such as the faces of strangers may produce an implicit evaluation, based on similar known faces. Associative processes are guided through associative learning. Thus, seeing two objects in repeated connection with each other creates a mental association. Associative processes are activated regardless of whether the provided evaluations are considered true or false. Thus, encountering an object that shares similarity with a negatively evaluated attitude object evokes a negative association, regardless of whether such an association is deemed true or false (Gawronski & Bodenhausen, 2006). For example, encountering a friendly dog may activate negative associations of another, aggressive dog, even if the individual rejects the idea that all dogs

are aggressive. Such an association is considered valid until it is rejected through a propositional process.

Propositional processes are at play whenever an individual is making an explicit evaluation of an attitude object, thus reflecting the individual’s explicit attitude. Propositional processes assess the consistency between currently active propositions of an individual. In general, humans seek consistency (Festinger, 1957). If inconsistency is encountered, an individual may either reject one of their propositions (e.g., reject the proposition that the friendly dog encountered is aggressive) or may search for additional propositions that resolve the inconsistency. However, the rejection may not be permanent (i.e., the next dog encountered may still produce a negative association) (Gawronski & Bodenhausen, 2006). Propositional processes are guided through propositional learning. New information in the form of propositional statements or inferences are compared with currently active propositions. Figure 1 illustrates the interaction between propositional and associative processes, using the example of encountering a dog.

**Table 1. Explicit and implicit attitude differences.**

	Implicit Attitude	Explicit Attitude
Result of	Associative processes	Propositional processes
Show in	Uncontrollable responses	Controllable responses
Formation	Repeated exposure	Comparison of new and active propositions
Truthfulness	No	Yes
Activation	Automatically	Requires mental capacity

In terms of the tripartite view of attitudes (Rosenberg & Hovland, 1960), implicit attitudes, as spontaneous, affective responses, can be viewed as the affective attitude component, while explicit attitudes can be viewed as encompassing both affective and cognitive components, depending on the degree of propositional engagement (Gawronski & Bodenhausen, 2006). Table 1 summarizes key aspects of implicit and explicit attitudes according to the APE model.

### 3. Consequences of attitude

The study of attitude is not an end in itself, neither in social psychology nor in IS. Attitude is usually studied with respect to its effects on the thinking and behavior of individuals. In his seminal work, Allport (1935) describes attitudes as follows: “Attitudes determine for each individual what he will see and hear, what he will think and what he will do” (Allport, 1935, p. 806). Current psychological research still follows Allport’s classification of the consequences of

attitudes, dividing them into (1) perception, (2) judgment, (3) memory, and (4) behavior (Bohner & Wänke, 2002; Eagly & Chaiken, 1993). In the following sections, we adopt this classification of attitude consequences and show how existing IS research has studied each of these consequences in relation to explicit and implicit attitudes.

**Table 2. Existing IS research on implicit attitude.**

	Findings
Bossler et al. (2022)	Developed a research model to investigate how implicit attitudes toward innovative technologies affect the job satisfaction of IT professionals.
Botelho et al. (2022)	Implicit gender attitudes lead to biased evaluations of posts of supposedly female users.
Lee et al. (2014)	Affectivity in social network posts can be used to group users.
Nyshadham and Castano (2012)	Proposed a research model to investigate how implicit attitude affects privacy-relevant behavior.
Pengnate et al. (2021)	Perceived visual appeal, trust, and intention to use a website is dependent on the implicitly measured centrality of website aesthetics of a user.
Serenko (2022)	Implicit attitude significantly influences engagement in digital piracy.
Serenko and Turel (2019)	Positive implicit attitudes lead to greater use of hedonic IS and shape IS habits.
Serenko and Turel (2021)	Implicit female gender identity decreases the intention to study IT and to pursue IT careers.
Shih et al. (2015)	Both explicit and implicit attitude affect the quality of information sharing in organizational groups.
Turel and Kalhan (2023)	People hold an implicit bias against artificial intelligence (AI), affecting their choice to use AI.
Weinert et al. (2015)	Developed a research model to investigate the influence of explicit and implicit attitude on intention to use hedonic or utilitarian IS.
Zielonka and Rothlauf (2022)	Psychological beliefs, explicit and implicit, affect the perception of technostress.

