The Role of Awareness and Demand in Evaluative Learning

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Abstract

Human likes and dislikes can be established or changed in numerous ways. Three of the most well-studied procedures involve exposing people to regularities in the environment (evaluative conditioning [EC], approach-avoidance [AA], mere exposure [ME]), to verbal information about upcoming regularities (EC, AA, or ME information), or to verbal information about evaluative properties of an attitude object (persuasive messages). In the current study, we investigated the relation between, on the one hand, different types of experiment-related beliefs (regularity, influence, and hypothesis awareness) and demand reactions (demand compliance and reactance), and, on the other hand, evaluative learning about novel food brands (Experiments 1 and 2) and well-known food brands (Experiment 2) via persuasive messages, experienced regularities, and verbal information about regularities. Participants were first exposed to an evaluative learning phase and then completed self-reported evaluation ratings, an Implicit Association Test (IAT), and a behavioral intention measure. Results indicate that regularity awareness was a necessary condition for most evaluative learning effects. Influence awareness was also a strong moderator of evaluative effects but more so for effects on self-reported ratings. Hypothesis awareness and reactance only weakly moderated evaluative learning and demand compliance only played an important role for well-known brands. The theoretical and practical implications of our findings are discussed.

Keywords:

evaluative learning; awareness; demand reactions; persuasion; regularities; regularity information

Statement of limitations:

Our study has several limitations that should be considered. We focused on evaluative learning in the context of food brands, which may yield different results with other types of stimuli. Alternative

learning procedures and implementations could also lead to different outcomes. Additionally, the study included a limited number of outcome measures, and different measures might yield different results. The correlational design limits our ability to draw causal inferences about the role of experiment-related beliefs. While participants may hold certain beliefs during evaluative learning, this does not confirm that these beliefs caused the learning effects. Future research using experimental manipulations targeting these beliefs could provide clearer insights into causal mechanisms. Moreover, the retrospective measures of beliefs used in our study may not accurately reflect participants' true beliefs during the learning process and could be influenced by factors such as social desirability or memory lapses. Retrospective measures might also capture beliefs formed after the learning procedure or omit forgotten beliefs. Finally, the study's findings are based on a specific sample of Project Implicit volunteers, and further research is needed to assess the generalizability of our results to other populations and settings.

The Role of Awareness and Demand in Evaluative Learning

Humans are continually bombarded with attempts to change their behavior, often by targeting their preferences. An obvious example is advertisements that explain the benefits of a particular consumer product or pair it with a well-known or attractive person. Another example is supermarkets offering a free cookie to children, hoping they will associate grocery shopping with a tasty reward (and keep their parents moving through the aisles). For nearly a century, the idea that attitudes influence behavior has played a defining role in social psychology (e.g., Allport, 1935; Eagly & Chaiken, 1993; Fazio, 1990) and led many to study how evaluations can be formed or changed. To this end, a vast number of procedures of evaluative learning have been studied. The current paper addresses the role of awareness and demand in evaluative learning across different procedures. Further, it attempts to do so while testing the relative impact of various procedures on multiple evaluation types (e.g., self-reported and more automatic evaluation) within a single experimental context, which is an improvement over previous research that has tended to investigate these learning procedures and evaluation types in separate experiments.

Evaluative Learning Procedures

Evaluative learning can be defined as the impact of environmental regularities on evaluative behavior (De Houwer et al., 2013). Notably, learning research has typically focused on three distinct types of regularities (De Houwer & Hughes, 2020a). First, there can be changes in evaluation due to regularities in the presence of one stimulus such as when we encounter this stimulus over and over again. For instance, we may prefer a new song because it is repeatedly played on the radio or we may like a politician because they often appear on television (i.e., mere exposure, ME; e.g., Zajonc, 1968; Moreland & Topolinski, 2010). Second, our evaluations can be shaped as the result of regularities in the presence of multiple stimuli such as when one stimulus is

paired with a valenced stimulus (i.e., evaluative conditioning, EC; e.g., Hofmann et al., 2010; Moran et al., 2023). Advertisers use this strategy when they pair their brand with a liked celebrity or a competitor's brand with a disliked event with the aim of increasing positivity towards the former and negativity towards the latter. Thirdly, we may encounter regularities in the presence of a stimulus and a response. For instance, repeatedly approaching one person and avoiding another can lead us to like the former and dislike the latter (i.e., approach-avoidance, AA; Van Dessel, Hughes, et al., 2019).

Evaluative learning can be the result of experiencing these regularities in the environment but can also arise from verbal information about these regularities. Learning through verbal information can be seen as a specific type of learning that is based on a spatio-temporal regularity that involves the presence of different words at one point in time (De Houwer & Hughes, 2020b). Research shows that reading or hearing that, in the future, a single stimulus will appear frequently or infrequently (ME information; Van Dessel et al., 2017), that a neutral stimulus will be paired with a positive or negative stimulus (EC information; De Houwer, 2006) or that there will be a relationship between stimuli and actions (AA information; Van Dessel et al., 2015) can lead to evaluations which are comparable to those that emerge when we experience the events for ourselves (Corneille & Béna, 2023; Hughes et al., unpublished manuscript; Smith et al., 2019).

Besides verbal information about upcoming regularities, various other types of verbal information are often used in the context of evaluative learning. Perhaps the most well-studied type involves verbal information that emphasizes a cause-and-effect relationship between an evaluative property and an evaluative stimulus (e.g., information that a brand of coffee has a rich taste). The effect of such information is typically studied in the domain of persuasion under the rubric of 'persuasive messages' (Briñol & Petty, 2012). While evaluative learning studies have also

examined effects of other types of information, the current study focuses on effects of ME, EC, AA, ME information, EC information, AA information, and persuasive messages.

Awareness in Evaluative Learning Research

Whereas evaluative learning is typically the result of one of the regularities noted above or a combination of these regularities, there are many potential moderators of evaluative learning (e.g., the specific constituents of the regularities, the context in which regularities are presented). Some of the more intriguing and well-studied moderators refer to the concept of *awareness*. For instance, in the literature on EC, contingency awareness (i.e., whether participants are aware of which stimuli have been paired) is one of the most intensely studied moderators (see Moran et al., 2023, for a review). Notably, researchers often differ in (1) their definitions of what awareness actually is, (2) which sub-types of awareness they consider to be most important for evaluative learning, and (3) how they go about measuring awareness (Lovibond & Shanks, 2002). Indeed, the procedural parameters of these measures often differ markedly across studies: although most involve post-hoc recognition tests that ask participants to reflect back on their earlier study experiences, others have used free recall or open-ended questions, and examined whether responses to these questions (either at the participant or stimulus level) correlate with changes in evaluative responding (Pleyers et al., 2007). In some cases, awareness is assessed during the acquisition phase (e.g., Purkis & Lipp, 2001) whereas in others it is assessed after the evaluative phase (e.g., Baeyens, Eelen, & van den Bergh, 1990), which has also stimulated debates about the differential role of awareness and memory in evaluative learning (e.g., Gawronski & Walther, 2012). These conceptual and methodological differences have led to diverging conclusions about what awareness is and its role in evaluative learning (for a detailed treatment see Corneille & Stahl, 2019; Kurdi et al., 2020; Sweldens, Corneille, & Yzerbyt, 2014). In what follows, we outline how

awareness can be defined in reference to people's conscious beliefs. We also consider several awareness sub-types and their potential role in evaluative learning.

Awareness as Conscious Experiment-Related Beliefs

We argue that in evaluative learning research, awareness is used as an umbrella term to describe conscious beliefs that people hold. These beliefs are typically assessed by registering a person's verbal descriptions of perceived experiences, with different measures of awareness varying in the type of conscious belief they assess. To illustrate this point more clearly, consider what happens during a typical evaluative learning study. Participants are exposed to a learning phase (usually by a researcher in an experimental context) after which changes in their evaluative responses are probed. There are multiple pieces of information that participants can discern from this experience. More specifically, this information can relate to (different aspects of): (a) the procedure, (b) the effect, or (c) the researcher. As we discuss in the remainder of this section, different types of awareness relate to beliefs about different pieces of information.

In evaluative learning, the *procedure* typically involves that participants (a) are exposed to regularities that are presented during the acquisition phase and (b) are probed for their evaluations. After completing this procedure, participants may hold conscious beliefs about the content of this procedure such as about the regularities that were present in the procedure. The *effect* in evaluative learning typically concerns the changes in liking that are due to the regularities in the acquisition phase. Conscious beliefs about these changes can involve beliefs about a change taking place, as well as beliefs about this change being related to aspects of the procedure (e.g., exposure to specific regularities). Additionally, in a research context, conscious beliefs about (the beliefs of) *the researcher* can also be relevant. Participants may hold conscious beliefs about the fact that elements are embedded in an experiment that has been arranged by the researcher for a specific

purpose (e.g., to study some aspect of their thoughts, feelings, and/or actions). These beliefs may for instance involve beliefs about what the researcher believes about the impact of the procedure on the stimulus evaluations (e.g., what hypotheses they may have about the results of the experiment).

Conceptualizing awareness in terms of beliefs about the procedure, effect, and researcher has several advantages. First, it ties the debate about the role of awareness in evaluative learning to a debate about the role of experiment-related beliefs. These beliefs may apply to different evaluative learning procedures, whether they involve experienced regularities or verbal information about these regularities. This approach may allow us to avoid conceptual confusions that arise when the same term is used to describe different effects. Take, for instance, the term 'hypothesis awareness'. Some may use this term to refer to hypotheses about the elements present in the acquisition phase (e.g., about the fact that stimuli are paired) while others may use this term to refer to hypotheses concerning regularities present in the acquisition phase (e.g., the fact that there is a specific contingency between stimuli), or to the idea that people generate hypotheses about how the researcher wants them to respond during the evaluative phase (e.g., that the researcher wants them to evaluate the stimulus paired with a positive stimulus positively). To aid scientific progress, a clear delineation of the different beliefs that have been considered in the debate may be important.

In reference to debates about the differential role of (contingency) awareness and memory in evaluative learning, another advantage of the current conceptualization is that attention can be drawn to the fact that people may hold different beliefs at different moments in time. It may therefore be useful to distinguish between the relation of evaluative learning with beliefs that are entertained at different times. Relatedly, with the current conceptualization of awareness, attention

can be drawn to the fact that participants may hold accurate or inaccurate beliefs. Sometimes participants may have accurately identified procedural elements, effects, or researcher beliefs. Yet in other cases, they may have arrived at inaccurate conclusions, and in still other situations, they may hold a combination of both accurate and inaccurate beliefs. Either of these beliefs may influence evaluative learning and thus can be of interest.

In short, we have argued that awareness can refer to conscious experiment-related beliefs that can be accurate or inaccurate and that can refer to different aspects of perceived experiences. In what follows, we explore specific types of awareness that have often been discussed in the evaluative learning literature in more detail (see Table 1 for an overview). We group these beliefs in terms of whether they relate to the procedure, the effect, or the researcher.

Table 1

Overview of different types of awareness in reference to the beliefs they refer to.

	Beliefs
Procedure-related beliefs	
Regularity awareness	Beliefs about the regularity between stimuli and/or responses
Contingency awareness	Beliefs about the spatio-temporal regularity between stimuli and/or responses
Identity awareness	Beliefs about the specific stimulus that a stimulus/response was paired with
Valence awareness	Beliefs about the valence of stimuli that a stimulus/response was paired with
Effect-related beliefs	
Influence awareness	Beliefs about the effect of a specific regularity on an evaluative outcome
Researcher-related beliefs	
Hypothesis awareness	Beliefs about the hypothesis that a researcher has about the experiment
Demand awareness	Beliefs about how the researcher expects the participant to behave

Procedure-Related Beliefs

A first group of relevant beliefs encompasses those related to the experimental procedure. Awareness measures often target conscious beliefs about the experimental manipulation(s) present in the acquisition phase such as beliefs about which stimuli have been paired. This is what is often measured in studies on *contingency awareness*, a concept widely referred to in evaluative learning research. More specifically, these types of measures typically examine if people hold conscious beliefs about the spatio-temporal regularity between stimuli and/or responses present in the acquisition phase.

Evaluative learning procedures may also involve other regularities that do not involve a contingency (e.g., mere exposure involves a regularity in the presence of a single stimulus). A broader term to refer to beliefs about regularities in evaluative learning procedures is the term *regularity awareness*. Note that regularity awareness can differ during the acquisition phase, when one is completing certain tasks in the evaluative phase, compared to after acquisition and test during the phase where post-hoc awareness measures are typically encountered. Note also that regularity awareness can refer to beliefs about a regularity that participants have already contacted or about a regularity that participants are informed about that they will contact in the future (in the context of verbal information about upcoming regularities). Regularity awareness measures can also probe different aspects of the regularity. For instance, regularity awareness measures have asked about the elements present in this regularity, such as about the stimuli or responses present in the regularity (e.g., which individual Unconditioned Stimulus, US, a Conditioned Stimulus, CS, was paired with during EC; often called 'identity awareness'), or the psychological properties of these elements (e.g., the valence of the USs with which a CS was paired; often called 'valence awareness') (e.g., Stahl, Unkelbach, & Corneille, 2009).

Although debates continue about the role of regularity awareness in evaluative learning, results generally reveal that higher levels of this type of awareness are associated with stronger evaluative learning effects, such as ME effects (Van Dessel, Mertens, et al., 2019), EC effects (Hofmann et al., 2010), and AA effects (Van Dessel, De Houwer, & Gast, 2016). Indeed, participants who accurately report the experimental regularity or the content of verbal information during the acquisition phase typically show changes in liking in the expected direction. Those who misperceive the regularity often show reversed effects and those who lack regularity awareness often show small or absent effects (e.g., Mattavelli, Richetin, Gallucci, & Perugini, 2017). In sum, regularity awareness seems to be important for evaluative learning in general.

Effect-Related Beliefs

Participants may also hold conscious beliefs about changes in evaluation that may or may not have occurred during the study, as well as the causes of these changes. These beliefs may differ depending on the type of behavior involved: participants can realize that certain changes have occurred (e.g., that their self-reported stimulus evaluations are different from before) and yet lack insight into other changes (e.g., that their automatic stimulus evaluations have also changed). Such awareness can emerge (and diverge) at different moments in time, such as during the acquisition phase, when completing certain tasks in the evaluative phase, or during the phase in which post-hoc awareness measures are typically encountered. So far, little work has been carried out on this type of awareness, especially when compared to the sheer number of studies on contingency or regularity awareness. An exception is a recent study by Sava and colleagues (2020). The authors reported that people often fail to attribute a change in their evaluative responses to a regularity (pairings), and that even when they were explicitly informed that their evaluations were due to such

a regularity, they continued to show EC effects (what the authors referred to as 'influence awareness' in the context of EC).

Note that effect-related awareness measures often center on the *causal relationship* between an experimental manipulation and a change in evaluation. However, participants may harbor assumptions about what changes have taken place and also about why evaluative change has occurred (i.e., influence awareness beliefs). These assumptions can either be accurate (contain reference to the regularities present in the acquisition phase, as well as the relationship between these regularities and one's evaluation) or inaccurate (reflect an *assumed* regularity that was never actually presented, or a task-irrelevant rationale for that change). Hence, influence awareness can refer to beliefs that do not necessarily imply knowledge of the actual influence of the manipulation.

Researcher-Related Beliefs

In many (if not most) studies, participants are aware that they are in a specific context (lab) and being exposed to regularities by a certain person (the researcher) for a specific purpose (to register some outcome variable). This may lead to beliefs about the experiment itself but also beliefs about the researcher (e.g., who this person is) and, more importantly, beliefs about the beliefs of the researcher. Past work has explored this type of awareness and tended to focus on two types of conscious researcher-related beliefs. On the one hand, participants may infer that the researcher has a specific hypothesis (e.g., that a certain regularity will change their behavior), and this inference may either be accurate or inaccurate. This type of belief has often been labelled as 'hypothesis' awareness. Research shows that it can moderate evaluative learning effects (Sweldens et al., 2014).

Interestingly, after becoming hypothesis aware, a participant may arrive at yet another belief: that the researcher not only introduced a regularity to change their behavior, but that the

researcher also wants them to be a 'good participant' and evaluate the stimulus in a certain way. This belief is often referred to as *demand awareness*.[1] Notably, if this belief is contacted during evaluation, then participants have three options available to them (also see Corneille & Lush, 2022).

The first is to disregard it, and respond solely on how *they* feel about the stimulus (e.g., based on the information they encountered during or prior to the study). In this case, the source of control over their evaluative responding is not the belief about the perceived wishes of the researcher (i.e., perceived demand) but some other event or belief (e.g., the regularity). A second option is to intentionally alter their performance in ways that concord with the presumed wishes of the researcher, a phenomenon known as *demand compliance* (Sawyer, 1975). In this case, the source of control over evaluative responding is not merely the regularity encountered during the acquisition phase but also the perceived wishes of the researcher. The third and final option is to intentionally alter performance in ways that directly oppose the wishes of the researcher, a phenomenon known as *reactance* (Brehm, 1966; Steindl et al., 2015). Here too, the source of control over evaluative responding is not merely a regularity but also the perceived wishes of the researcher (and one's desire to respond in opposition to it). Note that in order for demand compliance or reactance to occur, people first have to generate beliefs about the specific way in which the researcher wants them to evaluate that stimulus or response (i.e., be demand aware).

Research on demand has usually sought to show that evaluative learning effects cannot be explained away as demand compliance effects (see Corneille & Lush, 2022, for a recent review).

[1] The term "demand aware" entails that the participant has a correct belief about the hypothesis and wishes of the researcher. Participants can, however, also be mistaken about the hypothesis and wishes of the researcher, which could control behavior in the same ways as correct beliefs about the hypothesis and wishes of the researcher (also see Corneille & Lush, 2022).

For instance, some studies showed that evaluative learning effects are still present when individuals who report demand compliance are eliminated from analyses (e.g., Van Dessel et al., 2018). Others show that changes in evaluations are still present when cover stories are used or the true purpose of the experiment is hidden (e.g., Jones et al., 2010), in which case participants are unlikely to be demand compliant. Still other studies show that evaluations sometimes emerge on tasks that are less likely to allow a person to strategically control their evaluative responses (e.g., indirect procedures, physiological measures, and neurological measures; e.g., Gast & De Houwer, 2013).

The Present Research

Revisiting the Role of Awareness and Demand in Evaluative Learning

Although awareness has attracted considerable attention in evaluative learning research, gaps in our knowledge remain. Whereas certain types of awareness (e.g., contingency awareness) have been studied extensively, others have not (e.g., influence awareness). There is also little research in which multiple types of awareness were studied simultaneously, which limits our knowledge about the relation between the beliefs that moderate evaluative learning. Moreover, past work has heavily focused on the impact of awareness on one type of evaluative outcome (self-reported ratings), despite the fact that evaluations can take many forms (implicit measures, intentions, behavior), each of which may be moderated by awareness in different ways. Finally, much of this work has also been carried out in the context of one type of evaluative learning effect (EC). Hence, we still know little about the impact of awareness on other types of evaluative learning effects. These include effects that involve personally experienced regularities (e.g., ME, AA), or verbal information about these regularities or about the evaluative properties of a stimulus (persuasive messages).

To address these gaps in our knowledge, we conducted two studies that (a) assess multiple types of awareness and demand, (b) capture multiple types of evaluations, that are (c) established in many different ways, in order to examine if (d) the relation between awareness and demand and evaluations varies as a function of *awareness type* (e.g., regularity, influence, hypothesis, demand awareness) and *learning procedure* (evaluative learning via experienced regularities, regularity information, persuasive messages).

Practical and Theoretical Relevance

This study provides important new information about the moderators of evaluative learning, which may have important practical relevance. For instance, if one would find that evaluative learning can occur in the absence of influence awareness, this might indicate that evaluations can be influenced without having to alert people to the presence of an evaluative manipulation (which would also have ethical implications). In contrast, if some evaluative learning procedures only impact evaluation when there is demand compliance, this suggests that these procedures should not be used in real-life situations (at least not in situations where a similar notion of demand compliance is unlikely to occur).

While our study was primarily designed as exploratory, aiming to provide a rich dataset about the role of awareness in the effects of different types of learning procedures on various outcomes, it also has the potential to contribute to answering theoretical questions. One outstanding question is to what extent effects of verbal information about regularities depend on different types of mental processes as the effects of direct experience with the regularities. Dual-process theories of evaluative learning have argued that inferential processes (i.e., processes that involve the activation of beliefs) underlie effects of verbal information whereas associative processes (i.e., processes that involve the activation of associations between mental representations) underlie

effects of 'low-level' learning procedures, such as evaluative conditioning (e.g., Briñol et al., 2009, p. 2087). From this perspective, one might expect that experience-based procedures produce effects that are less sensitive to awareness. Conversely, inferential theories (e.g., Van Dessel et al., 2019) postulate that both types of procedures depend on the same types of processes and might hence not predict strong differences in the role of awareness.

Second, if inferences mediate evaluative learning effects, an important question that arises is ‘which inferences play a role?’. It has been argued that studies involving procedures with novel brands and regularities that are clearly constructed for the study might lead participants to interpret the regularities as a message from the researchers (Moran et al., 2023). On the one hand, this interpretation might lead participants to comply with researchers and provide the 'correct' answers in evaluation measures. Consequently, the effects should primarily depend on demand and reactance beliefs, as well as participants' belief that researchers attempted to influence their evaluations, which might raise concerns about the external validity of studies examining effects of stimulus regularities. On the other hand, learning about the contingencies might influence participants' evaluations even without perceived researcher demands or attempts to influence their attitudes towards the brands. In this case, the procedures might influence evaluation via other types of processes that may also play a role in real-life situations.

Related to the first two questions, dual-process theories could argue that processes related to hypothesis awareness and compliance explain effects of verbal information, because these effects are believed to depend on inferences, but not experience-based effects, which should rely more on associative processes. From this perspective, clear differences in the role of hypothesis awareness and compliance would be expected for effects of these procedures.

Similarly, dual-process theories have argued that automatic evaluations (i.e., evaluations that have automaticity features: Van Dessel et al., 2020) depend on associative processes, whereas self-reported measures rely on inferential processes (Rydell & McConnell, 2006). To investigate this question, we included the most commonly-used measure of automatic evaluations, the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), along with a behavioral intention measure and a self-reported evaluation measure. From a dual-process perspective, it could be argued that effects observed on the IAT, particularly those resulting from procedures involving direct experience with regularities, should not depend on beliefs.

Procedure and Hypotheses

The current work examines the role of different types of experiment-related beliefs in different evaluative learning effects in two experiments, one study that included only novel food brands, and one study that included both novel food brands and well-known food brands. Participants were first welcomed to the study and informed that they would encounter two novel food brands that had just been released onto the market or two well-known food brands. Thereafter, they proceeded to an acquisition phase where they were exposed to one of the following procedures: mere exposure, mere exposure information, evaluative conditioning, evaluative conditioning information, approach-avoidance, approach-avoidance information, or a persuasive message. Next, self-reported ratings, relatively more automatic evaluations as indexed by an IAT, and behavioral intentions towards the two brands were assessed. Finally, different conscious beliefs were probed: awareness of the regularity present during the acquisition phase (regularity awareness); awareness that one's evaluations had been influenced by the elements and regularities present in the acquisition phase (influence awareness); awareness that a researcher had introduced these elements and regularities in order to influence one's evaluations (hypothesis awareness) and

whether they had intentionally altered their performance on the evaluative tasks to comply (demand compliance) or resist (reactance) the presumed wishes of the experimenter.

The aim of the study was to test the relation between, on the one hand, the different types of conscious beliefs that were assessed and, on the other hand, evaluative learning effects. We did not have specific hypotheses about these relations a priori. Instead, for Experiment 1, we preregistered only the general hypotheses that the awareness beliefs would be related to the evaluative learning outcomes and that this relation (and the overall rate of awareness and demand) would differ between some of the learning procedures[2]. For Experiment 2, we preregistered the hypothesis that the robust patterns observed for the novel food brands in Experiment 1, would replicate for the novel food brands in Experiment 2 (see the Experiment 1 Discussion).

Transparency and Openness

We report how we determined our sample size, all data exclusions, all manipulations, and all measures in the study, and we follow JARS (Kazak, 2018). The study design and study materials are available, along with the raw data, and analytic plan on the Open Science Framework (Experiment 1: Van Dessel, Hughes, Perugini, et al., 2019; Experiment 2: Van Dessel et al., 2023). All data were collected without interim data analysis. Data were analyzed using R, version 4.2.2 (R Core Team, 2020). The study design, analysis plan and hypotheses were preregistered at the Open Science Framework.

[2] A secondary aim of our study was to assess differences in behavior change due to the different learning procedures. For this test, we preregistered directional hypotheses. Specifically, a prior (exploratory) study (Hughes et al., unpublished manuscript) found that, for explicit evaluations, persuasion produces bigger effects than EC-based procedures, EC-based procedures produce bigger effects than AA-based procedures and AA-based procedures produce bigger effects than ME-based procedures. For IAT scores, persuasion and EC-based procedures produce bigger effects than AA-based procedures and AA-based procedures produce bigger effects than ME-based procedures. For behavioral intentions, persuasion produce bigger effects than EC and AA-based procedures and EC and AA-based procedures produce bigger effects than ME-based procedures. We expected that the current study would replicate these findings.

Experiment 1

Method

Participants

A total of 2723 English-speaking volunteers navigated to the study information page on the Project Implicit website (https://implicit.harvard.edu). Participants were citizens of 62 countries (68.9% US, 3.8% UK, 3.8% Canada, 3.3% Australia, 1.4% India, all others <1%). Of these, 1279 (i.e., 47.0%) immediately opted out after learning about the study duration. The remaining 1444 (846 female) participants, ranging in age from 18 to 77 (M_{age} = 39, SD = 14), proceeded with the study on a voluntary basis. As pre-registered, data-collection was stopped after a minimum of 1000 participants had completed the experiment. This sample size was determined based on the availability of resources.

Design

The experiment was programmed in JavaScript and hosted on the Project Implicit website. It involved a single-factor between-subjects design (*Evaluative Learning Procedure*: AA, ME, EC, Persuasion, IAA, IME, IEC), with self-reported evaluation ratings, IAT scores, and behavioral intention ratings as the primary dependent variables. Three method variables were manipulated between participants: Evaluation Task Order (self-reported ratings or IAT first), IAT Block Order, and Stimulus Assignment (assignment of the two brand names to the positive or negative regularity).

Materials

Stimuli. Two fictional brand names and logos (Vekte and Empeya) served as target stimuli during the acquisition and evaluation phases. These stimuli were selected based on a rating study

in which a sample of 634 Project Implicit participants rated these as the two most neutral brands out of a set of twenty. For the EC learning procedure, five positive and five negative images served as positive and negative source stimuli.

IAT. Images of the two brands served as one set of target stimuli and the words "Positive" and "Negative" as another. Eight positively and eight negatively valenced adjectives served as one set of attribute stimuli (*happy, pleasant, nice, super, fantastic, great, wonderful, brilliant vs. horrible, terrible, nasty, sad, disgusting, foul, unpleasant [x2]*[3]) and images of the logos of the two brands (4 different versions) served as the second set (see Appendix A).

Procedure

After navigating to the study on the Project Implicit website, participants were informed that they would encounter two brands that had just been released into supermarkets around the world. Thereafter, they completed an acquisition phase, evaluation measures, and the awareness measures. A detailed description of the various methods can be found in Appendix A.

Acquisition Phase. The implementations of the different learning procedures were selected on the basis of optimization of the magnitude of evaluative learning while taking into account the constraints imposed by online implementation on the Project Implicit website and limited time availability. This selection was informed by prior studies examining the magnitude of these implementations (e.g., Van Dessel et al., 2019; Hughes et al., unpublished manuscript).

Mere Exposure Information. Participants were told that they would soon encounter two brand names and that one of these brands (e.g., Empeya) would be presented often and the other

[3] Due to a coding error, the word unpleasant appeared twice as much as the other attribute stimuli.

(e.g., Vekte) rarely. A manipulation check was implemented to ensure that they had understood the content of the verbal information. Specifically, participants were asked to indicate which of the stimuli would be presented often and which would be presented rarely. The correct answers had to be selected before they could proceed to the evaluative phase. Failure to do so resulted in re-exposure to the verbal information until a correct response was emitted.

Evaluative Conditioning Information. Participants were informed that they would see a brand name and that it would be paired with either a positive or negative image. Specifically, whenever they saw one brand (e.g., Empeya), a positive image (e.g., a happy person) would also appear, whereas when they saw a second brand (e.g., Vekte), a negative image would appear (e.g., a disgusted person). A manipulation check was included to ensure that they could accurately recall these iregularities and a correct response was required before they could progress onwards. Similar to ME information, a manipulation check ensured that participants recalled the verbal information before proceeding.

Approach-Avoidance Information. Participants were informed that they would encounter two brand names and that they would have to make a certain action every time one appeared. Specifically, when one brand appeared (e.g., Empeya), they would have to approach it and when they saw the second (e.g., Vekte), they would have to avoid it. Similar to ME and EC information, a manipulation check ensured that participants recalled the verbal information before proceeding.

Persuasive Message. Participants received a message focused on the evaluative properties of the two brand names. Specifically, they were informed that "*products from Empeya score high in terms of their quality, how ethically they are made, and their nutritional value. Moreover, they were judged to be good-tasting, healthy, and reasonably priced. In contrast, products from Vekte scored low in terms of their quality, how ethically they were made, and their nutritional value.*

They were also judged to taste poorly, to be less healthy, and overpriced." Thereafter a manipulation check question asked participants to indicate whether Empeya or Vekte was "high in quality, good-tasting, and is healthy" or "low in quality, tastes poorly, and is unhealthy", and a correct response was required to progress onwards.

Mere Exposure (ME). Mere exposure consisted of one block of eleven trials. On each trial, a single brand was displayed (in random order) in the middle of the screen for 500ms. Thereafter it disappeared and, following a 1000ms inter-trial interval (ITI), the next stimulus appeared. One brand was presented frequently (10 times) and the second infrequently (1 time).

Evaluative Conditioning (EC). Evaluative conditioning consisted of one block of thirty trials. Each trial consisted of the simultaneous presentation of two stimuli (a brand name and valenced image) for 2000ms. Thereafter, both stimuli disappeared, and following a 750ms ITI, the next stimulus pair was presented. Training consisted of two types of trials: fifteen in which one brand name (e.g., Empeya) was presented together with one of five positive images and another fifteen in which a second brand (e.g., Vekte) was presented together with one of five negative images. Trial order was randomized across participants.

Approach-Avoidance (AA). Participants were told that two items would appear onscreen: a stick figure (i.e., manikin) along with a brand name surrounded by a blue or green colored frame. They were also told that they would have to approach or avoid the brands by moving the manikin either closer or further away from a brand using the up and down keys.

Training consisted of fifty trials. Each trial started with the presentation of the manikin together with the presentation of a brand name (e.g., Vekte). The brand name appeared in the center of the screen, while the manikin appeared in the upper or lower half of the screen. Whenever the participant made a correct response (e.g., emitted an approach movement in the presence of a brand

with a green frame or an avoidance movement in the presence of a brand with a blue frame), the manikin either moved towards or away from the brand name and the duration of movement was 800ms. Thereafter, all stimuli disappeared from the screen, and following a 1500ms ITI, the next trial began. An incorrect response produced error feedback and participants had to emit a correct response in order to continue with the task. Participants completed an initial practice phase (6 trials) followed by the main phase wherein one brand was approached 22 times and the other was avoided 22 times.

Evaluative Measures. ***IAT***. Automatic evaluative responding towards the two brand names was assessed using an IAT. Instructions indicated that the two brands present in the acquisition phase (targets) as well as the words 'Positive' and 'Negative' (attributes) would appear on the upper left and right sides of the screen, and that stimuli could be assigned to these categories using either the left ('E') or right keys ('I'). If the image or word was correctly categorized the stimulus disappeared from the screen and the next trial would begin. In contrast, an incorrect response resulted in the presentation of a red 'X' which remained on-screen until the correct key was pressed.

Overall, participants completed seven blocks of trials. The first block of 20 practice trials required the brands to be sorted into their respective categories, with one assigned to the left ('E') key and the other with the right ('I') key. On the second block of 20 practice trials, positively valenced stimuli were assigned to the 'Positive' category using the left key whereas negative stimuli were assigned to the 'Negative' category using the right key. Blocks 3 (20 trials) and 4 (40 trials) involved a combined assignment of target and attribute stimuli to their respective categories. Specifically, participants categorized the first brand and 'positive' words using the left key and the second brand and 'negative' words using the right key. The fifth block of 20 trials reversed the key assignments, with the first brand now assigned to the right key and second brand with the left key.

Finally, the sixth (20 trials) and seventh blocks (40 trials) required participants to categorize the first brand with 'negative' words and the second brand with 'positive' words.

Self-Reported Ratings. Participants were presented with a brand and asked to indicate how positive or negative they considered it to be using a Likert scale ranging from 9 (*very positive*) to 1 (*very negative*) with 5 (*neither positive nor negative*) as a neutral mid-point. They were also asked to indicate how positive or negative, and good or bad they considered the brands to be on a similar scale. Question order was counterbalanced across participants.

Behavioral Intention Task. Participants were reminded that the two brands they had just encountered would be introduced into supermarkets in the coming months. They were asked if they would be willing to try those brands if they were added to their local supermarket and given the following options: "*I would only try Empeya", "I would only try Vekte", "I would try both products", "I would try neither product"*.

Awareness Measures. Following the evaluative phase, participants were asked to complete a number of additional questions and to answer these as honestly and accurately as possible. Questions were presented in a fixed order.

Regularity Awareness. Participants in the experienced regularities (ME, EC, AA) conditions were shown the logo of one of the brands and asked about the regularity they encountered during the acquisition phase. Participants in the (AA, ME, EC) verbal information conditions and the Persuasion condition were shown a brand logo and asked the following question: "*In the instructions at the beginning of the experiment, what did we tell you about the following brand?*". In each case, the response options specified the correct regularity (e.g., in the ME condition: 'This brand was presented MORE FREQUENTLY than the other brand), reversed regularity (e.g., ME: 'This brand was presented LESS FREQUENTLY than the other brand), no

regularity (e.g., ME: ‘This brand was presented THE SAME AMOUNT as the other brand) or ‘I don’t remember’. There were two regularity awareness questions, one for each brand, that were tailored to the regularity present in each evaluative learning condition. The order of the questions was counterbalanced.

Hypothesis Awareness (Self-Reported Ratings). Participants were asked whether they had ever considered, during the experiment, that the experimenter was attempting to influence their self-reported ratings and given three options to respond (‘yes’, ‘no’, ‘I don’t know’), this question thus probed awareness about the experimenter’s attempt to influence this dependent variable. Those who answered yes were then asked to indicate how the experimenter had tried to achieve this. Participants could choose from ten options: one for each of the seven evaluative learning procedures in the study (e.g., ME: ‘By manipulating how frequently the brands appeared’), one for the IAT (‘by manipulating the task where you had to quickly categorize brands with positive and negative words called the Implicit Association test’), one for a method unrelated to what was done in the task (‘Some other Method’), and one to indicate that the experimenter had not attempted to influence their evaluations (‘The researchers did not attempt to influence my ratings’). The two questions were combined to provide an indication about the extent to which the participant had conscious beliefs about the hypothesis of the experimenter (hypothesis awareness).

Hypothesis Awareness (IAT). Participants were shown a screen shot of the IAT and asked whether they had ever considered that, during the experiment, that the experimenter was attempting to influence their performance on the IAT. Those who answered yes were then asked to indicate how the experimenter had tried to achieve this. A similar set of options as in the case of the self-reported ratings was given with one exception: the IAT option was replaced with a self-reported ratings option (‘by manipulating the rating scales’).

Influence Awareness. Participants were asked if they thought that their self-reported ratings were influenced by the procedure they had encountered during the learning phase (i.e., by the experienced regularity). This method was explicitly stated onscreen (e.g., ME: 'by the fact that you saw one brand frequently and one brand rarely") and they were given three options to choose from (yes, no, I don't know). A similar question was asked in respect to their IAT performance.

Demand Compliance. Participants then indicated whether they had altered their self-reported ratings and IAT performance in order to concord with the presumed experimental agenda and given the following response options: yes, no, I don't know.

Reactance. Finally, they were asked if they had consciously attempted to resist what they thought the researchers had wanted them to feel about the brands when providing their self-reported ratings and when performing the IAT.

Data Analysis

Exclusions. Of the 1444 participants who initiated the study, 454 (i.e., 31.4%) failed to provide complete data on all measures and tasks. In-line with our pre-registered data-analysis plan, we removed the data for these participants as well as the data of 7 participants (i.e., 0.5%) whose total time from their first response to their final response in the experiment (i.e., total completion time) was more than 2.5 SDs from the mean (M = 15 min, SD = 13 min). Participant data was also removed for those who (a) had error rates above 30% when considering all IAT blocks or above 40% for any one of the critical IAT test blocks (33 participants; i.e., 2.3%), or (b) responded faster than 400ms on more than 10% of the IAT trials (22 participants; i.e., 1.5%). Analyses were then carried out on the data of participants who completed all measures and tasks (n = 928; 535 women, M_{age} = 39, SD = 14). Notably, attrition rates did not differ across the evaluative learning procedures, $\chi^2(6) = 6.46$, $p = .37$ (see Appendix B for a detailed breakdown of those who initiated

the experiment but provided incomplete data and those whose data was retained for subsequent analysis). For each evaluative learning procedure there were at least 117 participants. This sample size affords 80% power to detect an effect of the learning procedure of d = 0.23 in a one-tailed within-subjects t-test. Additionally, this sample size affords 80% power to detect a direct effect of abps = 0.32 and an indirect effect of abps = 0.18 in the mediation model analyses.[4]

Data Preparation. *IAT.* IAT scores were calculated using the D_2 algorithm (Greenwald, Nosek, & Banaji, 2003). Positive scores indicate a more positive evaluation of the stimulus subjected to positive attitude induction over the stimulus subjected to negative attitude induction. Negative scores indicate the opposite. Split-half reliability of IAT scores was $r(926) = .86$.

Self-reported Evaluation. An overall rating score was generated by averaging the three ratings obtained for each stimulus, and then subtracting the score for the stimulus subject to negative attitude induction from that subject to positive attitude induction. The internal consistency of the rating score was high (Cronbach's alpha = .98). IAT and ratings showed a moderate positive correlation, $r(926) = .31$, $p < .001$.

Behavioral Intention. Behavioral intention scores were computed by recoding responses on the behavioral intention question. A score of -1 indicates that participants selected the brand that was subject to negative attitude induction, a score of 0 indicates they selected both or neither brands, and a score of +1 indicates they selected the brand subject to positive attitude induction. Behavioral intention scores showed a weak positive correlation with IAT scores, $r(926) = .25$, $p < .001$, and a strong positive correlation with ratings, $r(926) = .60$, $p < .001$.

[4] Power analyses were conducted using Monte Carlo simulations, with parameters set to their average value in our dataset

Awareness and Demand Measures. Responses to the regularity, hypothesis, and influence awareness questions, as well as compliance and reactance questions, were coded as either 0 or 1. Responses were coded as 1 when participants indicated the correct regularity for both stimuli on the regularity awareness question, indicated the correct evaluative learning procedure in the hypothesis awareness question, or answered 'yes' to the influence awareness, demand compliance, or reactance questions. In all other cases, responses were coded as 0. Correlations between the different measures are reported in Appendix C.

Analysis Plan. We first assessed if IAT scores and self-reported ratings (dependent variables) varied as a function of the learning procedure (independent variables) through ANOVAs and post-hoc tests on the evaluation ratings, IAT, and behavioral intention ratings. We report Bayes Factors with Cauchy prior for the *t*-tests. We then used proportion tests to assess differences in the extent to which participants provided evidence of different types of awareness and demand and logistic regressions to assess differences in the proportion of participants that report these beliefs for the different learning procedures. Subsequently, we fitted mediation models to explore whether effects of the evaluative learning procedures were moderated by awareness beliefs and to evaluate evidence for evaluative learning effects in the presence or absence of the particular belief that was measured (as detailed below).

Results

Evaluative Learning

Overall, an evaluative learning effect emerged: participants preferred the stimulus subjected to positive attitude induction over the stimulus subjected to negative attitude induction. This effect was observed on ratings ($M = 1.67$, $SD = 3.13$), $t(927) = 16.23$, $p < .001$, $d = 0.53$, $BF_1 > 10^5$, IAT

scores (M = 0.25, SD = 0.46), $t(927) = 16.72$, $p < .001$, $d = 0.55$, $BF_1 > 10^5$, and behavioral intentions ($M = 0.17$, $SD = 0.47$), $V = 23148$, $p < .001$, $d = 0.37$, $BF_1 > 10^5$.

We also examined if ratings, IAT performance, and behavioral intentions varied as a function of *Learning Procedure* and two method factors (*Stimulus Identity* and *IAT Block Order*). For IAT scores, we observed a main effect of IAT Block Order, $F(1, 900) = 18.57$, $p < .001$, such that scores were larger when participants completed the learning-consistent versus learning-inconsistent block first. A main effect of Learning Procedure also emerged, $F(6, 900) = 15.99$, $p < .001$, indicating that learning effects differed in magnitude for the different procedures. Follow-up *t*-tests indicate that all learning procedures led to significant effects (i.e., a preference for the positive over negative stimulus) except for ME (Table 2). For self-report ratings, we also observed a main effect of Learning Procedure, $F(6, 914) = 42.72$, $p < .001$, with all procedures led to significant effects except for ME and ME information. Finally, submitting behavioral intention scores to a Kruskal-Wallis test also revealed a main effect of Learning Procedure, $\chi^2(6) = 102.01$, $p < .001$, with follow-up Mann-Whitney U tests indicating that all procedures led to significant effects, with the exception of ME and ME information.

Table 2

Rank-ordered test results for evaluative learning magnitude in Experiment 1.

	M (SD)	*test (p-value)*	*Bayes Factor*	*Cohen's dz*
IAT				
Persuasion	0.41 (0.42)	$t(136) = 10.66$ ($p < .001$)	$BF_1 > 10^5$	1.07
EC information	0.42 (0.43)	$t(146) = 11.74$ ($p < .001$)	$BF_1 > 10^5$	0.97
EC	0.33 (0.46)	$t(116) = 7.77$ ($p < .001$)	$BF_1 > 10^5$	0.72
AA information	0.32 (0.45)	$t(136) = 8.23$ ($p < .001$)	$BF_1 > 10^5$	0.70

ME information	0.15 (0.41)	$t(136) = 4.28$ ($p < .001$)	$BF_1 = 884$	0.37
AA	0.14 (0.44)	$t(122) = 3.62$ ($p < .001$)	$BF_1 = 87$	0.33
ME	0.01 (0.47)	$t(129) = 0.26$ ($p = .40$)	$BF_0 = 8.22$	0.02
Self-reported evaluation				
Persuasion	4.49 (3.29)	$t(136) = 16.01$ ($p < .001$)	$BF_1 > 10^5$	1.37
EC	2.33 (3.07)	$t(116) = 8.19$ ($p < .001$)	$BF_1 > 10^5$	0.76
AA information	2.39 (3.62)	$t(136) = 7.73$ ($p < .001$)	$BF_1 > 10^5$	0.66
EC information	1.43 (3.08)	$t(146) = 5.62$ ($p < .001$)	$BF_1 > 10^5$	0.46
AA	0.75 (1.94)	$t(122) = 4.27$ ($p < .001$)	$BF_1 = 818$	0.38
ME information	0.11 (1.62)	$t(136) = 0.82$ ($p = .21$)	$BF_0 = 4.76$	0.07
ME	0.12 (2.10)	$t(129) = 0.63$ ($p = .27$)	$BF_0 = 5.78$	0.05
Behavioral intention				
Persuasion	0.46 (0.53)	$\chi^2(1) = 58.31$ ($p < .001$)	$BF_1 > 10^5$	0.87
AA information	0.30 (0.56)	$\chi^2(1) = 30.27$ ($p < .001$)	$BF_1 > 10^5$	0.53
EC	0.21 (0.54)	$\chi^2(1) = 16.23$ ($p < .001$)	$BF_1 = 875$	0.40
AA	0.09 (0.34)	$\chi^2(1) = 7.52$ ($p = .006$)	$BF_1 = 11$	0.26
EC information	0.09 (0.44)	$\chi^2(1) = 5.55$ ($p = .019$)	$BF_1 = 3.31$	0.20
ME	0.04 (0.38)	$\chi^2(1) = 1.07$ ($p = .30$)	$BF_0 = 8.22$	0.10
ME information	0.02 (0.27)	$\chi^2(1) = 0.54$ ($p = .46$)	$BF_1 = 5.90$	0.05

Awareness and Demand

We observed differences in the extent to which participants provided evidence of awareness and demand based on the type of outcome, $\chi^2(8) = 1410.10$, $p < .001$. To explore this effect, we made pairwise comparisons for types of awareness in descending order of magnitude, revealing six distinct clusters: (1) regularity awareness, (2) influence awareness, (3) hypothesis awareness for self-reported ratings, (4) demand compliance for self-reported ratings, (5) reactance for self-

reported ratings and demand compliance for IAT performance, and (6) reactance for IAT performance and hypothesis awareness for IAT performance (Appendix C).

Rates of awareness differed as a function of learning procedure most strongly for influence and hypothesis awareness, followed by regularity awareness, and demand compliance (Table 3). Reactance did not differ significantly as a function of learning procedure. Results of logistic regressions for the separate learning procedures on awareness scores and of regression analyses of awareness on outcome measures for the different learning procedures can be found in Appendix C.

Table 3

Mean awareness, reactance, and compliance scores for the different learning procedures and rank orders (in brackets)

	Regularity awareness	*Hypothesis awareness*		*Influence awareness*		*Demand compliance*		*Reactance*	
		Self-report	*IAT*	*Self-report*	*IAT*	*Self-report*	*IAT*	*Self-report*	*IAT*
ME information	88% (4)	14% (7)	5 % (5)	18% (7)	20% (6)	18% (6)	18% (5)	20% (6)	17% (3)
EC information	89% (3)	40% (2)	23% (2)	44% (4)	48% (3)	33% (3)	25% (3)	24% (3)	15% (5)
AA information	94% (1)	26% (4)	17% (3)	51% (3)	42% (4)	41% (1)	31% (1)	25% (2)	16% (4)
ME	67% (6)	20% (6)	4% (6)	21% (6)	16% (7)	13% (7)	8% (7)	14% (7)	10% (7)
EC	75% (5)	79% (1)	36% (1)	69% (2)	62% (2)	27% (4)	22% (4)	27% (1)	22% (1)
AA	57% (7)	21% (5)	1% (7)	33% (5)	32% (5)	22% (5)	17% (6)	22% (5)	13% (6)
Persuasion	91% (2)	32% (3)	10% (4)	76% (1)	67% (1)	34% (2)	28% (2)	23% (4)	21% (2)

Moderation of Evaluative Learning by Awareness and Demand

To explore the role of experiment-related beliefs in evaluative learning, we fitted mediation models for mediation of learning effects by each of the beliefs using the lavaan package in R (version 0.5-16; Rosseel, 2012). Unlike traditional moderation analysis, which examines

interaction terms in linear models to explore how learning effects vary with beliefs, this method examines whether evaluative learning effects are moderated by these beliefs by assessing the extent to which these effects persist when controlling for the influence of beliefs on learning. Previous research has demonstrated the utility of this approach in other contexts examining moderation of evaluative learning by beliefs (e.g., Kattner, 2012; Richter & Gast, 2017).