To investigate IS research on implicit attitudes, we conducted a literature search across the top 21 IS journals (Lowry et al., 2013) and high-ranking IS conferences (AMCIS, ECIS, HICSS, ICIS, PACIS). We followed Webster & Watson (2002), using the keyword “implicit attitude”. This search yielded 24 results. We carefully and completely read each result. We excluded studies that (a) only briefly mention implicit attitude in their introduction, limitations, or bibliography; or (b) do not use implicit attitude as a

psychological construct. We arrived at a final sample of 12 articles using implicit attitude in the IS discipline (Table 2), which we then assigned to the four types of consequences.

For each of the four types of consequences, we (1) describe the respective type of consequence, (2) introduce appropriate theoretical lenses to study the effect of explicit and implicit attitudes on the respective type of consequence, (3) present example IS research (if available) that shows the effect of explicit and implicit attitude on a consequence of the respective type, and (4) illustrate how implicit attitude measures can be integrated into IS models investigating consequences of the respective type. The findings are summarized in our EIAC framework in Table 3.

### 3.1. Perception

**3.1.1. Description.** Perception encompasses all psychological processes involved in retrieving, understanding, and classifying stimuli (Eagly & Chaiken, 1993). Due to the large number of stimuli an individual is exposed to on a daily basis, it is important to be able to perceive and process relevant objects. As a first step of information processing, perception is affected by attitude. Attitude helps to identify important objects (e.g., food, enemies), shapes which aspects of an object are encoded in the mind (e.g., size, color), and how the perceived objects are classified. For example, a car might be classified either a means of transportation or a status symbol (Bohner & Wänke, 2002). Simply put, attitudes affect perception by influencing what external information we consider.

**3.1.2. Theoretical lenses.** Existing attitude affects information processing, including perception, through attitudinal selectivity. An appropriate theoretical lens to study the effects of attitudinal selectivity is cognitive dissonance theory (CDT) (Festinger, 1957). Following CDT, selective exposure and selective attention describe how individuals are more likely to consider information that is consistent with their attitudes and ignore conflicting information (Eagly & Chaiken, 1993). This is due to the desire to avoid negative arousal from incompatible information (Festinger, 1957). Once an attitude is formed, only information that supports that attitude is sought. This effect is typically stronger in situations where decisions are irreversible (Eagly & Chaiken, 1993).

**3.1.3. Example IS research.** Only few studies have examined selective exposure and attention effects in IS research. For example, the interaction between explicit attitudes and selective exposure has been studied in the context of online product reviews. Using an experimental approach, Lei et al. (2023)

show that, after selecting a product, online shoppers follow their initial beliefs about the product. Participants sought out and paid more attention to reviews consistent with their attitudes. Implicit attitude's effect on perception has been studied in researching visual website aesthetics, using indirect attitude measures to investigate differences between participants in how they perceive a particular website with regard to its visual appeal (Pengnate et al., 2021).

**3.1.4. Implicit attitude potentials.** Future IS research may use implicit attitude measures to better understand how individuals consider IS-related information and how their perceptions are shaped by their implicit attitudes when using digital technologies. Implicit measures are able to circumvent distorting influences, which may be caused by experiencing an uncomfortable psychological state, such as in the case of cognitive dissonance (Festinger, 1957). Thus, implicit attitude measures could be incorporated into models based on theories such as CDT to uncover deeper factors that shape individuals' perceptions of or use of digital technologies and to explain sources of cognitive dissonance.

To assess implicit attitudes, established instruments, such as the IAT (Serenko & Turel, 2020) or the AMP (Rydell et al., 2008), should be used. Effects on perception can be studied via experiments that, for example, examine (1) self-reported preferences to be exposed to attitude-supporting or non-supporting information, (2) time spent with the respective information, or (3) behavior aimed at discarding non-supporting information (Eagly & Chaiken, 1993). In IS research, for example, Lei et al. (2023) examined selective exposure by asking participants to choose three product reviews they wish to read out of six reviews (3 supporting, 3 non-supporting). In psychological research, for example, Sweeney & Gruber (1984) studied selective exposure by asking participants about their recent interest in politics surrounding Watergate on a 3-point scale.

Future IS research could adapt such measures to study the effects of implicit attitudes on perception. Studying the relationships between explicit attitudes and perceptions, as well as between implicit attitudes and perceptions, could provide an additional perspective on CDT and help to explain apparent but unexplained discrepancies between stated (explicit) attitudes and perceptions. The combination of selective exposure measures, explicit attitude measures, and implicit attitude measures may provide fruitful grounds for investigating selective exposure effects in situations where participants hold positive explicit attitudes toward an attitude object, but seem to notice and comment primarily on its negative aspects, and vice versa. Such effects are particularly salient in

situations where certain opinions are socially desirable, such as political positions (Dylko et al., 2017), or perceptions of novel technologies (Bossler et al., 2022). For example, studying explicit and implicit attitudes in relation to perceptions could explain why and how users engage with content they (allegedly) dislike on social media (cognitive dissonance), with implicit attitudes explaining the inconsistency between explicit attitudes and perceptions.

## 3.2. Judgment

**3.2.1. Description.** Judgment is concerned with what conclusion individuals draw from considered information. Unlike perception, which is concerned with what external information is considered, judgment is concerned with how that considered information is interpreted. Thus, in information processing, judgment occurs after perception. During judgment, existing attitudes shape and distort how individuals evaluate new information in light of prior experience. Attitudes represent generalized knowledge and act as heuristics in judging new information: We judge the things we like positively and approach them favorably, while we judge the things we dislike negatively and try to avoid, oppose, or attack them. Attitudes thus simplify judgment and decision processes, reducing use of cognitive resources (Bohner & Wänke, 2002).

**3.2.2. Theoretical lenses.** Theoretical lenses that may help explain how attitudes affect judgments include CDT (Festinger, 1957), social judgment theory (SJT) (Sherif & Hovland, 1961), and EDT (Lankton & McKnight, 2012). Regarding CDT, people tend to avoid information that conflicts with their attitudes, as explained earlier. However, conflicting information cannot always be avoided. Thus, individuals discard or distort incongruent information during information processing (Bohner & Wänke, 2002). Following SJT, individuals' attitudes serve as judgmental anchors against which new information is evaluated. If new information is similar to an individual's attitude, this similarity is amplified (assimilation). If new information contrasts with an individual's attitude, this discrepancy is amplified (contrast) (Eagly & Chaiken, 1993). Contrasting information is perceived as extreme and unfair (Sherif & Hovland, 1961). EDT uses assimilation and contrast effects through measures of expectations and satisfaction (Lankton & McKnight, 2012).

**3.2.3. Example IS research.** Existing studies in IS research that address how explicit attitudes affect judgment can be found in research that examines changes in attitudes over time, based on, for example, SJT (Sherif & Hovland, 1961) or EDT (Lankton &

McKnight, 2012). Such research examines, for example, changes in users' attitudes toward ISs over time (Venkatesh & Goyal, 2010) or judgments of IT security threats (Jensen et al., 2021). For example, using a field experiment, Jensen et al. (2021) find that attitudinal anchors influence judgments of fear appeals in security education, training, and awareness. Messages are only successful if they are close enough to the recipients' attitudes. Existing IS research on how implicit attitudes influence judgment is limited. For example, Botelho et al. (2022) studied how implicit attitudes toward gender affect judgments of messages in an online forum. They show that gender attitudes can lead to biased judgments, discrediting users who appear to be female.

**3.2.4. Implicit attitude potentials.** Future IS research may use implicit attitude to better understand how individuals make judgments about and use digital technologies. Because of their different origins, implicit attitudes may help in uncovering factors in judgment that cannot be uncovered by explicit attitudes. Thus, implicit attitude measures may be used side-by-side with explicit measures such as expectation and satisfaction in research using SJT and EDT to explain changes in judgment. Being unaffected by distorting influences, such as social desirability bias, implicit attitude could reveal that new information may lead to overt changes in explicit attitude measures, for example to avoid regulatory or social sanctions, leaving implicit attitudes and internal judgments unaffected.