Models were fitted for each of the learning procedures with the exception of ME, for which we did not find any evaluative learning effects.[5] We used the Maximum Likelihood with Robust standard errors (MLR) method to estimate standard errors for the direct and indirect effects. In this study, a direct effect refers to the effect of the learning procedures on the outcomes, when controlling for the potential influence of beliefs. An indirect effect refers to the extent to which the evaluative learning effect involves participants' beliefs as a potential intermediary variable. However, it is important to note that these indirect effects represent correlational patterns observed in the data, not causal pathways. Because our study design is correlational, the identified indirect effects should not be interpreted as evidence that beliefs causally mediate the relationship between the learning procedures and outcomes.

An overview of all the significant direct and indirect effects can be found in Table 4 and Figure 1. We report the partially standardized ab index (ab_{ps}) as an index of effect sizes (Preacher & Kelly, 2012). All *p*-values were adjusted for multiple comparisons by using the False Discovery Rate correction (Benjamini & Hochberg, 1995). For each learning procedure, we also tested a mediation model that included the different types of awareness together. The results of these analyses, as well as full reports of the simple mediation model results can be found in Appendix

[5] For the sake of conciseness, we have only included awareness measures that referred to the relevant measure for IAT and self-reported rating scores (e.g., mediation models for mediation by hypothesis awareness for IAT scores but *not* self-reported ratings).

D. In-line with recommendations by Yzerbyt et al. (2018), we also report individual components of the indirect effects (in Appendix E).

ME Information. Mediation models were only tested for IAT scores given that effects were only observed on this measure. We did not observe indirect effects, *Z*s < 1.67, *p*s > .18, ab_{ps} < 0.84. The direct effect of ME information was statistically significant for all analyses, *Z*s > 3.91, *p*s < .001, except when controlling for regularity awareness (abps = 0.83), Z = -0.28, *p* = .87.

EC Information. We observed indirect effects for influence awareness on all scores, *Z*s > 2.76, *p*s < .017, ab_{ps} > 0.32, for regularity awareness on IAT and self-reported evaluation scores, *Z*s > 2.35, *p*s < .028, ab_{ps} > 1.01, for demand compliance and reactance on self-reported evaluation and behavioral intention scores, *Z*s > 2.40, *p*s < .024, ab_{ps} > 0.20, and for hypothesis awareness on self-reported evaluation scores, Z = 2.55, *p* = .021, ab_{ps} = 0.34. The direct effect of EC information was significant, *Z*s > 2.64, *p*s < .018, except when controlling for regularity awareness (all scores), influence awareness (self-reported evaluation and behavioral intention scores), and demand compliance and hypothesis awareness (behavioral intention scores).

AA Information. We observed indirect effects for influence awareness and demand compliance on self-reported evaluation and behavioral intention scores, *Z*s > 4.38, *p*s < .001, ab_{ps} > 0.60, and for hypothesis awareness on self-reported evaluation scores, *Z* = 2.67, *p* = .012, ab_{ps} = 0.25. The direct effect of AA information was significant, *Z*s > 2.69, *p*s < .018, except when controlling for regularity awareness (all scores), influence awareness (self-reported evaluation and behavioral intention scores), and demand compliance (behavioral intention scores).

EC. We observed indirect effects for influence awareness and regularity awareness on self-reported evaluation and behavioral intention scores, *Z*s > 2.92, *p*s < .008, ab_{ps} > 0.63, and for demand compliance on self-reported evaluation scores, *Z* = 2.41, *p* = .028, ab_{ps} = 0.24. The direct

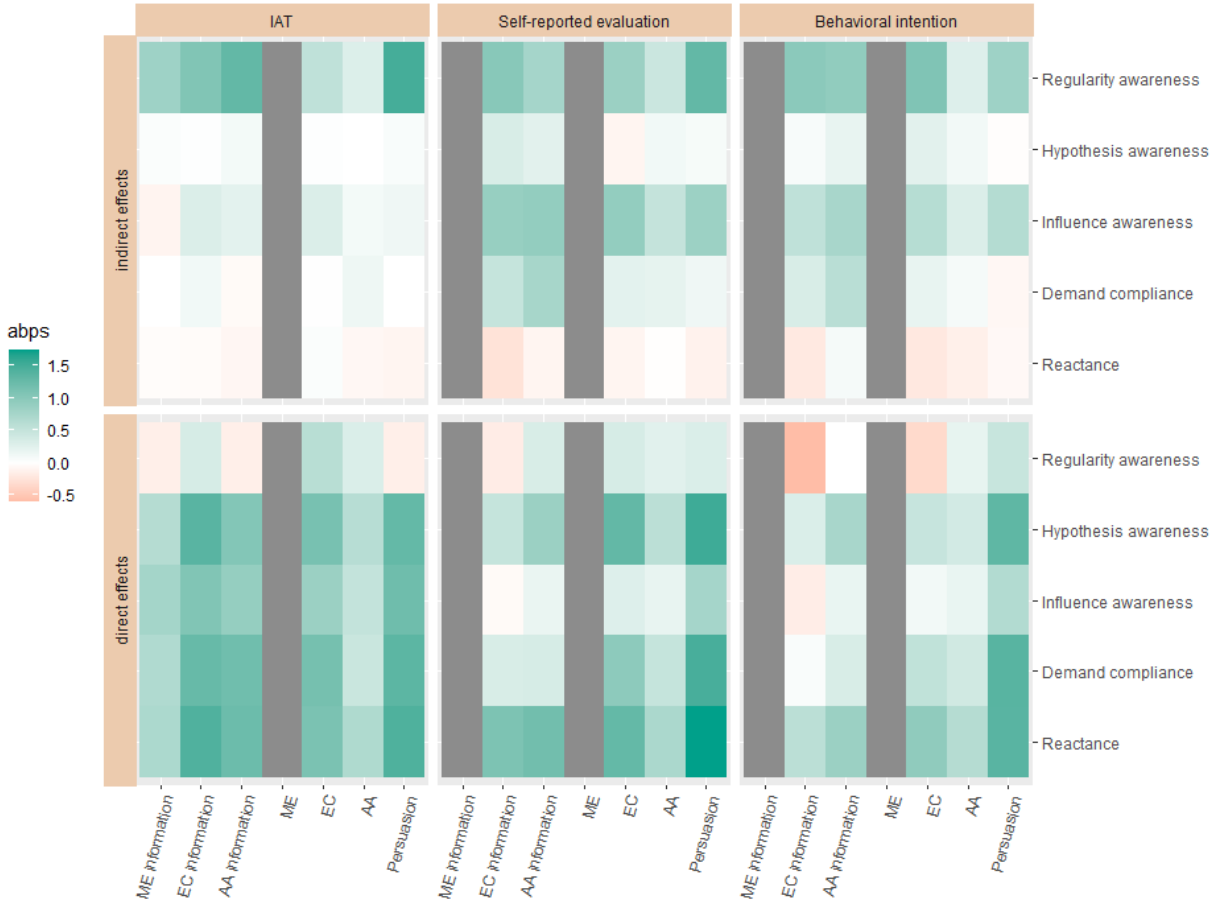
effect of EC was significant, *Z*s > 2.70, *p*s < .015, except when controlling for regularity awareness (all scores), influence awareness (self-reported evaluation and behavioral intention scores), and hypothesis awareness (behavioral intention scores).

AA. We observed indirect effects for influence awareness and regularity awareness on self-reported evaluation scores, *Z*s > 2.52, *p*s < .039, ab_{ps} > 0.45, and for reactance on behavioral intention scores, *Z* = 2.43, *p* = .038, ab_{ps} = 0.14. The direct effect of AA was significant, *Z*s > 2.50, *p*s < .038, except when controlling for regularity awareness (all scores), influence awareness (self-reported evaluation and behavioral intention scores), and demand compliance and hypothesis awareness (behavioral intention scores).

Persuasion. We observed indirect effects for regularity awareness on IAT scores and self-reported evaluation scores, *Z*s > 4.33, *p*s < .001, ab_{ps} > 1.29, and for influence awareness on self-reported evaluation and behavioral intention scores, *Z*s > 3.03, *p*s < .005, ab_{ps} > 0.65. The direct effect for Persuasion was significant, *Z*s > 2.81, *p*s < .010, except when controlling for regularity awareness (all scores).

Figure 1

Heatmap of the magnitude of direct and indirect effects in the Experiment 1 mediation models



Note. Grey bars indicate that the effect of the learning procedure on the outcome measure was non-significant and therefore ab_{ps} was not computed.

Table 4

Overview of the magnitude of direct and indirect effects in the Experiment 1 mediation models

	Regularity awareness	*Hypothesis awareness*	*Influence awareness*	*Demand compliance*	*Reactance*
IAT					
ME information	I: 0.83 D: -0.15	I: 0.04 D: 0.64*	I: -0.10 D: 0.78*	I: 0.00 D: 0.68*	I: -0.03 D: 0.71*
EC information	I: 1.07* D: 0.35	I: 0.02 D: 1.37*	I: 0.31* D: 1.07*	I: 0.12 D: 1.27*	I: -0.04 D: 1.43*
AA information	I: 1.30 D: -0.15	I: 0.10 D: 1.05*	I: 0.24 D: 0.91*	I: -0.05 D: 1.20*	I: -0.08 D: 1.23*
ME	N/A	N/A	N/A	N/A	N/A

EC	I: 0.55 D: 0.61	I: 0.02 D: 1.14*	I: 0.31 D: 0.86*	I: 0.01 D: 1.16*	I: 0.04 D: 1.12*
AA	I: 0.30 D: 0.32	I: 0.00 D: 0.62*	I: 0.10 D: 0.52*	I: 0.15 D: 0.47*	I: -0.07 D: 0.69*
Persuasion	I: 1.50* D: -0.15	I: 0.06 D: 1.29*	I: 0.14 D: 1.21*	I: 0.00 D: 1.35*	I: -0.09 D: 1.44*
Self-reported evaluation					
ME information	N/A	N/A	N/A	N/A	N/A
EC information	I: 1.01* D: -0.17	I: 0.34* D: 0.50*	I: 0.89* D: -0.05	I: 0.50* D: 0.34*	I: -0.26* D: 1.10*
AA information	I: 0.77 D: 0.34	I: 0.25* D: 0.86*	I: 0.92* D: 0.18	I: 0.76* D: 0.35*	I: -0.09 D: 1.19*
ME	N/A	N/A	N/A	N/A	N/A
EC	I: 0.86* D: 0.35	I: -0.09 D: 1.30*	I: 0.92* D: 0.29	I: 0.24* D: 0.97*	I: -0.09 D: 1.29*
AA	I: 0.46* D: 0.26	I: 0.12 D: 0.59*	I: 0.51* D: 0.20	I: 0.22 D: 0.50*	I: -0.01 D: 0.72*
Persuasion	I: 1.30* D: 0.32	I: 0.08 D: 1.54*	I: 0.85* D: 0.77*	I: 0.14 D: 1.48*	I: -0.12 D: 1.74*
Behavioral intention					
ME information	N/A	N/A	N/A	N/A	N/A
EC information	I: 0.99 D: -0.60	I: 0.07 D: 0.32	I: 0.55* D: -0.16	I: 0.34* D: 0.05	I: -0.20* D: 0.59*
AA information	I: 0.94 D: 0.00	I: 0.20 D: 0.75*	I: 0.75* D: 0.19	I: 0.60* D: 0.34	I: 0.09 D: 0.86*
ME	N/A	N/A	N/A	N/A	N/A
EC	I: 1.08* D: -0.34	I: 0.25 D: 0.49	I: 0.63* D: 0.11	I: 0.20 D: 0.54*	I: -0.21 D: 0.95*
AA	I: 0.29 D: 0.21	I: 0.11 D: 0.39	I: 0.31 D: 0.19	I: 0.09 D: 0.41	I: -0.14* D: 0.64*
Persuasion	I: 0.83 D: 0.48	I: -0.02 D: 1.33*	I: 0.65* D: 0.66*	I: -0.07 D: 1.38*	I: -0.06 D: 1.37*

Note. * = $p < .05$, *p*-values adjusted for multiple comparisons by using the False Discovery Rate correction.

Discussion

Experiment 1 marks the initial investigation into the role of awareness and demand across diverse learning procedures and on multiple measures. The results reveal varying rates of

awareness and demand, with the highest level observed for regularity awareness. These rates also differ depending on the specific learning procedure employed. For instance, receiving verbal information yielded higher rates of regularity awareness (88-94%) compared to experience of EC,ME, or AA regularities (57-75%).

More importantly, in accordance with our preregistered hypothesis, awareness and demand differentially moderate effects of the different evaluative learning procedures. We note the following four important patterns. First, regularity awareness stands out as a pivotal moderator of learning effects. For all learning procedures, there were no direct effects on any of the outcomes after controlling for regularity awareness. Second, for all learning procedures except persuasion, there were no direct effects on the self-reported evaluation and behavioral intention scores after controlling for influence awareness, whereas there were direct learning effects on IAT scores. One possible explanation for the exception with persuasion may be that this procedure clearly produced the strongest learning effects, allowing for more statistical power to observe a small effect. Third, while small effects of demand compliance we observed on some evaluative learning procedures (EC, EC information, AA information), for all learning procedures, effects of these learning procedures remained significant after controlling for demand compliance. Finally, we found no evidence that reactance moderates evaluative learning except for small effects on EC information and AA.

Taken together, these results shed light on the theoretical questions we outlined in the introduction. First, the results do not fit well with the idea that the role of awareness in experience-based procedures is strongly reduced compared to procedures that involve verbal information. Second, we did not find evidence that evaluative learning effects with novel brands are strongly dependent only on demand compliance nor with the idea derived from dual-process theories that

this would be the case specifically for the effects of verbal information. Furthermore, the evidence also does not suggest that such distinctive patterns occur less on IAT scores compared to self-report ratings. We did, however, observe only weak indirect effects on IAT scores (except for regularity awareness), in contrast to effects on self-reported ratings.

Experiment 1, however, is subject to two significant limitations. First, it constitutes a single exploratory experiment (with only broad pre-registered hypotheses) that concentrates solely on one particular type of attitude object (i.e., the novel food brands Vekte and Empeya). Second, the learning procedures were implemented in a singular way, with limited consistency in the implementations of the different learning procedures.

We conducted a second experiment to address these limitations. This experiment featured a conceptual replication condition involving two other novel food brands and a condition with two well-known food brands. Moreover, the implementations of the learning procedures were adjusted to more closely mirror each other, differing primarily with regard to the type of regularity that participants experienced or were informed about. This adaptation involved harmonizing stimulus timing and the number of trials in experience conditions and ensuring participants received one piece of information about attitude objects in verbal information conditions (e.g., in the persuasion condition, participants were solely informed about the quality of brand products).

For Experiment 2, we pre-registered the hypotheses that we would observe the four robust patterns that we noted above in the novel food brands condition. For the well-known brands condition, we indicated that, while we would test the same hypotheses, these hypotheses are not confirmatory and differences in results might occur. For instance, there would perhaps be smaller effects overall or a potentially stronger role of certain beliefs, such as those related to reactance.

Experiment 2

Method

Participants

A total of 8879 English-speaking volunteers navigated to the study information page on the Project Implicit website (https://implicit.harvard.edu). Participants were citizens of 74 countries (80.6% US, 3.8% UK, 2.5% Canada, 1.3% Australia, all others <1%). Of these, 3800 (i.e., 42.8%) immediately opted out after learning about the study duration. The remaining 5079 participants (gender: 3229 female, 1617 male, other: 108, did not report: 124), ranging in age from 18 to 92 (*Mage* = 33, *SD* = 14), proceeded with the study on a voluntary basis. As pre-registered, data-collection was stopped after a minimum of 3000 participants had completed the experiment. This sample size was determined because it should provide adequate (>80%) statistical power for finding small effects of the learning procedures of $d = 0.20$ in a one-tailed t-test at alpha = .05, taking into account the exclusion data of Experiment 1.

Design

The experiment involved a 2 (*Novelty Condition*: novel food brands, well-known food brands) x 7 (*Evaluative Learning Procedure*) between-subjects design.

Materials

Stimuli. In the novel food brands condition, the two fictional brand names and logos (Levida and Witkap) that were rated as third and fourth most neutral in the aforementioned rating study were employed as target stimuli. For the well-known food brands condition, McDonald's and Subway were selected as brands because these are well-known fast food chains.

Procedure

The study procedure was similar to the procedure of Experiment 1, with the following important deviations. First, for the well-known food brands condition, we removed the introductory information indicating learning about two new brands that would be introduced in the United States and elsewhere around the world. Instead, we indicated that they would learn about two brands that are well-known in the United States and elsewhere around the world. Second, for these brands, the behavioral intention question was changed to: “Imagine you're out with a friend, and they suggest eating at McDonald's or Subway. Please choose which of the following would be true for you? (Options: I would only recommend McDonald’s, I would only recommend Subway, I would recommend both McDonald’s and Subway, I would not recommend either).

Finally, there were several changes to the implementations of the learning procedures to make the procedures as similar to one another as possible with the key difference being the regularity participants learned about (verbally or via experience). Specifically, we removed the manipulation check questions that had been presented at the end of the learning phases of the conditions with verbal information. Moreover, in the persuasive message condition, participants only received one piece of information about the brands. Specifically, they learned that focus groups indicated that brand A scored much higher in terms of their overall quality whereas brand B scored much lower in terms of their overall quality. Also, the presentation duration for the experienced regularities was 1500ms and ITIs were 625ms. The experienced regularities were all encountered 20 times. For ME, this involved 20 presentations of brand A and 0 presentations of brand B in ME. For EC, there were 20 pairings of brand A with positive stimuli and 20 pairings of brand B with negative stimuli. For AA, there were 20 approach movements to brand A and 20 avoidance movements to brand B. See Appendix A for a more detailed outline of all the procedural details.

Data Analysis

Exclusions. Of the 5079 participants who initiated the study, 2144 (i.e., 42.2%) failed to provide complete data on all measures and tasks. In-line with our pre-registered data-analysis plan, we removed the data for these participants as well as the data of 64 participants (i.e., 0.1%) whose total time from their first response to their final response in the experiment (i.e., total completion time) was more than 2.5 SDs from the mean (M = 14 min, SD = 13 min). Participant data was also removed for those who (a) had error rates above 30% when considering all IAT blocks or above 40% for any one of the critical IAT test blocks (108 participants; i.e., 2.1%), or (b) responded faster than 400ms on more than 10% of the IAT trials (88 participants; i.e., 1.7%). Analyses were then carried out on the data of participants who completed all measures and tasks (n = 2765; gender: 1788 women, 859 men, 66 other, 52 not reported; M_{age} = 35, SD = 15). Notably, attrition rates did not differ across the evaluative learning procedures for the novel food brands condition, $\chi^2(6) = 2.95$, $p = .81$, or the well-known food brands condition, $\chi^2(6) = 5.25$, $p = .51$ (Appendix B). For each evaluative learning procedure there were at least 173 participants. This sample size affords 80% power to detect an effect of the learning procedure of $d = 0.19$ in a one-tailed within-subjects t-test. Additionally, this sample size affords 80% power to detect a direct effect of abps = 0.24 and an indirect effect of abps = 0.12 in the mediation model analyses.

Data Preparation. Scores were computed in the same way as in Experiment 1. Split-half reliability of IAT scores was $r(1396) = .84$ for the novel brands and $r(1365) = .80$ for the well-known brands. The internal consistency of the self-reported rating score was high for both types of brands (Cronbach's alpha = .92/.91). The evaluative measures correlated with one another: behavioral intention scores showed a weak positive correlation with IAT scores (novel brands: $r[1396] = .26$, $p < .001$, well-known brands: $r[1356] = .24$, $p < .001$), and a strong positive

correlation with self-report ratings (novel brands: r[1396] = .60, p < .001, well-known brands: r[1356] = .61, p < .001). IAT and self-report ratings showed a moderate positive correlation (novel brands: r[1396] = .33, p < .001, well-known brands: r[1356] = .33, p < .001).

Results

Evaluative learning

An overall evaluative learning effect was observed such that participants preferred the stimulus subjected to positive attitude induction over the stimulus subjected to negative attitude induction on all measures except for the behavioral intention scores for the well-known brands (M = 0.03, SD = 0.61), V = 67654, p = .11, d = 0.04, BF_0 = 9.05. The effect was observed on the rating scores (for novel brands: M = 1.04, SD = 2.58, t[1397] = 15.03, p < .001, d = 0.40, $BF_1 > 10^5$, for well-known brands: M = 0.37, SD = 2.33), t[1366] = 5.82, p < .001, d = 0.16, $BF_1 > 10^5$), on the IAT scores (for novel brands: M = 0.16, SD = 0.44, t[1397] = 13.50, p < .001, d = 0.36, $BF_1 > 10^5$, for well-known brands: M = 0.09, SD = 0.41, t[1366] = 7.80, p < .001, d = 0.21, $BF_1 > 10^5$), and on the behavioral intention scores for novel brands (M = 0.13, SD = 0.45), V = 36209, p < .001, d = 0.28, $BF_1 > 10^5$, but not for well-known brands.

We examined if ratings, IAT performance, and behavioral intentions varied as a function of *Learning Procedure*, *Stimulus Novelty* and *IAT Block Order* (for IAT scores). For IAT scores, we observed a main effect of IAT Block Order, F(1, 2737) = 52.17, p < .001, a main effect of Stimulus Novelty, F(1, 2751) = 24.50, p < .001, indicating smaller effects for the well-known brands, and a main effect of Learning Procedure, F(6, 2737) = 13.81, p < .001, but no interaction effects, Fs < 1.26, ps > .27. Follow-up t-tests indicate that all learning procedures led to significant effects (i.e., a preference for the positive over negative stimulus) with the exception of ME, persuasion, and ME information for well-known brands (Table 5; Table 6). For self-reported

evaluation ratings, we also observed a main effect of Learning Procedure, $F(6, 2751) = 21.36$, $p < .001$, a main effect of Stimulus Novelty, $F(1, 2751) = 57.94$, $p < .001$, and an interaction of Learning Procedure and Stimulus Novelty, $F(6, 2751) = 5.78$, $p < .001$. Follow-up tests showed that all learning procedures produced significant learning effects with the exception of ME for both brand types and ME information, AA, and persuasion for well-known brands. Finally, submitting behavioral intention scores to a Kruskal-Wallis test revealed a main effect of Learning Procedure, $\chi^2(6) = 52.40$, $p < .001$, of Stimulus Novelty, $\chi^2(1) = 20.49$, $p < .001$, and an interaction of Learning Procedure x Stimulus Novelty, $\chi^2(13) = 91.27$, $p < .001$. Follow-up Mann-Whitney U tests indicated that no learning procedures led to a preference for the positive over the negative stimulus for well-known brands and all learning procedures led to a preference for the positive over the negative stimulus for novel brands, with the exception of ME and ME information.

Table 5

Rank-ordered test results for evaluative learning magnitude for novel brands in Experiment 2.