Established instruments, such as the IAT or the AMP, should be used to assess implicit attitudes (Rydell et al., 2008; Serenko & Turel, 2020). Effects on judgment can be studied, for example, by (1) asking participants to rate provided information, (2) requesting counterarguments for provided information, or (3) letting participants indicate whether attitude-congruent and attitude-incongruent information is true or false (Bohner & Wänke, 2002; Eagly & Chaiken, 1993). In IS research, for example, Jensen et al. (2021) used an experimental approach by exposing the treatment group to simulated cyberattacks. They were then asked to judge several susceptibility claims related to cyberattacks. Depending on the participant's attitude, indicated by whether or not they had experienced a successful attack, these claims were found to be convincing or unconvincing. In psychological research, for example, Lord et al. (1979) asked participants to rate reports (-8 = completely unconvincing, 8 = completely convincing) on capital punishment that either supported or refuted their preexisting attitude.

Future IS research could adapt such measures to examine the effects of implicit attitudes on judgment.

By combining explicit and implicit attitude measures and asking participants about their judgments, implicit attitude measures can add an additional perspective to, for example, SJT. Because of their affective nature, implicit attitudes may influence judgments on a more fundamental level. Thus, judgments may be more consistent with implicit attitudes than with explicit attitudes, especially in cases where the explicit attitude has recently been changed by external information but these changes have not yet been internalized. To provide an example based on prior research, fear appeals in security education (Jensen et al., 2021) may lead to changes in explicit attitudes but leave subsequent judgments unchanged because implicit attitudes were not equally affected.

### 3.3. Memory

**3.3.1. Description.** Memory is concerned with the information individuals store and are able to retrieve. Consistent with perception and judgment, attitudinal selectivity has also been found to affect memory. Attitude-congruent information should be easier to remember and retrieve than attitude-incongruent information (Bohner & Wänke, 2002).

**3.3.2. Theoretical lenses.** CDT (Festinger, 1957) again serves as an appropriate theoretical lens. Attitude-incongruent information might be forgotten or distorted to reduce negative arousal (Bohner & Wänke, 2002; Eagly & Chaiken, 1993).

**3.3.3. Example IS research.** Unfortunately, we did not find any IS research that directly addresses the effect of either explicit or implicit attitude on memory. The closest match we could find was in a study by Moravec et al. (2022). In their study, they triggered memory retrieval processes during the judgment of potential fake news. Although attitude plays a role in memory retrieval processes, with people "more likely to believe information that matches their preexisting opinions (i.e., attitude homophily or alignment)" (Moravec et al., 2022, p. 890), due to research design, attitude was not directly investigated.

**3.3.4. Implicit attitude potentials.** Future IS research may explore the relationship between attitude and memory at both explicit and implicit levels. Based on CDT, avenues for research may be found in studying how congruent or incongruent attitude affects memory in experiencing digital technology.

The IAT and the AMP serve as suitable instruments to assess implicit attitude (Rydell et al., 2008; Serenko & Turel, 2020). Effects on memory can be studied, for example, by presenting participants with statements that are congruent or incongruent with their attitudes and asking participants to recall these statements (Bohner & Wänke, 2002). For example,

early psychological research provided pro- and anti-communist participants with positive and negative information about the Soviet Union and asked them to recall the information at a later time (Levine & Murphy, 1943).

Potential areas of study could include topics such as the effects of digital technologies on memory, for example, in the context of processing and remembering information on digital platforms, such as social media, depending on whether the information provided is congruent or incongruent with existing attitudes. Longitudinal studies may be best suited to investigate memory effects.

### 3.4. Behavior

**3.4.1. Description.** Behavior is concerned with how individuals act. Attitude has been shown to be an important predictor of behavior (e.g., Davis et al., 1989; Jeyaraj et al., 2006). However, overt behavior does not always match stated attitudes. People may commit certain acts to which they have a negative attitude, and vice versa. (Bohner & Wänke, 2002).

**3.4.2. Theoretical lenses.** Appropriate theoretical lenses to study the attitude-behavior relationship may be found, for example, in the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), TPB (Ajzen, 1991), and TAM (Davis et al., 1989). In TRA, TPB, and TAM, behavioral intention is positioned as the immediate antecedent of actual behavior, with all influencing factors pointing to behavioral intention. One important determinant of behavioral intention is attitude toward the behavior (Bohner & Wänke, 2002; Eagly & Chaiken, 1993).