	M (SD)	*test (p-value)*	*Bayes Factor*	*Cohen's dz*
IAT				
EC	0.28 (0.45)	$t(171) = 7.98$ ($p < .001$)	$BF_1 > 10^5$	0.61
EC information	0.26 (0.43)	$t(201) = 8.45$ ($p < .001$)	$BF_1 > 10^5$	0.59
AA information	0.24 (0.47)	$t(199) = 7.24$ ($p < .001$)	$BF_1 > 10^5$	0.51
AA	0.14 (0.44)	$t(237) = 4.97$ ($p < .001$)	$BF_1 > 10^5$	0.32
Persuasion	0.10 (0.44)	$t(189) = 3.04$ ($p = .001$)	$BF_1 = 13.61$	0.22
ME	0.07 (0.39)	$t(172) = 2.47$ ($p = .007$)	$BF_1 = 3.20$	0.19
ME information	0.05 (0.43)	$t(222) = 1.91$ ($p = .029$)	$BF_0 = 1.16$	0.13
Self-reported evaluation				
EC	2.23 (2.91)	$t(171) = 10.04$ ($p < .001$)	$BF_1 > 10^5$	0.77

AA information	2.03 (3.34)	$t(199) = 8.57$ ($p < .001$)	$BF_1 > 10^5$	0.61
Persuasion	1.11 (2.52)	$t(189) = 6.08$ ($p < .001$)	$BF_1 > 10^5$	0.44
EC information	1.29 (2.97)	$t(201) = 6.17$ ($p < .001$)	$BF_1 > 10^5$	0.43
AA	0.52 (2.44)	$t(237) = 3.90$ ($p < .001$)	$BF_1 = 211.93$	0.25
ME information	0.27 (1.46)	$t(222) = 2.75$ ($p = .003$)	$BF_1 = 50.01$	0.18
ME	0.03 (1.42)	$t(172) = 0.32$ ($p = .27$)	$BF_0 = 8.97$	0.02
Behavioral intention				
EC	0.31 (0.50)	$\chi^2(1) = 47.99$ ($p < .001$)	$BF_1 > 10^5$	0.63
AA information	0.28 (0.53)	$\chi^2(1) = 42.67$ ($p < .001$)	$BF_1 > 10^5$	0.53
EC information	0.12 (0.45)	$\chi^2(1) = 17.55$ ($p < .001$)	$BF_1 = 258.23$	0.28
AA	0.06 (0.34)	$\chi^2(1) = 7.82$ ($p = .005$)	$BF_1 = 7.01$	0.18
Persuasion	0.09 (0.50)	$\chi^2(1) = 6.34$ ($p = .012$)	$BF_1 = 3.03$	0.18
ME information	0.03 (0.33)	$\chi^2(1) = 1.27$ ($p = .26$)	$BF_0 = 3.59$	0.08
ME	0.02 (0.38)	$\chi^2(1) = 0.62$ ($p = .43$)	$BF_0 = 6.83$	0.05

Table 6

Rank-ordered test results for evaluative learning magnitude for well-known brands in Experiment 2.

	M (SD)	*test (p-value)*	*Bayes Factor*	*Cohen's dz*
IAT				
AA information	0.15 (0.39)	$t(236) = 5.97$ ($p < .001$)	$BF_1 > 10^5$	0.39
EC	0.15 (0.39)	$t(178) = 5.21$ ($p < .001$)	$BF_1 > 10^5$	0.39
EC information	0.15 (0.42)	$t(204) = 5.12$ ($p < .001$)	$BF_1 > 10^5$	0.36
AA	0.14 (0.44)	$t(122) = 3.62$ ($p < .001$)	$BF_1 = 87$	0.33
ME	0.03 (0.42)	$t(186) = 0.88$ ($p = .19$)	$BF_0 = 5.19$	0.06
Persuasion	0.02 (0.40)	$t(172) = 0.62$ ($p = .27$)	$BF_0 = 6.66$	0.05
ME information	-0.02 (0.42)	$t(198) = -0.58$ ($p = .72$)	$BF_0 = 18.96$	-0.04

Self-reported evaluation				
EC information	0.72 (2.54)	$t(204) = 4.04$ ($p < .001$)	$BF_1 = 358.53$	0.28
EC	0.71 (2.59)	$t(178) = 3.66$ ($p < .001$)	$BF_1 = 96.25$	0.27
AA information	0.68 (2.86)	$t(186) = 3.24$ ($p < .001$)	$BF_1 = 24.94$	0.24
AA	0.17 (2.09)	$t(236) = 1.27$ ($p = .10$)	$BF_0 = 3.45$	0.08
Persuasion	0.16 (2.11)	$t(172) = 0.98$ ($p = .16$)	$BF_0 = 4.39$	0.07
ME information	0.12 (2.06)	$t(198) = 0.82$ ($p = .21$)	$BF_0 = 5.70$	0.06
ME	0.04 (1.82)	$t(186) = 0.33$ ($p = .37$)	$BF_0 = 9.21$	0.02
Behavioral intention				
EC	0.08 (0.61)	$\chi^2(1) = 2.57$ ($p = .11$)	$BF_0 = 1.18$	0.14
AA information	0.07 (0.66)	$\chi^2(1) = 1.92$ ($p = .17$)	$BF_0 = 2.37$	0.11
ME information	0.06 (0.57)	$\chi^2(1) = 2.01$ ($p = .16$)	$BF_0 = 2.23$	0.11
EC information	0.05 (0.60)	$\chi^2(1) = 1.19$ ($p = .28$)	$BF_0 = 3.76$	0.08
AA	0.00 (0.64)	$\chi^2(1) = 0.04$ ($p = .84$)	$BF_0 = 13.76$	0.00
Persuasion	-0.03 (0.57)	$\chi^2(1) = 0.83$ ($p = .36$)	$BF_0 = 20.10$	-0.06
ME	-0.04 (0.59)	$\chi^2(1) = -1.09$ ($p = .30$)	$BF_0 = 23.25$	-0.07

Awareness and Demand

Overall, we observed differences in the extent to which participants provided evidence of awareness and demand based on the type of outcome, for novel brands, $\chi^2(8) = 997.17$, $p < .001$, and well-known brands, $\chi^2(8) = 1469.60$, $p < .001$. The highest rates of awareness (in descending order) were observed for (1) regularity awareness, (2) influence awareness, (3) demand compliance, hypothesis awareness and reactance for self-reported ratings, (4) reactance for IAT performance, and (5) hypothesis awareness for IAT performance (Appendix C).

For novel brands, rates of awareness differed as a function of learning procedure for hypothesis awareness, followed by influence awareness, demand compliance for self-reported ratings, regularity awareness, and demand compliance for IAT scores (Table 7). For well-known brands, rates of awareness differed most strongly as a function of learning procedure for influence and hypothesis awareness, followed by regularity awareness and demand compliance for self-reported ratings. Reactance did not differ as a function of learning procedure for either brands. Results of logistic regressions for the separate learning procedures on awareness scores and of regression analyses of awareness on outcome measures for the different learning procedures can be found in Appendix C.

Table 7

Mean awareness, reactance, and compliance scores for the different learning procedures and rank orders (in brackets) in Experiment 2.

	Regularity awareness	*Hypothesis awareness*		*Influence awareness*		*Demand compliance*		*Reactance*	
		Self-report	*IAT*	*Self-report*	*IAT*	*Self-report*	*IAT*	*Self-report*	*IAT*
Novel brands									
ME information	51% (6)	7% (7)	3 % (6)	24% (7)	22% (6)	19% (6)	24% (6)	23% (6)	21% (6)
EC information	67% (2)	21% (4)	18% (2)	48% (2)	49% (1)	37% (2)	38% (1)	28% (3)	29% (1)
AA information	69% (1)	26% (2)	8% (3)	45% (4)	45% (3)	37% (1)	36% (2)	31% (2)	21% (5)
ME	47% (7)	13% (6)	5% (5)	28% (6)	28% (7)	15% (7)	22% (7)	21% (7)	20% (7)
EC	65% (3)	60% (1)	22% (1)	55% (1)	48% (2)	28% (4)	28% (5)	33% (1)	27% (2)
AA	53% (5)	15% (5)	2% (7)	32% (5)	30% (5)	26% (5)	31% (4)	27% (4)	22% (4)
Persuasion	58% (4)	23% (3)	6% (4)	47% (3)	34% (4)	29% (3)	32% (3)	26% (5)	23% (3)
Well-known brands									
ME information	55% (6)	4% (7)	4 % (4)	16% (6)	15% (7)	12% (6)	29% (2)	22% (6)	21% (3)

EC information	62% (5)	21% (2)	15% (2)	29% (1)	35% (1)	20% (2)	24% (5)	22% (5)	23% (2)
AA information	75% (2)	16% (4)	8% (3)	27% (2)	32% (2)	22% (1)	29% (1)	24% (3)	20% (4)
ME	52% (7)	10% (6)	4% (5)	19% (5)	16% (6)	9% (7)	22% (6)	19% (7)	17% (7)
EC	69% (3)	59% (1)	23% (1)	27% (3)	30% (3)	18% (4)	26% (3)	35% (1)	26% (1)
AA	62% (4)	14% (5)	3% (7)	15% (7)	19% (5)	16% (5)	24% (4)	26% (2)	18% (5)
Persuasion	83% (1)	17% (3)	3% (6)	23% (4)	26% (4)	18% (3)	20% (7)	24% (4)	18% (6)

Moderation of Evaluative Learning by Awareness and Demand

Full reports of the simple mediation model results as well as the results of fitting multiple mediation models can be found in Appendix D. Individual components of the indirect effects can be found in Appendix E. Table 8 and Figure 2 show the direct and indirect effects of the simple mediation models for novel brands while Table 9 and Figure 3 show the direct and indirect effects of the simple mediation models for well-known brands.

ME Information. Mediation models were only tested for IAT scores and self-reported evaluation scores for novel brands. We did not observe indirect effects, $Zs < 2.44$, $ps > .10$, $ab_{ps} < 0.35$, or direct effects, $Zs < 3.01$, $ps > .060$.

EC Information. For novel brands, we observed indirect effects for regularity awareness on IAT and self-reported evaluation scores, $Zs > 2.92$, $ps < .008$, $ab_{ps} > 0.51$, and for influence awareness and demand compliance on self-reported evaluation and behavioral intention scores, $Zs > 3.59$, $ps < .001$, $ab_{ps} > 0.40$. The direct effect was significant, $Zs > 2.26$, $ps < .044$, except when controlling for regularity awareness (self-reported evaluation and behavioral intention scores), and influence awareness (self-reported evaluation scores).

For well-known brands, mediation models were only tested for IAT scores and self-reported evaluation scores. We observed indirect effects for influence awareness and demand compliance

on self-reported evaluation, *Z*s > 2.77, *p*s < .021, ab_{ps} > 0.26. The direct effect was significant, *Z*s > 2.58, *p*s < .026, except when controlling for regularity awareness (both scores), and influence awareness and demand compliance (self-reported evaluation scores).

AA Information. For novel brands, we observed indirect effects for regularity and influence awareness on all scores, *Z*s > 3.55, *p*s < .001, ab_{ps} > 0.40, and for demand compliance and hypothesis awareness on self-reported evaluation and behavioral intention scores, *Z*s > 2.25, *p*s < .034, ab_{ps} > 0.18. The direct effect of AA information was significant, *Z*s > 2.93, *p*s < .005, except when controlling for regularity awareness (all scores).

For well-known brands, mediation models were only tested for IAT scores and self-reported evaluation scores. We observed indirect effects for influence awareness and demand compliance on self-reported evaluation, *Z*s > 2.65, *p*s < .033, ab_{ps} > 0.26. The direct effect was significant, *Z*s > 2.86, *p*s < .021, except when controlling for regularity awareness, influence awareness and demand compliance (IAT and self-reported evaluation scores), and hypothesis awareness (self-reported evaluation scores).

ME. Mediation models were only tested for IAT scores for novel brands. We did not observe indirect effects, *Z*s < 1.21, *p*s > .38, ab_{ps} < 0.11. The direct effect was significant, *Z*s > 2.55, *p*s < .034, except when controlling for regularity awareness and influence awareness.

EC. For novel brands, we observed indirect effects for influence awareness and regularity awareness on all scores, *Z*s > 2.57, *p*s < .015, ab_{ps} > 0.31, and for hypothesis awareness and demand compliance on self-reported evaluation scores, *Z*s > 2.75, *p*s < .015, ab_{ps} > 0.21. The direct effect was significant, *Z*s > 2.82, *p*s < .009, except when controlling for regularity awareness (IAT scores).

For well-known brands, mediation models were only tested for IAT scores and self-reported evaluation scores. We observed indirect effects for demand compliance on both scores, *Zs* > 2.49, *ps* < .033, ab_{ps} > 0.20, and for influence awareness on self-reported evaluation, *Z* = 4.03, *p* < .001, ab_{ps} = 0.44. The direct effect was significant, *Z*s > 2.33, *p*s < .041, except when controlling for regularity or influence awareness, and demand compliance (self-reported evaluation scores).

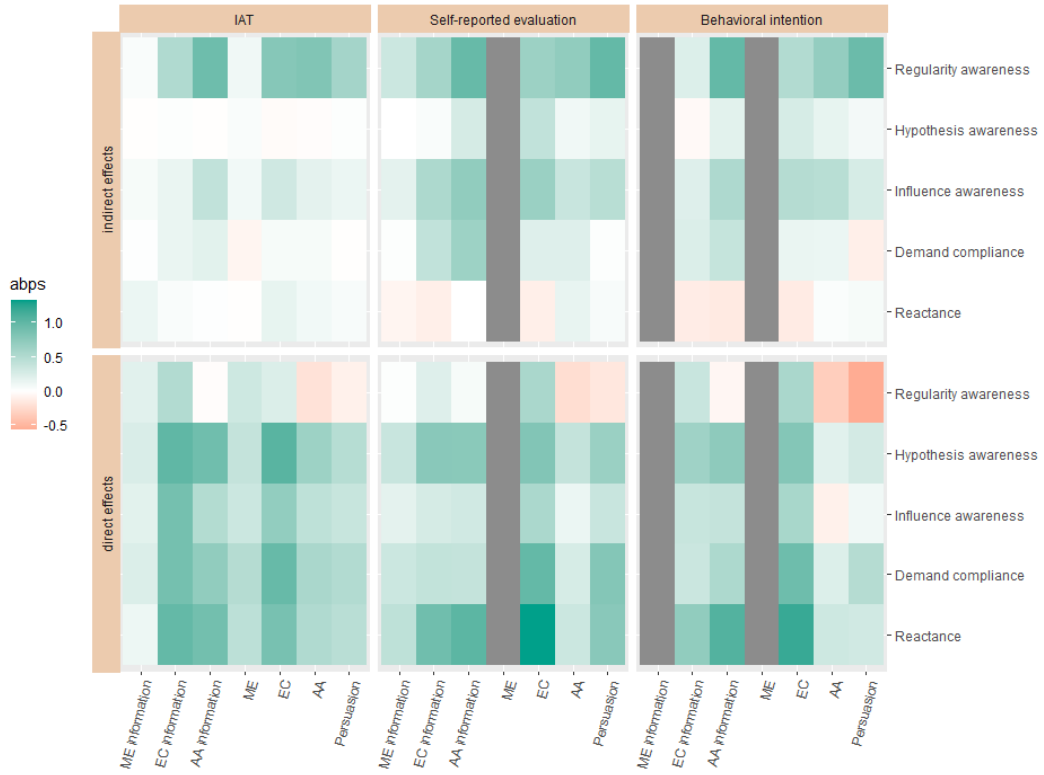
AA. For novel brands, we observed indirect effects for regularity awareness on all measures, *Zs* > 5.08, *ps* < .001, ab_{ps} > 0.70, for influence awareness on self-reported evaluation and behavioral intention scores, *Zs* > 3.23, *ps* < .005, ab_{ps} > 0.35, and for hypothesis awareness on behavioral intention scores, *Z* = 2.42, *p* = .034, ab_{ps} = 0.16. The direct effect was significant, *Z*s > 2.39, *p*s < .035, except when controlling for regularity awareness (all scores), influence awareness (self-reported evaluation and behavioral intention scores), and demand compliance and hypothesis awareness (behavioral intention scores).

For well-known brands, mediation models were only tested for IAT scores. We observed indirect effects for regularity awareness and reactance, *Zs* > 2.23, *ps* < .043, ab_{ps} > 0.07. The direct effect was significant, *Z*s > 4.46, *p*s < .001, except when controlling for regularity awareness.

Persuasion. For novel brands, we observed indirect effects for regularity awareness on all scores, *Zs* > 3.50, *ps* < .001, ab_{ps} > 0.60, and for influence awareness and hypothesis awareness on self-reported evaluation scores, *Zs* > 2.40, *ps* < .037, ab_{ps} > 0.16. The direct effect of Persuasion was significant, *Z*s > 2.76, *p*s < .015, except when controlling for regularity awareness (all scores), influence awareness (IAT and behavioral intention scores), and hypothesis awareness and reactance (behavioral intention scores).

Figure 2

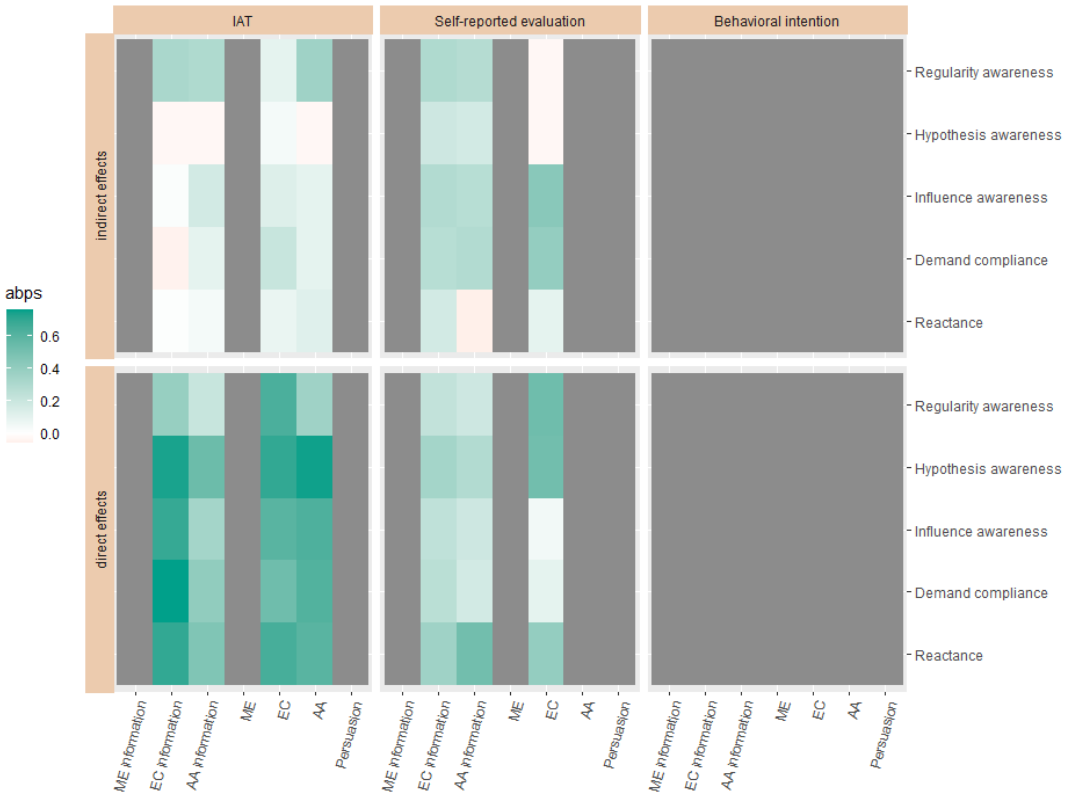
Heatmap of the magnitude of direct and indirect effects in the Experiment 2 mediation models for novel brands



Note. Grey bars indicate that the effect of the learning procedure on the outcome measure was non-significant and therefore ab_{ps} was not computed.

Figure 3

Heatmap of the magnitude of direct and indirect effects in the Experiment 2 mediation models for well-known brands



Note. Grey bars indicate that the effect of the learning procedure on the outcome measure was non-significant and therefore ab_{ps} was not computed.

Table 8

Overview of the magnitude of direct and indirect effects in the Experiment 2 mediation models for novel brands.

	Regularity awareness	*Hypothesis awareness*	*Influence awareness*	*Demand compliance*	*Reactance*
IAT					
ME information	I: 0.04 D: 0.20	I: -0.01 D: 0.25	I: 0.06 D: 0.19	I: 0.01 D: 0.24	I: 0.13 D: 0.12
EC information	I: 0.52* D: 0.51*	I: 0.02 D: 1.01*	I: 0.14 D: 0.89*	I: 0.14 D: 0.89*	I: 0.04 D: 0.99*
AA information	I: 0.93* D: -0.02	I: -0.01 D: 0.92*	I: 0.41* D: 0.50*	I: 0.19 D: 0.72*	I: 0.01 D: 0.90*
ME	I: 0.10 D: 0.33	I: 0.04 D: 0.39*	I: 0.09 D: 0.34	I: -0.07 D: 0.49*	I: -0.01 D: 0.44*
EC	I: 0.79* D: 0.24	I: -0.03 D: 1.05*	I: 0.32* D: 0.71*	I: 0.06 D: 0.97*	I: 0.16 D: 0.87*
AA	I: 0.82* D: -0.20	I: -0.02 D: 0.64*	I: 0.18 D: 0.43*	I: 0.06 D: 0.56*	I: 0.09 D: 0.52*

Persuasion	I: 0.60* D: -0.10	I: 0.02 D: 0.48*	I: 0.13 D: 0.37	I: -0.01 D: 0.51*	I: 0.05 D: 0.46*
Self-reported evaluation					
ME information	I: 0.34 D: 0.02	I: 0.00 D: 0.36*	I: 0.18 D: 0.18	I: 0.02 D: 0.34*	I: -0.07 D: 0.43*
EC information	I: 0.59* D: 0.22	I: 0.04 D: 0.77*	I: 0.54* D: 0.28	I: 0.41* D: 0.40*	I: -0.11 D: 0.92*
AA information	I: 0.97* D: 0.06	I: 0.28* D: 0.76*	I: 0.72* D: 0.31*	I: 0.64* D: 0.39*	I: 0.00 D: 1.03*
ME	N/A	N/A	N/A	N/A	N/A
EC	I: 0.65* D: 0.56*	I: 0.41* D: 0.81*	I: 0.66* D: 0.55*	I: 0.22* D: 0.99*	I: -0.11 D: 1.33*
AA	I: 0.72* D: -0.23	I: 0.10 D: 0.39*	I: 0.36* D: 0.13	I: 0.22 D: 0.27*	I: 0.15 D: 0.34*
Persuasion	I: 0.99* D: -0.17	I: 0.16* D: 0.66*	I: 0.47* D: 0.36*	I: 0.02 D: 0.80*	I: 0.05 D: 0.77*
Behavioral intention					
ME information	N/A	N/A	N/A	N/A	N/A
EC information	I: 0.23 D: 0.36	I: -0.04 D: 0.63*	I: 0.22 D: 0.37*	I: 0.24 D: 0.35*	I: -0.13 D: 0.72*
AA information	I: 0.99* D: -0.06	I: 0.19* D: 0.74*	I: 0.53* D: 0.39*	I: 0.38* D: 0.54*	I: -0.15 D: 1.08*
ME	N/A	N/A	N/A	N/A	N/A
EC	I: 0.51* D: 0.56*	I: 0.27 D: 0.80*	I: 0.49* D: 0.57*	I: 0.14 D: 0.93*	I: -0.14 D: 1.20*
AA	I: 0.70* D: -0.34*	I: 0.16* D: 0.20	I: 0.47* D: -0.10	I: 0.13 D: 0.23	I: 0.03 D: 0.33*
Persuasion	I: 0.95* D: -0.57*	I: 0.08 D: 0.29	I: 0.27 D: 0.10	I: -0.11 D: 0.49*	I: 0.06 D: 0.31

Table 9

Overview of the magnitude of direct and indirect effects in the Experiment 2 mediation models for well-known brands.

	Regularity awareness	*Hypothesis awareness*	*Influence awareness*	*Demand compliance*	*Reactance*
IAT					
ME information	N/A	N/A	N/A	N/A	N/A
EC information	I: 0.32 D: 0.39	I: -0.03 D: 0.74*	I: 0.02 D: 0.69*	I: -0.05 D: 0.76*	I: 0.01 D: 0.70*

AA information	I: 0.30 D: 0.21	I: -0.03 D: 0.54*	I: 0.17 D: 0.34	I: 0.10 D: 0.41	I: 0.04 D: 0.47*
ME	N/A	N/A	N/A	N/A	N/A
EC	I: 0.10 D: 0.64*	I: 0.04 D: 0.70*	I: 0.13 D: 0.60*	I: 0.21* D: 0.53*	I: 0.08 D: 0.65*
AA	I: 0.36* D: 0.36	I: -0.03 D: 0.75*	I: 0.10 D: 0.63*	I: 0.10 D: 0.62*	I: 0.12* D: 0.60*
Persuasion	N/A	N/A	N/A	N/A	N/A
Self-reported evaluation					
ME information	N/A	N/A	N/A	N/A	N/A
EC information	I: 0.30 D: 0.23	I: 0.19 D: 0.34*	I: 0.29* D: 0.24	I: 0.27* D: 0.26	I: 0.17 D: 0.36*
AA information	I: 0.28 D: 0.19	I: 0.17 D: 0.29	I: 0.27* D: 0.19	I: 0.29* D: 0.17	I: -0.06 D: 0.52*
ME	N/A	N/A	N/A	N/A	N/A
EC	I: -0.03 D: 0.53	I: -0.03 D: 0.52*	I: 0.44* D: 0.05	I: 0.40* D: 0.10	I: 0.10 D: 0.40*
AA	N/A	N/A	N/A	N/A	N/A
Persuasion	N/A	N/A	N/A	N/A	N/A
Behavioral intention					
All procedures	N/A	N/A	N/A	N/A	N/A

Discussion

Experiment 2 examined the role of awareness and demand in evaluative learning for both novel and well-known food brands. For the novel brands, there were two key differences compared to Experiment 1: two other brands were used and the learning procedures were implemented in a different way to foster more comparability between the procedures. This had an impact on overall effects of the learning procedures, with Persuasion effects being strongly reduced. With regard to the role of awareness and demand, four hypotheses were pre-registered based on the results of Experiment 1. First, consistent with Experiment 1, regularity awareness was the most crucial moderator of learning effects. For most learning procedures, there were no direct effects on any outcomes after controlling for regularity awareness. However, unlike Experiment 1, three

exceptions were notable: the effect of EC information on IAT scores, and the effect of EC on self-reported evaluation and behavioral intention scores. Second, similar to Experiment 1, indirect effects of influence awareness were mainly observed on the self-reported evaluation and behavioral intention scores with no direct effects after controlling for influence awareness. Direct effects were observed on IAT scores (for EC information, AA information, EC, AA). In contrast to Experiment 1, however, after controlling for influence awareness, direct effects of AA information and EC were observed on self-reported evaluation, and of EC, EC information and AA information on behavioral intention scores. Third, in line with Experiment 1 results, for all learning procedures, effects of the learning procedures on all measures remained significant after controlling for demand (except for AA on behavioral intention scores) and there were no indirect effects for reactance.

For the well-known brands condition, two main differences emerged compared to the effects for novel brands (in Experiments 1 and 2). First, there were smaller effects of the learning procedures on IAT and self-reported evaluation ratings and no significant effects on behavioral intention scores. Second, in contrast to novel brands, effects of the learning procedures did not remain significant after controlling for demand compliance. Indirect effects for demand compliance were observed for EC effects on IAT scores. Moreover, there were no direct effects of EC information, AA information and EC on self-reported evaluation scores after controlling for demand compliance. Regarding similarities, the data patterns for regularity awareness, influence awareness, and reactance were consisten with those for well-known brands. Regularity awareness remained crucial, with no direct effects on any of the outcomes after controlling for regularity awareness (except for EC on IAT scores). There were also no direct learning effects on self-reported evaluation scores after controlling for influence awareness. Finally, reactance did not moderate evaluative learning (except for a weak, positive, indirect effect for AA on IAT scores).

General Discussion

In the current work, we set out to examine the relation between experiment-related beliefs and evaluative learning, and in particular, to what extent this relation varies depending on the type of beliefs (related to the procedure, effect, or experimenter), the type of evaluations that were assessed (self-reported, IAT scores, behavioral intention), and how those evaluations were established (via experienced regularities, verbal information about regularities, or persuasive messages). In what follows, we first discuss the role of experiment-related beliefs in the evaluative learning. We then discuss (less focal) findings about the magnitude of the evaluative learning effects and the rates of awareness, followed by a discussion of the limitations of our research.

The Role of Awareness in Evaluative Learning

Regularity Awareness

The results suggest that a number of different beliefs each plays a distinct role in evaluative learning. First, regularity awareness emerges as the most crucial moderator of learning effects. When participants failed to discern the regularities, there was typically no effect of evaluative learning procedures. That is, across most learning procedures, direct effects, which refer to the causal impact of the learning procedures on outcomes independent of other variables, were no longer significant on any outcomes after controlling for regularity awareness. It is noteworthy that regularity awareness was assessed after learning and evaluation. Our findings therefore relate to the debate surrounding the significance of regularity awareness at different stages of the learning process, known as contingency awareness and contingency memory (Gawronski & Walther, 2012). They suggest that regularity awareness during evaluation is essential for the effects of evaluative learning procedures.

However, regularity awareness did not account for all outcomes. For certain outcomes and learning procedures, indirect effects for regularity awareness, which refer to the evaluative learning effects that can be explained with beliefs as intermediary variables, were not statistically significant. While this could suggest evaluative learning in the absence of regularity awareness, it might also be attributed to insufficient statistical power, given the small effects on relevant measures, the limited number of participants not reporting the regularities for these manipulation, and the fact that direct effects typically vanished once the indirect effect was controlled for. Notably, however, this latter observation did not apply to effects of EC information and EC on some outcomes in Experiment 2. This suggests that learning about a stimulus-stimulus contingency (via verbal information or experience) might sometimes produce an effect even without explicit memory of the regularity. Caution is warranted when interpreting this finding, however, because regularity awareness was assessed after evaluation with one specific question.

The observation of the crucial role of regularity awareness in evaluative learning has theoretical and practical implications. Practically, it suggests that ensuring individuals pick up on regularities well enough that they can report them is crucial for effective evaluative learning. However, given the correlational nature of these findings, it could also merely imply that observable evaluative learning typically co-occurs with awareness. It is worth noting that achieving this awareness could sometimes be better accomplished through verbal information than direct experience with regularities, which could explain why effects of verbal information about future regularities sometimes surpass those of direct experience with regularities (Charlesworth, Kurdi, & Banaji, 2020; Kurdi & Banaji, 2017).

We also observed that there are strong indirect effects for regularity awareness for both learning based on verbal information and learning based on experienced regularities. This finding

is theoretically relevant because it contrasts with dual-process theories postulating that effects of experience-based procedures depend on lower-level (associative) processes that do not require regularity awareness (ME: Zajonc, 1980; EC: Olson & Fazio, 2001; AA: Kawakami et al., 2007). In contrast, the results accord with propositional theories that suggest that inferences based on conscious beliefs about regularities underpin evaluative learning (see De Houwer, Van Dessel, & Moran, 2021). The observation of direct effects after controlling for regularity awareness for EC and EC information in Experiment 2, however, might suggest that, for these procedures, the (inferential or associative) mental processes that drive evaluative learning may not require conscious regularity beliefs.

Another noteworthy finding is that the important role of regularity awareness seems to hold across all evaluation measures. This contrasts with theories assuming that measures like the IAT might better capture (associative) evaluative learning occurring in the absence of regularity awareness (Rydell et al., 2006). It is important to highlight, however, that the IAT does not provide a pure measure of automatic evaluative behavior (Van Dessel et al., 2020).

Influence Awareness

Influence awareness also emerges as playing a significant role in evaluative learning, despite fewer participants reporting influence awareness compared to regularity awareness. Nevertheless, influence awareness strongly moderates many learning effects, reminiscent of placebo effects: the belief that something can have an impact strengthens the impact. Interestingly, some direct effects (e.g., strong effects of EC information and AA) vanish after controlling for influence awareness. However, this pattern is predominantly observed for effects on self-reported evaluation and behavioral intention ratings, which often exhibit similar patterns, but not for effects on the Implicit Association Test (IAT).

On IAT scores, only small indirect effects were observed for AA information and EC in Experiment 2, with no significant effects for other learning procedures. While this discrepancy could potentially relate to lower levels of influence awareness for IAT scores compared to self-reported ratings, this explanation is not supported by the data, as awareness rates were largely similar. Another possibility is that beliefs about evaluation being influenced by regularities typically co-occur with evaluative learning, but beliefs about IAT performance being influenced may not, as participants may not readily infer that the IAT is a measure of evaluation or may have misunderstood what was meant when they were asked about awareness related to IAT performance. To explore this idea, we conducted moderation analyses of evaluative learning on IAT scores for awareness in reference to the self-reported ratings (Appendix F). Notably, the pattern of significant results for influence awareness in reference to the self-reported ratings and IAT performance is consistent (except for the indirect effect of AA information in Experiment 1 and of EC information in Experiment 2, which were significant only in reference to self-reported ratings).

Regarding the limitations of influence awareness, it is noteworthy that, for some procedures, there are (large) indirect effects but the direct effect after controlling for influence awareness is still significant (i.e.., for novel brands: for persuasion in both experiments and for EC and AA information in Experiment 2). This suggests that self-reported ratings can still be influenced by these procedures without the conscious belief that specific regularities impact these ratings. In contrast, for well-known brands, indirect effects were observed, but no direct effects remained significant after controlling for influence awareness on self-reported ratings. However, this could also relate to the reduced statistical power for well-known brands give the smaller effect sizes.

These findings carry theoretical and practical implications. At the practical level, practitioners aiming for evaluative change may achieve greater success by employing learning procedures that promote (or co-occur with) conscious beliefs that the procedure can alter their evaluations—an approach that could also be considered more ethical. Moreover, for novel brands, there can also be effects that do not require influence awareness for some procedures (e.g., for persuasion). Hence, when targeting evaluative learning in the absence of influence awareness, alternative procedures may be more suitable than these procedures. However, it is important to note that the current results are correlational, so caution is warranted in interpreting them.

At the theoretical level, implications of these results are in line with regularity awareness results. For instance, they suggest that conscious beliefs may play a role in evaluative learning even for experience-based procedures such as EC, ME, and AA.

Hypothesis Awareness, Demand, and Reactance

The results also suggest some role of beliefs related to hypothesis and demand awareness, but this role is more varied. First, indirect effects for hypothesis awareness were small and only observed on self-reported evaluation ratings (and behavioral intention scores for AA and AA information in Experiment 2) for novel brands. Direct effects did not disappear after controlling for hypothesis awareness. Second, small indirect effects for demand compliance were observed for EC, EC information, and AA information effects, but only on self-reported evaluation ratings (and behavioral intention scores for AA information in Experiment 2) for novel brands. Direct effects did not disappear after controlling for demand compliance. Notably, demand compliance seems to play a stronger role for well-known brands because controlling for demand compliance rendered all effects on self-reported ratings insignificant. Additionally, reactance does not seem to play a

strong role in evaluative learning effects, with only small indirect effects observed in Experiment 1 (for EC information and AA effects for novel brands) that were not replicated in Experiment 2.

At the practical level, these results suggest that beliefs related to researcher hypotheses and demand have, at most, a moderate impact on evaluative learning for novel brands. However, for well-known brands, demand compliance appears to play an important role. This finding is crucial for behavioral intervention, as it may indicate that achieving evaluative change with short online interventions may be challenging as effects may not generalize beyond an experiment where participants are aware of researcher hypotheses. Alternatively, however, it is also possible that this observation extends beyond experimental settings such that evaluative learning effects for well-known brands may be observed mainly when the target person understands and willingly adheres to the intended message set by the intervention facilitator.

At the theoretical level, the results suggest that, even for the effects of verbal information, a theoretical account positing that regularities influence evaluative learning solely via demand compliance does not explain effects observed with novel brands. Instead, a communication account that suggests that participants interpret regularity information (or experienced regularities) as a message from the researchers may provide a more comprehensive explanation (Moran et al., 2023). According to this account, evaluative learning can occur when participants interpret the stimulus pairings as a message from the experimenter (e.g., “the fact that the experimenter pairs this stimulus with a positive picture indicates that the stimulus is positive”) and when they believe that the message conveyed by the experimenters is valid. Results further indicate that indirect effects can be observed for both procedures based on verbal information and procedures based on the experience of regularities. This finding also contrasts with the idea that beliefs do not moderate the latter effects due to their reliance on lower-level processes.

It should be noted, however, that a theoretical account that merely refers to demand compliance as the source of evaluative learning might explain effects for well-known brands. Interestingly, this applies to all learning procedures, not just those based on verbal information. However, it is important to note that effects for well-known brands were rather small and absent for behavioral intention scores. One possible explanation for this finding can be found in inferential accounts of evaluative learning which postulate that evaluative learning depends on the integration of relevant arguments (De Houwer et al., 2021). For well-known brands, participants may typically have learned many relevant arguments, such that the additional information learned in short evaluative learning procedures is not integrated into their evaluative behavior (except when they infer that integrating this information fits with their goal to please the researcher). Further research is needed to explore this and other explanations.

Findings about the Magnitude of Evaluative Learning and Rates of Awareness

The Magnitude of Effects of Evaluative Learning Procedures

In line with previous observations (Hughes et al., unpublished manuscript), the implementation of persuasion that integrated several arguments (Experiment 1), yielded the strongest effects on all outcomes. However, a different implementation involving only one piece of information in Experiment 2 resulted in a significant reduction in the magnitude of persuasion effects. In this case, EC- and AA-based procedures showed larger effects. Notably, AA information consistently produced larger effects than AA, whereas EC consistently produced (slightly) larger effects than EC information (except for IAT score effects in Experiment 1). On the other hand, ME information and ME did not produce strong effects. While these findings may hold significance for both practitioners and theorists, it is crucial to acknowledge that alternative implementations (such as different AA actions or persuasive messages) may yield different results.

Rates of Beliefs

Overall, participants exhibited high levels of regularity awareness, followed by comparatively lower levels of influence awareness, hypothesis awareness (for ratings), demand compliance, and reactance. Interestingly, hypothesis awareness for IAT performance was the lowest, significantly lower than what was observed for self-reported ratings. One possible explanation is that participants perceive their performance on the IAT less readily as a measure of their evaluations. Additionally, individuals may have more experience with the various methods through which others attempt to influence their self-reported evaluations, contributing to higher awareness levels in this context.

Rates of beliefs varied depending on the learning procedure to which participants were exposed. For example, procedures with verbal information typically resulted in relatively higher levels of regularity awareness compared to when individuals experienced those regularities firsthand. This trend was particularly prominent in Experiment 1, where a manipulation check followed the learning procedures involving verbal information, assessing participants' processing of the crucial information provided. Perhaps of more interest is the finding that hypothesis awareness was substantially higher for EC than for EC information or any other learning procedure. This discrepancy suggests that participants may be more accustomed to the former type of evaluative learning effect, wherein stimulus pairings can alter evaluations. Moreover, in exploring why persuasive messages might evoke such strong effects, it is notable that influence awareness was higher for persuasion (as well as for EC, EC information, and AA information) compared to other procedures. While these results were not the primary focus, they may provide intriguing avenues for further investigation.

Constraints on Generality

The current study carries several limitations tied to specific design choices (Table 10). First, our use of food brands as stimuli may limit the generalizability of our findings. Different results might be observed with alternative stimulus types. Additionally, alternative learning procedures or variations in the implementation of existing procedures could lead to different outcomes. In Experiment 1, we selected implementations of learning procedures that were deemed to maximize effects based on prior evidence (Hughes et al., unpublished manuscript) within the constraints of an online setup and limited time frame. Experiment 2 adjusted these procedures to more closely align on procedural details. Nonetheless, certain arbitrary decisions were unavoidable, such as the decision to present persuasive information about food brand quality. Although results were largely consistent across the two different implementations in the two experiments—with the most notable exception being the magnitude of persuasion effects—different results could arise from alternative implementations of these procedures.

The study also faced other limitations regarding generalization. The research was constrained to three outcome measures, and including additional measures, such as automatic evaluation measures probing evaluations under various automaticity conditions, might yield different results. Moreover, the generalizability of our findings to other populations and settings is uncertain due to our sample and experimental conditions being limited to an online environment and specific time frames. Furthermore, the study did not explore other types of experiment-related beliefs, such as beliefs about other aspects of the procedure, inaccurate beliefs, or beliefs at various time points. A more comprehensive exploration of how different experiment-related beliefs influence all important types of evaluative learning procedures across diverse measures and populations could provide deeper insights, though our study only begins to address this issue.

Another significant limitation involves the correlational nature of our study. Given that our investigation of experiment-related beliefs in evaluative learning is based on correlational data, we cannot draw causal conclusions. Although participants may hold certain beliefs during evaluative learning, this does not confirm that these beliefs caused the learning effects. Experimental manipulations that directly target these beliefs could offer clearer insights into causal mechanisms, and future research employing such designs could enhance our understanding of these relationships.

Finally, there are significant limitations related to the measurement of beliefs. Retrospective measures of beliefs may not accurately reflect participants' beliefs during the learning process. Participants might report their beliefs inaccurately if they did not fully understand the questions, were not fully aware of their beliefs, or were not motivated to deeply consider or honestly report their beliefs. For example, participants might present themselves in a way that aligns with social expectations rather than their true beliefs. Additionally, retrospective measures might capture beliefs formed after the learning procedure (e.g., beliefs formed as a result of the evaluative learning effect) or omit those that participants may have forgotten. To address these limitations, future research could benefit from using concurrent measures of beliefs to provide a more accurate assessment.

Table 10. *Table of limitations.*

Limitations
Limited generalizability to other stimuli
Alternative (implementations of) learning procedures not explored
Limited generalizability to other outcome measures
Generalizability to different populations

Other beliefs not explored

Correlational design limits causal claims

Biases in retrospective measures of beliefs

Conclusions

The current work underscores the significant role of conscious beliefs in evaluative learning. We found that experiment-related beliefs and demand reactions moderate effects on evaluative learning to varying degrees across different learning procedures. This highlights the intricate interplay between conscious beliefs and evaluative learning processes, revealing the nuanced nature of attitude formation and modification. These insights offer valuable constraints for theoretical frameworks and can inform the development of more effective interventions in domains where evaluative learning is pertinent.

Author contributions

PVD: Conceptualization, Methodology, Formal Analysis, Data Curation, Writing – Review & Editing, Funding Acquisition; SH: Conceptualization, Methodology, Writing – Original Draft; MP: Formal Analysis, Writing – Review & Editing; CTS: Methodology, Software, Investigation, Writing – Review & Editing; ZM: Formal Analysis; JDH: Conceptualization, Writing – Review & Editing, Funding Acquisition.

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Appendix A: procedural details

Experiment 1

Stage 1: *Cover story*

Informed consent

Cover Story:

> *Thank you for participating. In this study you will learn about two new brands that could soon be introduced to supermarkets in the United States and elsewhere around the world.*
>
> *As a thank you for taking part in this short (10min) experiment we are going to give you the chance to win 1 of 50 Amazon gift cards worth $10 (more on this at the end of the study). If you're interested in taking part please press the 'Continue' button below.*
>
> *Otherwise, please click the button labelled 'Please take me to another study'.*

Stage 2: *Learning* Phase

a. **Mere Exposure Information**

Instructions:

> Later on in this study you will see two new brand names (Empeya and Vekte) that may be introduced to supermarkets in the USA and elsewhere around the world. Remember that later in this experiment:
>
> The brand name "Empeya" will be presented to you OFTEN 
>
>
> The brand name "Vekte" will be presented to you RARELY 
>
>
> It is very important that you remember how often these two brand names will be presented later in the experiment. You will need this information to complete the task correctly. This information will not be available later – only NOW- so read it carefully.

Manipulation check question at the end of the learning phase (presented on same screen):

> Which of the following did you just read about the new brand named Empeya/Vekte? Later in this experiment…
> - Empeya/Vekte will be presented rarely
> - Empeya/Vekte will be presented often

b. Evaluative Conditioning Information

Instructions:

Later in this study you will see a positive image (e.g., a happy person) or a negative image (e.g., a disgusted person). Each image will be paired with a brand name that may be introduced to supermarkets in the USA and elsewhere in the world (either Vekte or Empeya). Specifically, later in this experiment:

Whenever you see the Brand Name "Empeya" a POSITIVE IMAGE will also 

Whenever you see the Brand Name "Vekte" a NEGATIVE IMAGE will also a 

It is VERY important to remember which brand name will be paired with positive or negative words in the second part of the experiment. You will need this information to complete the tasks successfully. This information will NOT be presented later in the experiment - ONLY NOW - so please read it carefully.

Manipulation check question at the end of the learning phase (presented on same screen):

Which of the following did you just read about the new brand named Empeya/Vekte? Later in this experiment...

Empeya/Vekte will be presented with a NEGATIVE image
Empeya/Vekte will be presented with a POSITIVE image

c. **Approach Avoidance Information**

Instructions:

Later in this study you will see two brand names ('Vekte' and 'Empeya') that may be introduced to supermarkets in the USA and elsewhere around the world. You will have to make a particular action every time you see one of these brands. Specifically, later in this experiment:

Whenever you see the brand name Empeya you will need to APPROACH it. 

Whenever you see the brand name Vekte you will need to AVOID it. 

It is VERY important to remember what brand name you will have to approach or avoid later in the experiment. You will need this information to successfully complete the study. This information will NOT be presented later in the experiment - ONLY NOW - so please read it carefully.

Manipulation check question at the end of the learning phase (presented on same screen):

Which of the following did you just read about the new brand named Empeya/Vekte? Later in this experiment...

- I will have to approach Empeya/Vekte
- I will have to avoid Empeya/Vekte

d. Persuasive Message

Instructions:

Later in this experiment you will see two new brands ('Vekte' and 'Empeya') that will soon be introduced to supermarkets in the USA and elsewhere around the world.

The first brand name is called "Empeya"

The second brand name is called "Vekte"

Results indicate that products from Empeya score high in terms of their quality, how ethically they are made, and their nutritional value. Moreover, they were judged to be good-tasting, healthy, and reasonably priced.

In contrast, products from Vekte scored low in terms of their quality, how ethically they were made, and their nutritional value. They were also judged to taste poorly, to be less healthy, and overpriced.

We will ask you questions about these two brands later in the study.

Manipulation check question at the end of the learning phase (presented on same screen):

It is VERY important to remember what qualities products from Vekte have and what qualities products from Empeya have. You will need this information to complete the tasks successfully. This information will NOT be presented later in the experiment - ONLY NOW - so please read it carefully.

1. Which of the following did you just read about the new brand named Empeya/Vekte?

- During product testing, Empeya/Vekte was considered to taste poorly, to be less healthy, and overpriced.

- During product testing, Empeya/Vekte was considered to be good-tasting, very healthy, and reasonably priced.

e. **Mere Exposure (*Experience*) Condition**

Instructions:

> In the following part of the experiment a new brand name (either 'Vekte' or 'Empeya') will be presented onscreen. These brands may be introduced to supermarkets in the USA and elsewhere around the world.
>
> You will now see the brand names one by one. You do not need to respond to the names, but it is important that you pay close attention to what appears on screen. You will need to do so in order to complete the task successfully!

Learning phase: Randomly present Empeya ten times and Vekte once.

Trial parameters: 500ms followed by an ITI of 1000ms → total of 11 ME trials

f. **EC (*Experience*) Condition**

Instructions:

> In the following part of the experiment you will see a brand (either 'Vekte' or 'Empeya') that may soon be introduced to supermarkets in the USA and elsewhere around the world. Each brand will also be presented with a second image. Please pay close attention to what you see on the screen as you will need this information in order to successfully complete the study.