**3.4.3. Example IS research.** Existing IS research has utilized explicit attitude measures to explain and predict behavior in multiple studies. Explicit attitude measures have been used, for example, to study the use of computer programs (Davis et al., 1989), the use of protective information technologies (Dinev et al., 2009), and the continued use intention of the Internet in socio-economically advantaged and disadvantaged households (Hsieh et al., 2008). Although the majority of IS research on the attitude-behavior relationship has been conducted with respect to explicit attitude, we find several publications that include implicit attitude, investigating, for example, engagement in digital piracy (Serenko, 2022), habitual use of hedonic IS (Serenko & Turel, 2019; Weinert et al., 2015), and IS career and study choice (Serenko & Turel, 2021).

**3.4.4. Implicit attitude potentials.** Future IS research may further explore the relationship between implicit attitude and behavior. Prior research has noted that there is an attitude-behavior gap (Ajzen & Fishbein, 1977), meaning that not all expressed

attitudes translate into corresponding behavior. Moderators, such as attitude accessibility (Bohner & Wänke, 2002), have been investigated to explain the attitude-behavior gap. Implicit attitudes could provide further explanations. Prior research suggests that social desirability bias may affect explicit attitudes, but not subsequent behaviors and judgments (Gawronski et al., 2006). Thus, individuals may engage in behaviors that are inconsistent with their (explicitly stated) attitudes. Implicit attitude measures could uncover implicit attitudes fitting the behavior, helping to close the attitude-behavior gap.

To assess implicit attitudes, established instruments, such as the IAT (Serenko & Turel, 2020) or the AMP (Rydell et al., 2008), should be used. To assess effects on behavior, established constructs, such as intention, as well as actual behavior can be studied. For example, Serenko (2022) examined the effects of explicit and implicit attitudes toward digital piracy on intentions to engage in digital piracy and actual engagement.

**Table 3. Explicit/Implicit Attitude Consequence (EIAC) framework.**

	Definition	Theoretical lenses	Example IS research	
			Explicit Attitude	Implicit Attitude
Perception	Retrieval of new information for consideration	CDT	Lei et al. (2023); Dylko et al. (2017)	Pengnate et al. (2021); Zielonka and Rothlauf (2022)
Judgment	Interpretation and evaluation of new information	CDT, SJT, EDT	Venkatesh and Goyal (2010); Jensen et al. (2021); Shu and Cheng (2012)	Bossler et al. (2022); Botelho et al. (2022); Lee et al. (2014); Turel and Kalhan (2023)
Memory	Storage and retrieval of information	CDT	-	-
Behavior	Engagement in specific actions	TRA, TPB, TAM, EDT	Dinev et al. (2009); Hsieh et al. (2008); Kim (2009)	Nyshadham and Castano (2012); Serenko (2022); Serenko and Turel (2019); Serenko and Turel (2021); Shih et al. (2015); Weinert et al. (2015)

Future IS research can incorporate implicit attitude measures into established models (e.g., TRA, TPB) by adding implicit attitude as an antecedent to intention (Serenko and Turel 2019; Weinert et al., 2015) and actual behavior (Serenko, 2022; Serenko

and Turel, 2019). Investigating the influence of implicit attitudes on intention as well as actual behavior may help explain apparent gaps between attitudes and behavior, and increase the overall predictive power of these models. For example, existing IS research has already successfully used implicit attitude side by side with explicit attitude to explain discrepancies between explicit attitudes and the use of hedonic IS (Serenko and Turel 2019).

In exploring the relationship between implicit attitudes and behavior, IS scholars should closely specify implicit measures of attitudes and behavioral outcomes they are investigating. To produce meaningful results, “implicit measures of attitudes should specify a behavior [...] instead of a general target” (Dai & Albarracín, 2022, p. 4), for a simple reason: Although users may like the general idea of a technology, they may not like using it themselves. By specifying the conditions, attitudes and behavior may correspond to a higher degree.

#### 4. Discussion

In this study, we have provided a thorough introduction to implicit attitudes – automatically activated, associative, affective responses to attitude objects – at a conceptual level. We have developed the EIAC framework grounded in psychological research (Allport, 1935) to structure the consequences of explicit and implicit attitudes, encompassing perception, judgment, memory, and behavior.