Learning phase: Empeya paired 15 times with different positive USs, Vekte paired 15 times with different negative USs. Presentation duration of 2000ms and an ITI of 750ms → total of 30 EC trials. Two blocks of 15 trials.

g. **Approach Avoidance (*Experience*) Condition**

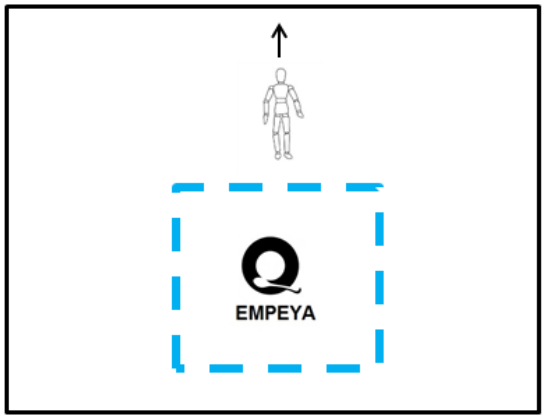
Instructions:

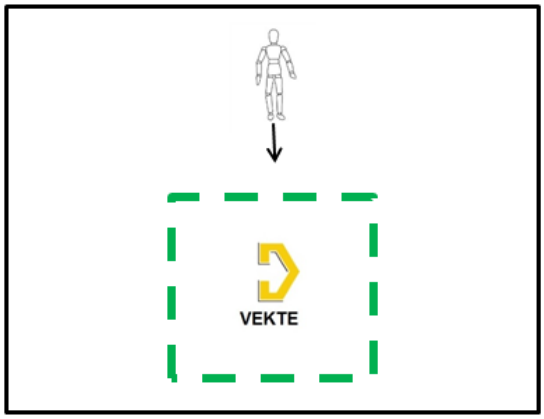
> In this experiment you will see two brands (either 'Vekte' or 'Empeya') that will soon be introduced to supermarkets in the USA and elsewhere around the world. Each brand will be presented in the middle of the screen. Your job is to respond in a specific way when you see one of these items. Specifically:
>
> When you see a brand with a **green** frame around it, you should **approach** it.
>
> When you see a brand with a **blue** frame around it, you should **avoid** it.
>
> How exactly do you approach or avoid something? You will be presented with a stick figure every time you see a brand. If you want to approach the brand then you should move the stick figure closer to the image by using the up or down keys on the keyboard. If you want to avoid the item then you should move the stick figure away from the image by using those same keys.
>
> It is VERY important to remember what you should do whenever you see a brand name with a green (approach) or blue (avoid) frame around it. You will need this information to complete the tasks successfully. This information will not be available later - only now.

Practice Trials: 8 trials followed by instructions (*this is the end of the practice trials, so now you are ready for the main block of trials. This task should take about 2 minutes*).

Learning Trials: 50 trials (total: Empeya 25 times approached: green frame, Vekte 25 times avoided: blue frame or vice versa).

Trial Presentation: Manikin + framed stimulus → response → manikin walks towards or away from the image → 200 ms ITI





Stage 3: *Evaluations*:

3.1. IAT

- Targets: Vekte; Empeya; Positive; Negative
- Attributes: Vekte; Empeya – 4 different versions of the logos
- Attributes: (*Happy, Pleasant, Nice, Super, Fantastic, Great, Wonderful, Brilliant vs. Unpleasant (x2), Horrible, Terrible, Nasty, Sad, Disgusting, Foul*)
- Blocks: practice attributes – practice targets – experimental block – practice attributes categorization reversed – experimental block categorization reversed
- Require a correct response to advance trials

3.2. Self-reported evaluation

3 Questions about each brand (order of questions counterbalanced):
a. “How positive or negative do you feel about the following brands?”
9 (very positive) → 1 (very negative). Separate ratings for each brand.
b. “How pleasant or unpleasant are your feelings about the following brands ? “
9 (very pleasant) → 1 (very unpleasant). Separate ratings for each brand.
c. How good or bad do you think products from the following brands are ?
9 (very good) → 1 (very bad). Separate ratings for each brand.

3.3. Behavioral Intention Question.

As we mentioned at the beginning, the two brands you have just encountered could be introduced into supermarkets in the coming months. Please choose which of the following would be true for

you if they were added to your local supermarket.
Options: *I would only try Empeya, I would only try Vekte, I would try both products, I would not try either product*.

Stage 4: *Awareness*, reactance and compliance questions

For the last part of the study, we will ask you just a few more questions.
This is probably the most important part of this experiment.
Please make sure to fill in these questions as honestly and accurately as possible. Thank you!

4.1. Regularity awareness:

- *ME info: In the instructions at the beginning of the experiment what did we tell you about the following brand? (a) I was told that this brand would be presented MORE FREQUENTLY than the other brand (b) I was told that this brand would be presented LESS FREQUENTLY than the other brand (c) I was told that this brand would be presented THE SAME AMOUNT as the other brand (d) I don't remember*

- *EC info: In the instructions at the beginning of the experiment, what did we tell you about the following brand? (a) I was told this brand would be paired with POSITIVE images (b) I was told this brand would be paired with NEGATIVE images (c) I was told this brand would be paired with both POSITIVE and NEGATIVE images (d) I don't remember what I was told.*

- *AA info: In the instructions at the beginning of the experiment, what did we tell you that about the following brand? (a) I was told I would have to APPROACH this brand (b) I was told I would have to AVOID this brand (c) I was told I would have to APPROACH and AVOID this brand (d) I don't remember*

- *Persuasion: At the very beginning of the experiment we gave you two pieces of information. The first piece of information was about focus groups. Can you recall what we told you that focus groups thought about the brands? (a) The focus groups said that products from this brand taste good, are healthy and are reasonably priced (b) The focus groups said that products from this brand taste poorly, are less healthy and are overpriced (c) The focus groups said that products from this brand have both positive and negative qualities regarding their cost and healthiness (d) I don't remember*

- *ME: In the task at the beginning of the experiment we presented either Empeya or Vekte in the middle of the screen. Please indicate how often the following brand was presented: (a) Presented MORE frequently than the other brand (b) Presented LESS frequently than*

the other brand (c) Presented the same amount as the other brand (d) I don't remember

- *EC: At the very beginning of the experiment we presented Empeya and Vekte along with another image in the middle of the screen. Please indicate what type of image was presented with each brand. (a) This brand was presented with POSITIVE images (b) This brand was presented with NEGATIVE images (c) This brand was presented equally often with POSITIVE and NEGATIVE images (d) I don't remember*

- *AA: At the beginning of the experiment, we presented you with a brand name surrounded by a green frame (which you had to approach) and a brand name surrounded by a blue frame (which you had to avoid). Please indicate what action you performed when you saw the following brand:(a) I most approached this brand (b) I avoided this brand (c) I approached and avoided this brand equally often (d) I don't remember*

  Note: always 2 regularity awareness questions: same question for brand 1 and 2

4.2.A. Hypothesis awareness self-reported ratings

i. Experimenter intent to influence

You rated the brand names as positive, neutral, or negative using a [1-9 scale]. During the experiment, did you consider the possibility that ***we were trying to influence*** *your ratings of the brand names? Yes/No/I don't know*

ii. Hypothesis awareness

How did we try to influence your ratings of the brands? By manipulating…
(a) how frequently the brands appeared (b) the fact that the brands were paired with positive or negative images (c) the fact that you approached or avoided the brands (d) the positive or negative information you received about the brands (e) Instructions at the beginning of the experiment that one brand would be paired with positive images and the other would be paired with negative images (f) Instructions at the beginning of the experiment that one brand would have to be approached and one brand would have to be avoided (g) Instructions at the beginning of the experiment that one brand would be presented frequently and one brand would be presented infrequently (h) the task where you had to quickly and accurately categorize brand names with positive and negative words called the Implicit Association Test (see screenshot below), (i) some other method, (j) the researchers did not attempt to influence my ratings.

B. Hypothesis awareness IAT

i. Experimenter intent to influence

You also performed a task where you had to quickly and accurately categorize brand names with positive and negative words called the Implicit Association Test (see screenshot below). During the experiment, did you consider the possibility that ***we were trying to influence*** *your performance on the Implicit Association Test? Yes/No/I don't know*

ii. Hypothesis awareness

How did we try to influence your performance on the Implicit Association Test? By manipulating.. (a) how frequently the brands appeared (b) the fact that the brands were paired with positive or negative images (c) the fact that you approached or avoided the brands (d) the positive or negative information you received about the brands (e) Instructions at the beginning of the experiment that one brand would be paired with positive images and the other would be paired with negative images (f) Instructions at the beginning of the experiment that one brand would have to be approached and one brand would have to be avoided (g) Instructions at the beginning of the experiment that one brand would be presented frequently and one brand would be presented infrequently (h) the ratings scales, (i) some other method, (j) the researchers did not attempt to influence my performance.

4.3.A. **Influence awareness self-reported ratings**:

When you rated the brand names as being positive, neutral, or negative using the [1-7 scale], do you think that your ratings of the brand names ***were actually influenced*** *by (the fact that you saw one brand frequently and one brand rarely/ the fact that one brand was paired with positive images and the other brand was paired with negative images/ the fact that you approached one brand and avoided the other/ the information you received at the beginning of the experiment that one brand was positive and the other brand was negative [e.g., regarding price and quality / the instructions you received about the brands]/ by the instructions you received at the beginning of the experiment that you would see one brand frequently and one brand rarely?/ by the instructions you received at the beginning of the experiment that one brand would be paired with positive images and the other brand would be paired with negative images/ by the instructions you received at the beginning of the experiment that you would approach one brand and avoid another)?*
Yes/No/I don't know

B. Influence awareness IAT:

When you completed the Implicit Association Test, do you think that your performance ***was actually influenced*** *by (the fact that you saw one brand frequently and one brand rarely/ the fact that one brand was paired with positive images and the other brand was paired with negative images / the fact that you approached one brand and avoided the other/ the fact that you approached one brand and avoided the other/ the information you received at the beginning of the experiment that one brand was positive and the other brand was negative (e.g., regarding price and quality) / by the instructions you received at the beginning of the experiment that you*

would see one brand frequently and one brand rarely? / by the instructions you received at the beginning of the experiment that one brand would be paired with positive images and the other brand would be paired with negative images /by the instructions you received at the beginning of the experiment that you would approach one brand and avoid another)?
Yes/No/I don't know

4.4.A. Demand compliance self-reported ratings

Earlier you rated the brand names as being positive, neutral, or negative. Did you base your ratings NOT on how you actually felt about the brand names but ONLY on what you thought the researchers wanted you to say? Yes/No/I don't know

B. Demand compliance IAT

The Implicit Association Test asked you to categorize brands and words as quickly and accurately as possible. During the Implicit Association Test, did you attempt to influence your speed or accuracy in order to go along with what you thought the researchers wanted you to feel about the brands? Yes/No/I don't know

4.5.A. Reactance self-reported ratings

When you rated the brand names as being positive, neutral, or negative, did you consciously resist what you thought the researchers wanted you to feel about the brands? Yes/No/I don't know

B. Reactance IAT

When you completed the Implicit Association Test, did you try to influence your speed or accuracy in order to consciously resist what you thought the researchers wanted you to feel about the brands? Yes/No/I don't know

Experiment 2

Procedure:

The procedure is similar to Experiment 1. Deviations are noted in highlights (except for the brand names and logos which are always different from Experiment 1). They involve either Levida and Witkap (we used this below) for participants in the novel food brands condition and McDonald's and Subway for participants in the well-known food brands condition.

Stage 1: Cover Story

Informed consent

Cover Story:

> *Thank you for participating. In this study you will learn about two new brands that could soon be introduced to supermarkets in the United States and elsewhere around the world.*
>
> *If you are interested in taking part please press the 'Continue' button below. Otherwise, please click the button labelled 'Please take me to another study'.*
>
> *Please note that this study takes about 12 minutes to complete. It is always best for our science if participants do not quit once they have started a study. So if you do not have 12 minutes free right now, it is a good idea to try another study!*

Note: for the well-known brands, we removed the second sentence indicating learning about two new brands that will be introduced in the United States and elsewhere around the world. Instead we indicated that they would learn about two brands that are well-known in the United States and elsewhere around the world. The same holds for all other references to novel brands.

Next page:

> *Welcome! Thank you very much for deciding to complete this study - we really appreciate your time!*

Stage 2: Learning Phase

a. **Mere Exposure Information**

Instructions:

> Later on in this study you will see two new brand names (Levida and Witkap) that may soon be introduced to supermarkets in the USA and elsewhere around the world. Remember that later in this experiment:
>
> The brand name "Levida" will be presented to you OFTEN 

The brand name “Witkap” will be presented to you RARELY 

It is very important that you remember how often these two brand names will be presented later in the experiment. You will need this information to complete the task correctly. This information will not be available later – only NOW- so read it carefully.

There are no manipulation check question at the end of the learning phase

b. Evaluative Conditioning Information

Instructions:

Later in this study you will see a positive image (e.g., a happy person) or a negative image (e.g., a disgusted person). Each image will be paired with a brand name that may be introduced to supermarkets in the USA and elsewhere in the world (either Levida or Witkap). Specifically, later in this experiment:

Whenever you see the Brand Name “Levida” a POSITIVE IMAGE will also appear.

Whenever you see the Brand Name “Witkap” a NEGATIVE IMAGE will also appear.

It is VERY important to remember which brand name will be paired with positive or negative words in the second part of the experiment. You will need this information to complete the tasks successfully. This information will NOT be presented later in the experiment - ONLY NOW - so please read it carefully.

No manipulation check question at the end of the learning phase

c. **Approach Avoidance Information**

Instructions:

Later on in this study you will see two brand names (‘Levida and ‘Witkap’) that may be introduced to supermarkets in the USA and elsewhere around the world. You will have to make a particular action every time you see one of these brands. Specifically, later in this experiment:

Whenever you see the brand name Levida you will need to APPROACH it.

Whenever you see the brand name Witkap you will need to AVOID it.

It is VERY important to remember what brand name you will have to approach or avoid later in the experiment. You will need this information to successfully complete the study. This information will NOT be presented later in the experiment - ONLY NOW - so please read it carefully.

No manipulation check question at the end of the learning phase

d. Persuasive Message

Instructions:

Later on in this study you will see two new brands ('Levida' and 'Witkap') that will soon be introduced to supermarkets in the USA and elsewhere around the world.

The first brand is called Levida

The second brand is called Witkap

Please consider that, over the past twelve months, products from these two brands have all been extensively pre-tested with focus groups in a number of different countries.

Results indicate the following:

Products from Levida scored much higher in terms of their overall quality.

In contrast, products from Witkap scored much lower in terms of their overall quality.

It is VERY important to remember what qualities products from Levida have and what qualities products from Witkap have / what the focus group decided about products from Subway and products from McDonald's. You will need this information to complete the tasks successfully. This information will NOT be presented later in the experiment - ONLY NOW - so please read it carefully.

There was no manipulation check question at the end of the learning phase

e. **Mere Exposure (*Experience*) Condition**

Instructions:

> In the following part of the experiment a new brand name (either 'Levida' or 'Witkap') will be presented onscreen. These brands may be introduced to supermarkets in the USA and elsewhere around the world.
>
> You will now see the brand names one by one. You do not need to respond to the names, but it is important that you pay close attention to what appears on screen. You will need to do so in order to complete the task successfully!

Learning phase: Randomly present Levida 20 times and Witkap never.

Trial parameters: 1500ms presentation followed by an ITI of 625ms → total of 20 ME trials

f. **EC (*Experience*) Condition**

Instructions:

> In the following part of the experiment you will see a brand (either 'Levida' or 'Witkap') that may soon be introduced to supermarkets in the USA and elsewhere around the world. Each brand will also be presented with a second image. Please pay close attention to what you see on the screen as you will need this information in order to successfully complete the study.

Learning phase: Levida paired 20 times with different positive USs, Witkap paired 20 times with different negative USs. Presentation duration of 1500ms and an ITI of 625ms → total of 40 EC trials. Two blocks of 20 trials.

g. **Approach Avoidance (*Experience*) Condition**

Instructions:

> In this experiment you will see two brands (either 'Levida' or 'Witkap') that will soon be introduced to supermarkets in the USA and elsewhere around the world. Each brand will be presented in the middle of the screen. Your job is to respond in a specific way when you see one of the brands. Specifically:
>
> When you see a brand with a **green** frame around it, you should **approach** it.
>
> When you see a brand with a **blue** frame around it, you should **avoid** it.
>
> How exactly do you approach or avoid something? You will be presented with a stick figure every time you see a brand. If you want to approach the brand then you should move the stick figure closer to the image by using the up or down keys on the keyboard. If you want to avoid the item then you should move the stick figure away from the image by using those same keys.
>
> It is VERY important to remember what you should do whenever you see a brand name with a green (approach) or blue (avoid) frame around it. You will need this information to complete the tasks successfully. This information will not be available later - only now.

No practice trials

Learning Trials: Levida 20 times approached: green frame, Witkap 20 times avoided: blue frame. Total of 40 trials. Note that half the time, the manikin is presented below and half the time above the brand such that participants need to sometimes move the up key and sometimes the down key to approach (the same holds for avoid).

Trial Presentation: Manikin + framed stimulus → response → manikin walks towards or away from the image (incorrect response does not register, no error feedback) → 625 ms ITI

Stage 3: Evaluations:

3.1. IAT

IAT

- Targets: Levida; Witkap; Positive; Negative
- Attributes: Levida; Witkap
- Attributes: (*Happy, Pleasant, Nice, Super, Fantastic, Great, Wonderful, Brilliant vs. Unpleasant (x2), Horrible, Terrible, Nasty, Sad, Disgusting, Foul*)
- 7 Blocks
- Requires a correct response to advance trials

3.2. Self-Report Measures:

- *Self-reported evaluations*.
  3 Questions about each brand (order of questions counterbalanced):
  a. "How positive or negative do you feel about the following brands?"
  9 (very positive) → 1 (very negative). Separate ratings for each brand.
  b. "How pleasant or unpleasant are your feelings about the following brands?"
  9 (very pleasant) → 1 (very unpleasant). Separate ratings for each brand.
  c. How good or bad do you think products from the following brands are?
  9 (very good) → 1 (very bad). Separate ratings for each brand.

- *Behavioral Intention Question*.
  As we mentioned at the beginning, the two brands you have just encountered could be introduced into supermarkets in the coming months. Please choose which of the following would be true for you if they were added to your local supermarket.
  Options: *I would only try Levida, I would only try Witkap, I would try both products, I would not try either product*.

  This question was changed for the well-known brands:

Imagine you're out with a friend, and they suggest eating at McDonald's or Subway. Please choose which of the following would be true for you?

Options: I would only recommend McDonald's, I would only recommend Subway, I would recommend both McDonald's and Subway, I would not recommend either.

Stage 4: Awareness and compliance questions

For the last part of the study, we will ask you just a few more questions.
This is probably the most important part of this experiment.
Please make sure to fill in these questions as honestly and accurately as possible. Thank you!

4.1. Regularity awareness:

- *ME info: In the instructions at the beginning of the experiment what did we tell you about the following brand? (a) I was told that this brand would be presented MORE FREQUENTLY than the other brand (b) I was told that this brand would be presented LESS FREQUENTLY than the other brand (c) I was told that this brand would be presented THE SAME AMOUNT as the other brand (d) I don't remember*

- *EC info: In the instructions at the beginning of the experiment, what did we tell you about the following brand? (a) I was told this brand would be paired with POSITIVE images (b) I was told this brand would be paired with NEGATIVE images (c) I was told this brand would be paired with both POSITIVE and NEGATIVE images (d) I don't remember what I was told.*

- *AA info: In the instructions at the beginning of the experiment, what did we tell you that about the following brand? (a) I was told I would have to APPROACH this brand (b) I was told I would have to AVOID this brand (c) I was told I would have to APPROACH and AVOID this brand (d) I don't remember*

- *Persuasion: At the very beginning of the experiment, we gave you two pieces of information. The first piece of information was about focus groups. Can you recall what we told you that focus groups thought about the brands? (a) The focus groups said that products from this brand scored much HIGHER in terms of their overall quality (b) The focus groups said that products from this brand scored much LOWER in terms of their overall quality (c) The focus groups said that products from this brand scored the same as the other brand in terms of overall quality (d) I don't remember*

- *ME: In the task at the beginning of the experiment we presented either Levida or Witkap in the middle of the screen. Please indicate how often the following brand was presented:*

(a) Presented MORE frequently than the other brand (b) Presented LESS frequently than the other brand (c) Presented the same amount as the other brand (d) I don't remember

- *EC: At the very beginning of the experiment we presented Levida and Witkap along with another image in the middle of the screen. Please indicate what type of image was presented with each brand. (a) This brand was presented with POSITIVE images (b) This brand was presented with NEGATIVE images (c) This brand was presented equally often with POSITIVE and NEGATIVE images (d) I don't remember*

- *AA: At the beginning of the experiment, we presented you with a brand name surrounded by a green frame (which you had to approach) and a brand name surrounded by a blue frame (which you had to avoid). Please indicate what action you performed when you saw the following brand:(a) I most approached this brand (b) I avoided this brand (c) I approached and avoided this brand equally often (d) I don't remember*

  Note: always 2 regularity awareness questions: same question for brand name 2

4.2.A. Hypothesis awareness self-reported ratings

i. Experimenter intent to influence

You rated the brand names as positive, neutral, or negative using a [1-9 scale]. During the experiment, did you consider the possibility that ***we were trying to influence*** *your ratings of the brand names? Yes/No/I don't know*

ii. Hypothesis awareness

How did we try to influence your ratings of the brands? By manipulating…
(a) how frequently the brands appeared (b) the fact that the brands were paired with positive or negative images (c) the fact that you approached or avoided the brands (d) the information you received about ratings of the overall quality of the brands (e) Instructions at the beginning of the experiment that one brand would be paired with positive images and the other would be paired with negative images (f) Instructions at the beginning of the experiment that one brand would have to be approached and one brand would have to be avoided (g) Instructions at the beginning of the experiment that one brand would be presented frequently and one brand would be presented infrequently (h) the task where you had to quickly and accurately categorize brand names with positive and negative words called the Implicit Association Test (see screenshot below), (i) some other method, (j) the researchers did not attempt to influence my ratings.

B. Hypothesis awareness IAT

i. Experimenter intent to influence

You also performed a task where you had to quickly and accurately categorize brand names with positive and negative words called the Implicit Association Test (see screenshot below). During the experiment, did you consider the possibility that ***we were trying to influence*** *your performance on the Implicit Association Test? Yes/No/I don't know*

ii. Hypothesis awareness

How did we try to influence your performance on the Implicit Association Test? By manipulating.. (a) how frequently the brands appeared (b) the fact that the brands were paired with positive or negative images (c) the fact that you approached or avoided the brands (d) the information you received about ratings of the overall quality of the brands (e) Instructions at the beginning of the experiment that one brand would be paired with positive images and the other would be paired with negative images (f) Instructions at the beginning of the experiment that one brand would have to be approached and one brand would have to be avoided (g) Instructions at the beginning of the experiment that one brand would be presented frequently and one brand would be presented infrequently (h) the ratings scales, (i) some other method, (j) the researchers did not attempt to influence my performance.

4.3.A. **Influence awareness self-reported ratings**:

When you rated the brand names as being positive, neutral, or negative using the [1-7 scale], do you think that your ratings of the brand names ***were actually influenced*** *by (the fact that you saw one brand frequently and one brand rarely/ the fact that one brand was paired with positive images and the other brand was paired with negative images/ the fact that you approached one brand and avoided the other/ the information you received at the beginning of the experiment that one brand scored much lower and the other brand much higher in terms of their overall quality/ by the instructions you received at the beginning of the experiment that you would see one brand frequently and one brand rarely?/ by the instructions you received at the beginning of the experiment that one brand would be paired with positive images and the other brand would be paired with negative images/ by the instructions you received at the beginning of the experiment that you would approach one brand and avoid another)?*
Yes/No/I don't know

B. Influence awareness IAT:

When you completed the Implicit Association Test, do you think that your performance ***was actually influenced*** *by (the fact that you saw one brand frequently and one brand rarely/ the fact that one brand was paired with positive images and the other brand was paired with negative images / the fact that you approached one brand and avoided the other/ the fact that you approached one brand and avoided the other/ the information you received at the beginning of the experiment that one brand scored much lower and the other brand much higher in terms of their overall quality / by the instructions you received at the beginning of the experiment that you would see one brand frequently and one brand rarely? / by the instructions you received at the*

beginning of the experiment that one brand would be paired with positive images and the other brand would be paired with negative images /by the instructions you received at the beginning of the experiment that you would approach one brand and avoid another)?
Yes/No/I don't know

4.4.A. Demand compliance self-reported ratings

Earlier you rated the brand names as being positive, neutral, or negative. Did you base your ratings NOT on how you actually felt about the brand names but ONLY on what you thought the researchers wanted you to say? Yes/No/I don't know

B. Demand compliance IAT

The Implicit Association Test asked you to categorize brands and words as quickly and accurately as possible. During the Implicit Association Test, did you attempt to influence your speed or accuracy in order to go along with what you thought the researchers wanted you to feel about the brands? Yes/No/I don't know

4.5.A. Reactance self-reported ratings

When you rated the brand names as being positive, neutral, or negative, did you consciously resist what you thought the researchers wanted you to feel about the brands? Yes/No/I don't know

B. Reactance IAT

When you completed the Implicit Association Test, did you try to influence your speed or accuracy in order to consciously resist what you thought the researchers wanted you to feel about the brands? Yes/No/I don't know

Stage 5: Debriefing

Appendix B: Attrition rates

Table B-1. *Total number of participants who started Experiment 1 and completed the experiment in each of the seven experimental conditions as a function of Positive Stimulus.*

	ME info	EC info	AA info	ME	EC	AA	Persuasion
	N	*N*	*N*	*N*	*N*	*N*	*N*
Started							
Vekte = pos	103	108	103	90	103	97	119
Empeya = pos	108	114	98	104	97	106	94
	211 (14.6%)	222 (15.4%)	201 (13.9%)	194 (13.4%)	200 (13.9%)	203 (14.1%)	213 (14.8%)
Completed							
Vekte = pos	63	70	68	62	59	57	74
Empeya = pos	74	77	69	68	58	66	63
	137 (14.8%)	147 (15.8%)	137 (14.8%)	130 (14.0%)	117 (12.6%)	123 (13.3%)	137 (14.8%)

Table B-2. *Total number of participants who started Experiment 2 and completed the experiment in each of the seven experimental conditions as a function of Positive Stimulus and Stimulus Novelty.*

Novel brands	ME info	EC info	AA info	ME	EC	AA	Persuasion
	N	*N*	*N*	*N*	*N*	*N*	*N*
Started							
Levida = pos	220	190	194	170	186	240	181
Witkap = pos	196	203	188	184	158	245	199
	416 (8.2%)	393 (7.7%)	382 (7.5%)	354 (7.0%)	344 (6.8%)	485 (9.5%)	380 (7.5%)
Completed							
Levida = pos	115	95	107	80	95	120	85

Witkap = pos	108	107	93	93	77	118	105
	223 (8.1%)	202 (7.3%)	200 (7.2%)	173 (6.3%)	172 (6.2%)	238 (8.6%)	190 (6.9%)
Well-known brands	ME instruct	EC instruct	AA instruct	ME	EC	AA	Persuasion
	N	*N*	*N*	*N*	*N*	*N*	*N*
Started							
McDo = pos	144	171	155	159	143	203	135
Subway = pos	168	172	158	166	167	220	164
	312 (6.1%)	343 (6.8%)	313 (6.2%)	325 (6.4%)	310 (6.1%)	423 (8.3%)	299 (5.6%)
Completed							
McDo = pos	88	96	90	92	81	107	77
Subway = pos	111	109	97	95	98	130	96
	199 (7.2%)	205 (7.4%)	187 (6.8%)	187 (6.8%)	179 (6.4%)	237 (8.6%)	173 (6.3%)

Appendix C: Additional analyses on awareness and demand scores

Correlations of awareness measures

Table C1. Correlations for awareness measures in Experiment 1

	Regularity awareness	*Hypothesis awareness*		*Influence awareness*		*Demand compliance*		*Reactance*	
		Self-report	*IAT*	*Self-report*	*IAT*	*Self-report*	*IAT*	*Self-report*	*IAT*
Regularity awareness	1								
Hypothesis awareness self-report	.15	1							
Hypothesis awareness IAT	.06	.25	1						
Influence awareness self-report	.14	.24	.16	1					
Influence awareness IAT	.10	.19	.14	.60	1				
Demand compliance self-report	.05	.10	.10	.30	.24	1			
Demand compliance IAT	-.03	.03	.03	.17	.24	.36	1		
Reactance self-report	-.00	.08	.06	.02	.01	.11	.14	1	
Reactance IAT	-.04	.01	.01	.05	.07	.14	.31	.41	1

Table C2. Correlations for awareness measures in Experiment 2

	Regularity awareness	*Hypothesis awareness*		*Influence awareness*		*Demand compliance*		*Reactance*	
		Self-report	*IAT*	*Self-report*	*IAT*	*Self-report*	*IAT*	*Self-report*	*IAT*
Novel brands									
Regularity awareness	1								
Hypothesis awareness self-report	.24	1							
Hypothesis awareness IAT	.04	.19	1						
Influence awareness self-report	.15	.17	.14	1					

Influence awareness IAT	.11	.14	.12	.54	1				
Demand compliance self-report	.07	.09	.06	.29	.26	1			
Demand compliance IAT	-.04	.02	.04	.15	.23	.33	1		
Reactance self-report	.04	.08	.06	.12	.13	.19	.20	1	
Reactance IAT	-.02	-.04	.05	.20	.19	.24	.38	.36	1
Well-known brands									
Regularity awareness	1								
Hypothesis awareness self-report	.19	1							
Hypothesis awareness IAT	.08	.21	1						
Influence awareness self-report	-.01	.11	.13	1					
Influence awareness IAT	-.00	.15	.13	.54	1				
Demand compliance self-report	-.02	.04	.06	.28	.23	1			
Demand compliance IAT	-.01	.00	.04	.23	.23	.33	1		
Reactance self-report	.02	.07	.08	.17	.18	.14	.19	1	
Reactance IAT	.00	.06	.09	.15	.20	.18	.37	.43	1

Rates of Awareness, reactance and compliance

Experiment 1

Overall, we observed differences in the extent to which participants provided evidence of awareness and demand based on the type of outcome, $\chi^2(8) = 1410.10$, $p < .001$ (see Table C3). To explore this effect, we made pairwise comparisons for types of awareness in descending order of magnitude, revealing six distinct clusters. First, participants demonstrated the highest level for regularity awareness ($M = 81\%$, $SD = 41\%$), χ^2s > 256.01, *ps* < .001. Second highest was influence awareness (evaluative ratings $M = 45\%$, $SD = 50\%$; IAT performance: $M = 41\%$, $SD = 49\%$), χ^2s > 23.03, *ps* < .001, followed by hypothesis awareness for self-reported ratings ($M = 33\%$, $SD =$

47%), χ^2s > 5.91, *ps* < .015. Fourth highest was demand compliance for self-reported ratings (*M* = 27%, *SD* = 45%), χ^2s > 5.31, *ps* < .021. A fifth cluster consisted of reactance for self-reported ratings (*M* = 23%, *SD* = 42%), and demand compliance for IAT performance (*M* = 22%, *SD* = 41%), χ^2s > 10.74, *ps* < .001. A final cluster consisted of reactance for IAT performance (*M* = 16%, *SD* = 37%), and hypothesis awareness for IAT performance (*M* = 13%, *SD* = 34%).

Table C3. Mean and standard deviations for the various awareness measures in Experiment 1

Awareness Type	M	SD
Regularity Awareness	81%	41%
Influence Awareness		
- *Self-reported ratings*	45%	50%
- *IAT*	41%	49%
Hypothesis Awareness		
- *Self-reported ratings*	33%	47%
- *IAT*	13%	34%
Demand		
- *Self-reported ratings*	27%	45%
- *IAT*	22%	41%
Reactance		
- *Self-reported ratings*	23%	42%
- *IAT*	16%	37%

Experiment 2

Overall, we observed differences in the extent to which participants provided evidence of awareness and demand based on the type of outcome, for the novel brands, $\chi^2(8) = 997.17$, $p < .001$, and the well-known brands, $\chi^2(8) = 1469.60$, $p < .001$ (see Table C4). To explore this effect, we made pairwise comparisons for types of awareness in descending order of magnitude. For novel brands, we found four distinct clusters. First, participants demonstrated the highest level for regularity awareness (*M* = 58%, *SD* = 49%), χ^2s > 102.04, *ps* < .001. Second highest rates were observed for influence awareness (self-reported ratings: *M* = 39%, *SD* = 49%; IAT performance:

M = 36%, *SD* = 48%), χ^2s > 10.06, *ps* < .002. Third highest rates were observed for demand compliance (self-reported ratings: *M* = 27%, *SD* = 45%; IAT performance: *M* = 30%, *SD* = 46%), reactance (self-reported ratings: *M* = 27%, *SD* = 44%; IAT performance: *M* = 23%, *SD* = 42%), and hypothesis awareness for self-reported ratings (*M* = 22%, *SD* = 42%), χ^2s > 99.13, *ps* < .001. Lowest rates were observed for hypothesis awareness of IAT performance (*M* = 9%, *SD* = 28%).

For well-known brands, there were four distinct clusters. First, participants demonstrated the highest level for regularity awareness (*M* = 65%, *SD* = 48%), χ^2s > 435.84, *ps* < .001. Second highest rates were observed for influence awareness (evaluative ratings: *M* = 22%, *SD* = 42%; IAT performance: *M* = 24%, *SD* = 43%), reactance (self-reported ratings: *M* = 24%, *SD* = 43%; IAT performance: *M* = 20%, *SD* = 40%), demand compliance for IAT performance (*M* = 25%, *SD* = 43%), and hypothesis awareness for self-reported ratings (*M* = 19%, *SD* = 40%), χ^2s > 3.96, *ps* < .047. Third highest rates were observed for demand compliance for self-reported ratings (*M* = 16%, *SD* = 37%), $\chi^2(1) = 28.34$, $p < .001$. Lowest rates were observed for hypothesis awareness of IAT performance (*M* = 8%, *SD* = 28%).

Table C4. Mean and standard deviations for the various awareness measures in Experiment 2

Awareness Type	M	SD
Novel brands		
Regularity Awareness	58%	49%
Influence Awareness		
- *Self-reported ratings*	39%	49%
- *IAT*	36%	48%
Demand		
- *Self-reported ratings*	27%	45%
- *IAT*	30%	46%
Reactance		
- *Self-reported ratings*	27%	44%
- *IAT*	23%	42%

Hypothesis Awareness		
- *Self-reported ratings*	22%	42%
- *IAT*	9%	28%
Well-known brands		
Regularity Awareness	65%	48%
Reactance		
- *Self-reported ratings*	24%	43%
- *IAT*	20%	40%
Influence Awareness		
- *Self-reported ratings*	22%	42%
- *IAT*	24%	43%
Hypothesis Awareness		
- *Self-reported ratings*	19%	40%
- *IAT*	8%	28%
Demand		
- *Self-reported ratings*	16%	37%
- *IAT*	25%	43%

Differences in awareness, reactance and compliance scores for learning procedures

Experiment 1

A binomial logistic regression on regularity awareness scores (M = 81%, SD = 41%) with the factors Learning Procedure (ME information, EC information, AA information, ME, EC, AA, Persuasion) and Positive Stimulus (Vekte, Empeya) showed a main effect of Learning Procedure, $\chi^2(6) = 95.44$, $p < .001$. The regularity awareness odds were highest for (1) AA information, followed by (2) Persuasion, (3) EC information, (4) ME information, (5) EC, (6) ME, and (7) AA (Table 3).

Logic regressions also showed a main effect of Learning Procedure on hypothesis awareness scores for self-reported ratings (M = 33%, SD = 47%), $\chi^2(6) = 152.13$, $p < .001$ and hypothesis awareness for IAT performance (M = 14%, SD = 34%), $\chi^2(6) = 100.43$, $p < .001$. The hypothesis awareness odds for self-reported ratings were highest for (1) EC, followed by (2) EC

information, (3) Persuasion, (4) AA information, (5) AA, (6) ME, and (7) ME information. The hypothesis awareness odds for IAT performance were highest for (1) EC, followed by (2) EC information, (3) AA information, (4) Persuasion, (5) ME information, (6) ME, and (7) AA.

Logic regressions also showed a main effect of Learning Procedure on influence awareness scores for self-reported ratings (M = 45%, SD = 50%), $\chi^2(6) = 165.97$, $p < .001$, and IAT performance (M = 41%, SD = 49%), $\chi^2(6) = 131.12$, $p < .001$. The influence awareness odds for self-reported ratings were highest for (1) Persuasion, followed by (2) EC, (3) AA information, (4) EC information, (5) AA, (6) ME, and (7) ME information. The influence awareness odds for IAT performance were highest for (1) Persuasion, followed by (2) EC, (3) EC information, (4) AA information, (5) AA, (6) ME information, and (7) ME.

Logic regressions also showed a main effect of Learning Procedure on demand compliance scores for self-reported ratings (M = 27%, SD = 45%), $\chi^2(6) = 41.84$, $p < .001$, and IAT performance (M = 22%, SD = 41%), $\chi^2(6) = 28.88$, $p < .001$. The demand compliance odds for self-reported ratings were highest for (1) AA information, followed by (2) Persuasion, (3) EC information, (4) EC, (5) AA, (6) ME information, and (7) ME. The ranking of demand compliance odds for IAT performance was the same with the exception that AA (6) and ME information (5) switched ranks.

Logic regressions did not reveal a main effect of Learning Procedure on reactance scores for self-reported ratings (M = 23%, SD = 42%), $\chi^2(6) = 7.97$, $p = .24$, or IAT performance (M = 16%, SD = 37%), $\chi^2(6) = 9.91$, $p = .13$.

Experiment 2

For novel brands, the effect of Learning Procedure was strongest for hypothesis awareness (for self-report ratings and IAT performance), χ^2s > 84.93, ps < .001. Both types of awareness were significantly stronger for EC than for the other procedures, ps < .001 (except for EC information

for hypothesis awareness for IAT performance). The second strongest effect of Learning Procedure was observed for influence awareness (for self-report ratings and IAT performance), χ^2s > 60.38, *p*s < .001. Both types of awareness were significantly stronger for EC, EC information and AA information than for the other procedures (except for Persuasion for influence awareness for self-report ratings), *p*s < .031. The third strongest effect of Learning Procedure was observed for demand compliance for self-report ratings, $\chi^2(6) = 43.14$, $p < .001$. Demand compliance was significantly weaker for ME and ME information (except for AA), *p*s < .035. The fourth strongest effect of Learning Procedure was observed for regularity awareness, $\chi^2(6) = 33.17$, $p < .001$. Regularity awareness was significantly higher for participants who were exposed to EC, AA information and AA compared to the other learning procedures (except for Persuasion), *p*s < .024. Fifth, we observed a smaller but significant Learning Procedure effect for demand compliance for IAT performance, $\chi^2(6) = 19.34$, $p = .004$. Demand compliance was stronger for AA information and EC information (except for AA and Persuasion), *p*s < .050. Finally, reactance towards self-reported ratings, $\chi^2(6) = 9.74$, $p = .14$, and IAT performance, $\chi^2(6) = 7.79$, $p = .25$, did not differ as a function of learning procedure (Table 7).

For well-known brands, the effect of Learning Procedure was strongest for hypothesis awareness (for self-report ratings and IAT performance), χ^2s > 78.91, *p*s < .001. Both types of awareness were significantly stronger for EC than for the other procedures, *p*s < .040. The second strongest effect of Learning Procedure was observed for regularity awareness, $\chi^2(6) = 59.69$, $p < .001$. Regularity awareness was significantly higher for participants who were exposed to Persuasion compared to the other learning procedures (except for AA information), *p*s < .003. The third strongest effect of Learning Procedure was observed for influence awareness (for self-report ratings and IAT performance), χ^2s > 24.01, *p*s < .001. Both types of awareness were significantly

stronger for EC, EC information and AA information than for the other procedures (except for Persuasion), *p*s < .001. The fourth strongest effect of Learning Procedure was observed for demand compliance for self-report ratings, $\chi^2(6) = 17.66$, $p = .007$. Demand compliance was significantly weaker for ME and ME information (except for EC and AA), *p*s < .035. The fifth strongest effect of Learning Procedure was observed for reactance for self-report ratings, $\chi^2(6) = 13.88$, $p = .031$. Reactance was significantly stronger for EC (except for EC and AA), *p*s < .050. Finally, demand compliance for IAT performance, $\chi^2(6) = 6.30$, $p = .39$, and reactance for IAT performance, $\chi^2(6) = 7.39$, $p = .29$, did not differ as a function of learning procedure.

Appendix D: Results of moderation analyses

To examine moderation of evaluative learning effects by experiment-related beliefs, we fitted mediation models and report the direct and indirect effects. The dependent variable (the preference for one of the two evaluation objects on the relevant outcome measure) was regressed on both the independent variable (the object that is the target of positive attitude induction in the learning procedure) and the mediator (a variable coding for the presence or absence of the experiment-related belief) and the mediator was regressed on the independent variable. This mediation model allows us to decompose the effect of the learning procedure on the evaluation scores into direct and indirect effects. The indirect effect, which is the product of the paths from the independent variable to the mediator and from the mediator to the dependent variable, represents the portion of the evaluative learning effect that can be explained by the effect of the respective belief on evaluative learning. The direct effect represents the evaluative learning effect when controlling for the indirect effect.

Our choice to use mediation analysis to test the relationship between awareness and evaluative learning effects is driven by its ability to estimate how much of the effect can be attributed to changes in beliefs and how much persists when controlling for this influence. This approach differs from traditional linear regression with follow-up tests, which do not compare effect sizes while accounting for the influence of beliefs.

Experiment 1

The results for each of the learning procedures are reported separately below. In each case, a direct effect indicates an effect of the learning procedure on the outcome variable while controlling for awareness whereas an indirect effect indicates the effect of the learning procedure on the outcome variable after taking awareness into account.

Simple mediation models

ME information. Analyses for ME information effects were restricted to IAT scores because a learning effect was only observed on this measure (Table D-1). We did not observe any indirect effects of ME information on IAT scores for any of the types of awareness, βs < 0.37, *Z*s < 1.69, *p*s > .18. The direct effect was statistically significant for all analyses, βs > 0.27, *Z*s > 3.90, *p*s < .001, except when controlling for regularity awareness (ab_{ps} = 0.83), β = -0.07, *Z* = -0.28, *p* = .86.

Table D-1. *Rank ordered results for the magnitude of direct and indirect effects in the ME information mediation models*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
IAT scores					
Regularity awareness	0.36 (0.22)	-0.07 (0.23)	1.66 (*p* = .18)	-0.28 (*p* = .86)	0.83
Hypothesis awareness IAT	0.02 (0.01)	0.27 (0.07)	1.41 (*p* = .26)	3.91 (*p* < .001)	0.04
Demand compliance IAT	0.00 (0.04)	0.29 (0.07)	0.04 (*p* = .97)	3.99 (*p* < .001)	0.00
Reactance IAT	-0.01 (0.03)	0.31 (0.07)	-0.43 (*p* = .84)	4.20 (*p* < .001)	-0.03
Influence awareness IAT	-0.04 (0.04)	0.34 (0.08)	-1.22 (*p* = .30)	4.17 (*p* < .001)	-0.10

EC information. For EC information effects (Table D-2), we observed indirect effects on IAT scores for regularity awareness, ab_{ps} = 1.08, and influence awareness, ab_{ps} = 0.32, all βs > 0.18, *Z*s > 2.77, *p*s < .017. The direct effect on IAT scores was statistically significant for all analyses, βs > 0.65, *Z*s > 6.07, *p*s < .001, except when controlling for regularity awareness, β = 0.19, *Z* = 0.63, *p* = .63. We observed indirect effects on self-reported evaluation scores for regularity awareness, ab_{ps} = 1.01, hypothesis awareness, ab_{ps} = 0.34, influence awareness, ab_{ps} = 0.89, and demand compliance, ab_{ps} = 0.50, βs > 1.15, *Z*s > 2.55, *p*s < .024, and reversed indirect effects for

reactance, ab_{ps} = -0.26, β = -0.87, Z = -3.21, p = .003. The direct effect on self-reported evaluation scores was statistically significant for all analyses, βs > 1.15, Zs > 2.64, ps < .018, except when controlling for regularity awareness or influence awareness, βs < -0.17, Zs < -0.40, ps > .72. We observed indirect effects on behavioral intention scores for influence awareness, ab_{ps} = 0.55 and demand compliance, ab_{ps} = 0.34, βs > 0.15, Zs > 2.53, ps < .021, and reversed effects for reactance, ab_{ps} = -0.20, β = -0.09, Z = -2.41, p = .023. The direct effect on behavioral intention scores was statistically significant only when controlling for reactance, β = 0.26, Z = 2.90, p = .008.

Table D-2. *Rank ordered results for the magnitude of direct and indirect effects in the EC information mediation models.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
IAT scores					
Regularity awareness	0.65 (0.28)	0.19 (0.30)	2.36 (p =.027)	0.63 (p =.63)	1.08
Influence awareness IAT	0.19 (0.07)	0.65 (0.11)	2.77 (p =.016)	6.07 (p < .001)	0.32
Demand compliance IAT	0.08 (0.04)	0.76 (0.09)	2.04 (p =.069)	8.96 (p < .001)	0.12
Hypothesis awareness IAT	0.01 (0.03)	0.83 (0.09)	0.32 (p =.75)	9.62 (p < .001)	0.01
Reactance IAT	-0.03 (0.03)	0.86 (0.08)	-0.88 (p =.47)	11.11 (p < .001)	-0.04
Self-reported evaluation scores					
Regularity awareness	3.44 (1.30)	-0.59 (1.32)	2.66 (p =.015)	-0.44 (p =.72)	1.01
Influence awareness self-report	3.01 (0.52)	-0.17 (0.41)	5.85 (p < .001)	-0.40 (p =.73)	0.89
Demand compliance self-report	1.69 (0.44)	1.16 (0.44)	3.86 (p < .001)	2.64 (p =.017)	0.50
Hypothesis awareness self-report	1.15 (0.45)	1.70 (0.59)	2.55 (p =.021)	2.87 (p =.008)	0.34
Reactance self-report	-0.87 (0.27)	3.72 (0.57)	-3.21 (p =.003)	6.49 (p < .001)	-0.26
Behavioral intention scores					
Regularity awareness	0.44 (0.22)	-0.27 (0.24)	1.99 (p =.072)	-1.11 (p =.36)	0.99

Influence awareness self-report	0.24 (0.07)	-0.07 (0.07)	3.52 ($p < .001$)	-0.96 ($p = .44$)	0.55
Demand compliance self-report	0.15 (0.06)	0.02 (0.08)	2.53 ($p = .020$)	0.32 ($p = .75$)	0.34
Hypothesis awareness self-report	0.03 (0.06)	0.14 (0.10)	0.50 ($p = .70$)	1.46 ($p = .20$)	0.07
Reactance self-report	-0.09 (0.04)	0.26 (0.09)	-2.41 ($p = .023$)	2.90 ($p = .008$)	-0.20

For AA information effects (Table D-3), we observed no indirect effects on IAT scores, βs < 0.73, Zs < 2.03, ps > .081. The direct effect on IAT scores was statistically significant for all analyses, βs > 0.52, Zs > 4.98, ps < .001, except when controlling for regularity awareness (ab_{ps} = 1.30), β = -0.08, Z = -0.17, p = .89. We observed indirect effects on self-reported evaluation scores for hypothesis awareness, ab_{ps} = 0.25, influence awareness, ab_{ps} = 0.92; and demand compliance, ab_{ps} = 0.76, βs > 1.07, Zs > 2.67, ps < .013. The direct effect on self-reported evaluation scores was statistically significant for all analyses, βs > 1.52, Zs > 2.69, ps < .018, except when controlling for regularity awareness (ab_{ps} = 0.77) or influence awareness, βs < 1.48, Zs < 1.28, ps > .27. We observed indirect effects on behavioral intention scores for influence awareness, ab_{ps} = 0.75, and demand compliance, ab_{ps} = 0.60, βs > 0.38, Zs > 4.37, ps < .001. The direct effect on behavioral intention scores was statistically significant for all analyses, βs > 0.48, Zs > 4.31, ps < .001, except when controlling for regularity awareness (ab_{ps} = 0.94), influence awareness, or demand compliance, βs < 0.39, Zs < 1.97, ps > .080.