By illustrating interactions of implicit attitudes with attitude consequences, and by providing multiple theoretical lenses in which implicit attitudes can be studied, such as CDT, EDT, SJT, TRA, TPB, and TAM, we outline areas for future in which implicit attitude can help us understand our interactions and experiences with digital technology. These areas include, but are not limited to, how implicit attitudes may warp our attention and perception of digital technologies and digital content, how preexisting attitudes may influence how we judge new technology, which digital content we notice and remember, and how implicit attitudes determine how we interact with technology, even if we do not intend to do so. Our study provides three contributions.

First, we contribute to research on attitudes by introducing implicit attitudes at a conceptual level. We illustrate how implicit measures can complement traditional ways of measuring attitudes through self-report measures by circumventing distorting influences such as social desirability and self-representation biases. By explaining the intricacies of the interactions of affective, associative, and cognitive, propositional processes in producing

implicit and explicit attitude evaluations, we draw on a vast body of research from psychology and provide a concise overview of the concept, measurement, and application of implicit attitudes, making the methods and concepts developed by researchers in psychology readily available to the IS community. Future IS research may use our conceptual guidelines, which provide a theoretical basis for exploring implicit attitudes, in combination with a practical guide for collecting implicit attitude evaluations (e.g., Serenko and Turel, 2020).

Second, we contribute to research on the influence of attitude on information processing and on the attitude-behavior relationship by illustrating how explicit and implicit attitudes affect (1) information processing, which includes perception, judgment, and memory, and (2) behavior. Drawing on a variety of established theories used in IS, such as CDT, EDT, SJT, TRA, TPB, and TAM, we provide an overarching guideline for the study of implicit attitudes in IS research with the EIAC framework and have located existing IS research on implicit attitudes therein. Thus, we show where the concept of implicit attitudes has already been applied in IS research. In addition, we provide future research with several avenues for potential studies, as well as appropriate theoretical lenses and instruments. Consideration of implicit attitudes may help reconcile many previously unexplained, apparent discrepancies and explain why people may not think and act according to their own stated attitudes. Using implicit attitude measures can identify implicit attitudes that are overridden by distorting influences, such as social desirability bias, but still affect thoughts and actions. Future IS research can use our framework to identify and fill gaps, and to introduce additional theoretical lenses. We envision the application of our framework to examine the consequences of implicit attitudes in different IS domains and to investigate how explicit and implicit attitudes, due to their different origins, are shaped in different ways when approaching new technologies.

Third, from a practical perspective, implicit attitudes may explain why people behave differently from their stated attitudes. Although implicit attitude measures may appear harder to assess in practical settings, implicit assessments may help explain unexpected consequences of underlying affect when confronted with digital technology.

There are several challenges associated with the use of implicit attitude measures. First, experiments measuring implicit attitudes are more difficult to set up than explicit attitude measures (e.g., self-report questionnaires), requiring additional expertise. Second, implicit measures require the development of appropriate stimuli. For example, the IAT requires

words associated with the attitude object. Similarly, the AMP requires images. This can be difficult for something as abstract as technology. Third, the IAT, widely used in IS research, requires bipolar attributes (e.g., old/young), making it impossible to investigate attitude objects without a clear counterpart. Fourth, because of their nature as timed experiments, implicit attitude measures require the attention of participants. Distractions may easily impact their reliability.

Our work has several limitations. First, our illustrative examples for the study of implicit attitude are limited by the small number of available publications. Second, with psychological research on implicit attitude models becoming more and more complex, we chose the APE model for a pragmatic introduction of implicit attitudes into the IS field. Future psychological research may provide more elaborate models, which might require adaptations. Third, although we firmly ground the four classes of potential attitude consequences in psychological research (Allport, 1935), these classes may not precisely fit to every potential consequence.

## 5. Conclusion

Attitude, in its explicit form, has long been an important construct in IS research, featuring in theories such as TRA, TPB, and TAM. To circumvent distracting factors that may distort an individual's attitude in self-report measures, such as social desirability bias, psychological research has developed implicit measures of attitude. However, these developments have gone largely unnoticed in IS research. With our work, we introduce implicit attitudes to IS research on a conceptual level. We review current IS research on implicit attitudes and develop the EIAC framework for consequences of attitude, encompassing perception, judgment, memory and behavior. We locate current IS research into this framework and provide guidance for future research.

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