Table D-3. *Rank ordered results for the magnitude of direct and indirect effects in the AA information mediation models*

	Estimate		*Z*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
IAT scores					
Regularity awareness	0.72 (0.49)	-0.08 (0.51)	1.47 ($p = .17$)	-0.17 ($p = .89$)	1.30
Influence awareness IAT	0.13 (0.07)	0.52 (0.10)	2.02 ($p = .081$)	4.98 ($p < .001$)	0.24

Hypothesis awareness IAT	0.06 (0.03)	0.58 (0.09)	1.69 (p =.15)	6.61 (p < .001)	0.17
Demand compliance IAT	-0.03 (0.05)	0.66 (0.09)	-0.48 (p =.68)	7.65 (p < .001)	-0.05
Reactance IAT	-0.04 (0.04)	0.68 (0.08)	-1.19 (p =.28)	8.01 (p < .001)	-0.08
Self-reported evaluation scores					
Influence awareness self-report	4.00 (0.61)	0.79 (0.63)	6.58 (p < .001)	1.27 (p =.28)	0.92
Regularity awareness	3.32 (2.32)	1.47 (2.35)	1.43 (p =.17)	0.63 (p =.54)	0.77
Demand compliance self-report	3.27 (0.60)	1.52 (0.57)	5.48 (p < .001)	2.69 (p =.017)	0.76
Hypothesis awareness self-report	1.07 (0.40)	3.72 (0.72)	2.67 (p =.012)	5.19 (p < .001)	0.25
Reactance self-report	-0.39 (0.30)	5.18 (0.77)	-1.30 (p =.27)	6.77 (p < .001)	-0.09
Behavioral intention scores					
Regularity awareness	0.60 (0.51)	0.00 (0.52)	1.17 (p =.28)	0.00 (p =.99)	0.94
Influence awareness self-report	0.48 (0.10)	0.12 (0.10)	4.91 (p < .001)	1.15 (p =.30)	0.75
Demand compliance self-report	0.38 (0.09)	0.22 (0.11)	4.38 (p < .001)	1.96 (p =.081)	0.60
Hypothesis awareness self-report	0.12 (0.06)	0.48 (0.11)	2.10 (p =.072)	4.31 (p < .001)	0.19
Reactance self-report	0.06 (0.06)	0.54 (0.11)	0.98 (p =.36)	4.96 (p < .001)	0.08

We did not perform moderation analyses for ME effects because no learning effects were observed for this learning procedure.

For EC effects (Table D-4), we did not observe indirect effects on IAT scores. The direct effect on IAT scores was statistically significant for all analyses, βs > 0.48, Zs > 3.46, ps < .004, except when controlling for regularity awareness (ab_{ps} = 0.55), β = 0.34, Z = 1.75, p = .12. We observed indirect effects on self-reported evaluation scores for regularity awareness, ab_{ps} = 0.86, influence awareness, ab_{ps} = 0.92, and demand compliance, ab_{ps} = 0.24, βs > 0.91, Zs > 2.41, ps < .029. The direct effect on self-reported evaluation scores was statistically significant for all analyses, βs > 3.73, Zs > 3.18, ps < .004, except when controlling for regularity awareness or influence awareness, βs < 1.35, Zs < 1.94, ps > .088. We observed indirect effects on behavioral

intention scores for regularity awareness, $ab_{ps} = 1.08$, and influence awareness, $ab_{ps} = 0.63$, $\beta s > 0.37$, $Zs > 2.92$, $ps < .008$. The direct effect on behavioral intention scores was statistically significant for all analyses, $\beta s > 0.31$, $Zs > 2.70$, $ps < .015$, except when controlling for regularity awareness, hypothesis awareness ($ab_{ps} = 0.25$), or influence awareness, $\beta s < 0.29$, $Zs < 1.03$, $ps > .38$.

Table D-4. *Rank ordered results for the magnitude of direct and indirect effects in the EC mediation models.*

	Estimate		*Z*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
IAT scores					
Regularity awareness	0.31 (0.17)	0.34 (0.20)	1.86 (p =.092)	1.75 (p =.12)	0.55
Influence awareness IAT	0.17 (0.11)	0.48 (0.14)	1.56 (p =.17)	3.47 (p =.003)	0.31
Reactance IAT	0.02 (0.05)	0.63 (0.10)	0.48 (p =.70)	6.50 (p < .001)	0.04
Hypothesis awareness IAT	0.01 (0.07)	0.64 (0.10)	0.20 (p =.86)	6.29 (p < .001)	0.02
Demand compliance IAT	0.00 (0.04)	0.65 (0.10)	0.08 (p =.94)	6.77 (p < .001)	0.01
Self-reported evaluation scores					
Influence awareness self-report	3.54 (0.69)	1.11 (0.58)	5.16 (p < .001)	1.93 (p =.088)	0.92
Regularity awareness	3.32 (0.93)	1.34 (1.07)	3.57 (p < .001)	1.25 (p =.30)	0.86
Demand compliance self-report	0.91 (0.38)	3.74 (0.65)	2.41 (p =.028)	5.74 (p < .001)	0.24
Reactance self-report	-0.33 (0.32)	4.98 (0.72)	-1.05 (p =.37)	6.94 (p < .001)	-0.09
Hypothesis awareness self-report	-0.36 (1.31)	5.02 (1.57)	-0.28 (p =.83)	3.19 (p =.003)	-0.09
Behavioral intention scores					
Regularity awareness	0.63 (0.18)	-0.20 (0.21)	3.55 (p <.001)	-0.95 (p =.43)	1.08
Influence awareness self-report	0.37 (0.13)	0.06 (0.13)	2.92 (p =.007)	0.49 (p =.70)	0.63
Hypothesis awareness self-report	0.15 (0.23)	0.28 (0.28)	0.63 (p =.62)	1.02 (p =.38)	0.25

Demand compliance self-report	0.12 (0.06)	0.31 (0.12)	1.85 (p =.11)	2.70 (p =.014)	0.20
Reactance self-report	-0.12 (0.06)	0.55 (0.12)	-1.95 (p =.092)	4.80 (p < .001)	-0.21

For AA effects (Table D-5), we did not observe indirect effects on IAT scores. The direct effect on IAT scores was statistically significant for all analyses, βs > 0.21, Zs > 2.50, ps < .039, except when controlling for regularity awareness (ab_{ps} = 0.30), β = 0.15, Z = 1.21, p = .33. We observed indirect effects on self-reported evaluation scores for regularity awareness, ab_{ps} = 0.46, and influence awareness, ab_{ps} = 0.51, βs > 0.93, Zs > 2.53, ps < .039. The direct effect on self-reported evaluation scores was statistically significant for all analyses, βs > 0.91, Zs > 3.16, ps < .006, except when controlling for regularity awareness or influence awareness, βs < 0.54, Zs < 1.56, ps > .19. We observed reversed indirect effects on behavioral intention scores for reactance, ab_{ps} = -0.14, β = -0.05, Z = -2.43, p = .038. The direct effect on behavioral intention scores was not statistically significant except when controlling for reactance, β = 0.22, Z = 2.92, p = .017.

Table D-5. *Rank-ordered results for the magnitude of direct and indirect effects in the AA mediation models.*

	Estimate		*Z*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
IAT scores					
Regularity awareness	0.14 (0.09)	0.15 (0.12)	1.53 (p =.20)	1.21 (p =.33)	0.30
Demand compliance IAT	0.07 (0.04)	0.21 (0.09)	1.72 (p =.17)	2.51 (p =.038)	0.15
Influence awareness IAT	0.04 (0.06)	0.24 (0.09)	0.74 (p =.47)	2.61 (p =.030)	0.10
Hypothesis awareness IAT	0.01 (0.01)	0.28 (0.08)	0.75 (p =.44)	3.54 (p < .001)	0.00
Reactance IAT	-0.03 (0.04)	0.32 (0.08)	-0.74 (p =.47)	4.04 (p < .001)	-0.07
Self-reported evaluation scores					
Influence awareness self-report	1.07 (0.32)	0.42 (0.27)	3.30 (p =.005)	1.55 (p =.19)	0.51

Regularity awareness	0.95 (0.38)	0.53 (0.39)	2.53 (p =.038)	1.35 (p =.27)	0.46
Demand compliance self-report	0.45 (0.26)	1.03 (0.33)	1.72 (p =.16)	3.17 (p =.005)	0.22
Hypothesis awareness self-report	0.25 (0.22)	1.23 (0.36)	1.15 (p =.34)	3.44 (p <.001)	0.12
Reactance self-report	-0.01 (0.16)	1.50 (0.43)	-0.08 (p =.93)	3.47 (p < .001)	-0.01
Behavioral intention scores					
Influence awareness self-report	0.11 (0.05)	0.07 (0.07)	2.22 (p =.068)	0.99 (p =.39)	0.31
Regularity awareness	0.10 (0.07)	0.07 (0.08)	1.54 (p =.20)	0.95 (p =.39)	0.29
Hypothesis awareness self-report	0.04 (0.04)	0.14 (0.07)	1.08 (p =.35)	1.91 (p =.10)	0.11
Demand compliance self-report	0.03 (0.03)	0.14 (0.07)	0.98 (p =.39)	2.08 (p =.085)	0.09
Reactance self-report	-0.05 (0.02)	0.22 (0.08)	-2.43 (p =.038)	2.92 (p =.017)	-0.14

For persuasion effects (Table D-6), we observed indirect effects on IAT scores for regularity awareness, $ab_{ps} = 0.81$, $\beta = 0.22$, $Z = 4.34$, $p < .001$. The direct effect on IAT scores was statistically significant for all analyses, βs > 0.64, Zs > 6.88, ps < .001, except when controlling for m regularity awareness, β = -0.08, Z = *-0.42*, p = .70. We observed indirect effects on self-reported evaluation scores for regularity awareness, $ab_{ps} = 1.30$, and influence awareness, $ab_{ps} = 0.85$, βs > 4.71, Zs > 4.63, ps < .001. The direct effect on self-reported evaluation scores was statistically significant for all analyses, βs > 4.26, Zs > 3.56, ps < .001, except when controlling for regularity awareness, β = 1.78, Z = 1.40, p = .22. We observed indirect effects on behavioral intention scores for influence awareness, $ab_{ps} = 0.65$, $\beta = 0.45$, $Z = 3.04$, $p = .004$. The direct effect on behavioral intention scores was statistically significant for all analyses, βs > 0.46, Zs > 2.82, ps < .010, except when controlling for regularity awareness ($ab_{ps} = 0.83$), β = 0.34, Z = 0.78, p = .48.

Table D-6. *Rank ordered results for the magnitude of direct and indirect effects in the Persuasion mediation models.*

	Estimate	*Z*	ab_{ps}

	ind	*dir*	*ind*	*dir*	
IAT scores					
Regularity awareness	0.81 (0.19)	-0.08 (0.19)	4.34 ($p < .001$)	-0.42 ($p = .70$)	1.50
Influence awareness IAT	0.07 (0.09)	0.65 (0.10)	0.83 ($p = .47$)	6.88 ($p < .001$)	0.14
Hypothesis awareness IAT	0.03 (0.02)	0.69 (0.08)	1.93 ($p = .088$)	9.05 ($p < .001$)	0.06
Demand compliance IAT	0.00 (0.04)	0.73 (0.08)	-0.06 ($p = .95$)	9.11 ($p < .001$)	0.00
Reactance IAT	-0.05 (0.03)	0.77 (0.08)	-1.40 ($p = .22$)	9.90 ($p < .001$)	-0.09
Self-reported evaluation scores					
Regularity awareness	7.23 (1.31)	1.78 (1.27)	5.53 ($p < .001$)	1.40 ($p = .20$)	1.30
Influence awareness self-report	4.72 (1.02)	4.28 (1.20)	4.64 ($p < .001$)	3.57 ($p < .001$)	0.85
Demand compliance self-report	0.76 (0.41)	8.24 (0.72)	1.86 ($p = .088$)	11.42 ($p < .001$)	0.14
Hypothesis awareness self-report	0.43 (0.37)	8.57 (0.69)	1.16 ($p = .33$)	12.39 ($p < .001$)	0.08
Reactance self-report	-0.67 (0.32)	9.68 (0.60)	-2.11 ($p = .056$)	16.18 ($p < .001$)	-0.12
Behavioral intention scores					
Regularity awareness	0.58 (0.40)	0.34 (0.43)	1.44 ($p = .18$)	0.78 ($p = .47$)	0.83
Influence awareness self-report	0.45 (0.15)	0.46 (0.16)	3.04 ($p = .004$)	2.82 ($p = .009$)	0.65
Hypothesis awareness self-report	-0.01 (0.06)	0.93 (0.11)	-0.23 ($p = .84$)	8.19 ($p < .001$)	-0.02
Reactance self-report	-0.04 (0.05)	0.96 (0.10)	-0.80 ($p = .47$)	9.59 ($p < .001$)	-0.06
Demand compliance self-report	-0.05 (0.07)	0.97 (0.11)	-0.72 ($p = .51$)	8.50 ($p < .001$)	-0.07

Multiple mediation model

For each of the different learning procedures, we also fit a mediation model that included the different types of awareness that produced significant indirect effects in the simple mediation models. We did not perform analyses for ME information and ME effects because there were no significant (indirect) effects for these learning procedures.

For EC information effects (Table D-7), we observed indirect effects on IAT scores for regularity awareness, $ab_{ps} = 1.08$, and influence awareness, $ab_{ps} = 0.32$, $\beta s > 0.19$, $Zs > 2.34$, $ps < .020$. We observed indirect effects on self-reported evaluation scores for influence awareness, $ab_{ps} = 0.65$, and demand compliance, $ab_{ps} = 0.31$, $\beta s > 1.07$, $Zs > 2.93$, $ps < .004$, and reversed indirect effects for reactance, $ab_{ps} = -0.25$, $\beta = -0.84$, $Z = -3.27$, $p = .001$. We observed indirect effects on behavioral intention scores for influence awareness, $ab_{ps} = 0.42$, $\beta = 0.19$, $Z = 2.85$, $p = .004$, and reversed effect for reactance, $ab_{ps} = -0.19$, $\beta = -0.09$, $Z = -2.48$, $p = .013$.

Table D-7. R*ank ordered results for the magnitude of direct and indirect effects in the EC information multiple mediation models.*

	Estimate (SE)	*Z (p-value)*	*ab_{ps}*
IAT scores			
Regularity awareness	0.65 (0.28)	2.34 (p =.019)	1.08
Influence awareness IAT	0.19 (0.07)	2.71 (p =.007)	0.32
Direct	-0.00 (0.32)	-0.01 (p =.99)	
Self-reported evaluation scores			
Influence awareness self-report	2.22 (0.45)	4.92 (p < .001)	0.65
Regularity awareness	2.03 (1.32)	1.53 (p =.13)	0.60
Demand compliance self-report	1.07 (0.37)	2.93 (p =.003)	0.31
Hypothesis awareness self-report	0.44 (0.35)	1.26 (p =.20)	0.13
Reactance self-report	-0.84 (0.26)	-3.27 (p =.001)	-0.25
Direct	-2.07 (1.39)	-1.49 (p =.14)	
Behavioral intention scores			
Influence awareness self-report	0.19 (0.07)	2.85 (p =.004)	0.42
Demand compliance self-report	0.11 (0.06)	1.84 (p =.066)	0.24
Reactance self-report	-0.09 (0.03)	-2.48 (p =.013)	-0.19

Direct	-0.03 (0.08)	-0.40 (p =.69)

For AA information effects (Table D-8), we observed indirect effects on self-reported evaluation scores for influence awareness, ab_{ps} = 0.63, and demand compliance, ab_{ps} = 0.54, βs > 2.32, Zs > 4.58, ps < .001. Similarly, we observed indirect effects on behavioral intention scores for influence awareness, ab_{ps} = 0.56, and demand compliance, ab_{ps} = 0.42, βs > 0.27, Zs > 3.08, ps < .003.

Table D-8. *Rank ordered results for the magnitude of direct and indirect effects in the AA information multiple mediation models.*

	Estimate (SE)	*Z (p-value)*	ab_{ps}
Self-reported evaluation scores			
Influence awareness self-report	2.72 (0.58)	4.72 (p < .001)	0.63
Demand compliance self-report	2.33 (0.51)	4.59 (p < .001)	0.54
Hypothesis awareness self-report	0.57 (0.31)	1.86 (p =.063)	0.13
Direct	-0.83 (0.62)	-1.35 (p =.18)	
Behavioral intention scores			
Influence awareness self-report	0.36 (0.10)	3.73 (p <.001)	0.56
Demand compliance self-report	0.27 (0.09)	3.08 (p =.002)	0.42
Direct	-0.03 (0.11)	-0.26 (p =.79)	

For EC effects (Table D-9), we observed indirect effects on self-reported evaluation scores for regularity awareness, ab_{ps} = 0.64, and influence awareness, ab_{ps} = 0.72, βs > 2.48, Zs > 2.41, ps < .017. We also observed indirect effects on behavioral intention scores for regularity awareness, ab_{ps} = 0.97, and influence awareness, ab_{ps} = 0.45, βs > 0.26, Zs > 2.14, ps < .033.

Table D-9. *Rank ordered results for the magnitude of direct and indirect effects in the EC multiple mediation models.*

	Estimate	*Z*	ab_{ps}

Self-reported evaluation scores			
Influence awareness self-report	2.78 (0.76)	3.65 (p <.001)	0.72
Regularity awareness	2.48 (1.03)	2.41 (p =.016)	0.64
Demand compliance self-report	0.61 (0.35)	1.77 (p =.077)	0.16
Direct	-1.21 (1.00)	-1.22 (p =.22)	
Behavioral intention scores			
Regularity awareness	0.56 (0.18)	3.11 (p =.002)	0.97
Influence awareness self-report	0.26 (0.12)	2.15 (p =.032)	0.45
Direct	-0.39 (0.21)	-1.87 (p =.061)	

For AA effects (Table D-10), we observed an indirect effect on self-reported evaluation scores for influence awareness, ab_{ps} = 0.49, and regularity awareness, ab_{ps} = 0.36, βs > 0.74, Zs > 2.13, ps < .034. We observed a reversed indirect effect on behavioral intention scores for reactance, ab_{ps} = -0.14, β = -0.05, Z = -2.52, p = .012. The direct effect was also significant, β = 0.22, Z = 2.86, p = .004.

Table D-10. *Rank ordered results for the magnitude of direct and indirect effects in the AA multiple mediation models.*

	Estimate	*Z*	ab_{ps}
Self-reported evaluation scores			
Influence awareness self-report	1.01 (0.31)	3.21 (p =.001)	0.49
Regularity awareness	0.74 (0.35)	2.13 (p =.033)	0.36
Direct	-0.27 (0.41)	-0.65 (p =.51)	
Behavioral intention scores			
Reactance self-report	-0.05 (0.02)	-2.52 (p =.012)	-0.14
Direct	0.22 (0.08)	2.86 (p =.004)	

For Persuasion effects (Table D-11), we observed indirect effects on IAT scores for regularity awareness, $ab_{ps} = 1.50$, $\beta = 0.81$, $Z = 4.55$, $p < .001$. We observed indirect effects on self-reported evaluation scores for regularity awareness, $ab_{ps} = 1.04$, and influence awareness, $ab_{ps} = 0.74$, βs > 4.13, Zs > 4.09, ps < .001. We observed an indirect effect on behavioral intention scores for influence awareness, $ab_{ps} = 0.65$, $\beta = 0.45$, $Z = 3.06$, $p = .003$. The direct effect was also significant, $\beta = 0.46$, $Z = 2.78$, $p = .005$.

Table D-11. *Rank ordered results for the magnitude of direct and indirect effects in the Persuasion multiple mediation models.*

	Estimate	*Z*	ab_{ps}
IAT scores			
Regularity awareness	0.81 (0.18)	4.55 (p <.001)	1.50
Direct	-0.08 (0.18)	-0.45 (p =.66)	
Self-reported evaluation scores			
Regularity awareness	5.81 (1.38)	4.22 (p < .001)	1.04
Influence awareness self-report	4.14 (1.01)	4.09 (p <.001)	0.74
Direct	-0.94 (1.58)	-0.60 (p =.55)	
Behavioral intention scores			
Influence awareness self-report	0.45 (0.15)	3.06 (p =.002)	0.65
Direct	0.46 (0.17)	2.78 (p =.005)	

Experiment 2

Simple mediation models

ME information. For novel brands, moderation analyses for ME information effects were restricted to IAT and self-reported evaluation scores because a learning effect was only observed on these measures (Table D-12). We did not observe any indirect effects on IAT scores for any of

the types of awareness, βs < 0.07, *Zs* < 1.87, *ps* > .19. The direct effect was also not statistically significant for any analyses, βs < 0.12, *Zs* < 1.89, *ps* > .19. For self-reported evaluation scores, we also did not observe any indirect effects, βs < 0.50, *Zs* < 2.44, *ps* > .10, or any direct effects, βs < 0.63, *Zs* < 3.01, *ps* > .060.

For well-known brands, there were no effects of ME information on any of the outcomes.

Table D-12. *Rank ordered results for the magnitude of direct and indirect effects in the ME information simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Reactance IAT	0.06 (0.03)	0.05 (0.06)	1.86 (*p* = .20)	0.78 (*p* = .63)	0.13
Influence awareness IAT	0.02 (0.03)	0.08 (0.06)	0.89 (*p* = .58)	1.22 (*p* =.45)	0.06
Regularity awareness	0.02 (0.06)	0.09 (0.07)	0.30 (*p* = .90)	1.16 (*p* = .45)	0.04
Demand compliance IAT	0.00 (0.03)	0.10 (0.06)	0.11 (*p* = .93)	1.60 (*p* = .28)	0.01
Hypothesis awareness IAT	-0.00 (0.01)	0.11 (0.06)	-0.54 (*p* = .79)	1.88 (*p* = .20)	-0.01
Self-reported evaluation scores					
Regularity awareness	0.49 (0.20)	0.03 (0.30)	2.43 (*p* =.10)	0.09 (*p* =.93)	0.34
Influence awareness self-report	0.26 (0.14)	0.26 (0.17)	1.82 (*p* = .20)	1.49 (*p* =.30)	0.18
Demand compliance self-report	0.03 (0.09)	0.49 (0.21)	0.31 (*p* = .90)	2.31 (*p* =.11)	0.02
Hypothesis awareness self-report	-0.00 (0.04)	0.52 (0.20)	-0.09 (*p* =.93)	2.62 (*p* =.090)	-0.00
Reactance self-report	-0.10 (0.11)	0.62 (0.21)	-0.89 (*p* =.58)	3.00 (*p* = .060)	-0.07

EC information. For novel brands, we observed indirect effects on IAT scores for regularity awareness, ab_{ps} = 0.52, β = 0.26, *Z* = 2.93, *p* = .007 (Table D-13). The direct effect on IAT scores was statistically significant for all analyses, βs > 0.26, *Zs* > 2.26, *ps* < .044. We observed indirect

effects on self-reported evaluation scores for regularity awareness, ab_{ps} = 0.59, influence awareness, ab_{ps} = 0.54, and demand compliance, ab_{ps} = 0.41, βs > 1.33, *Z*s > 3.60, *p*s < .001. The direct effect on self-reported evaluation scores was statistically significant for all analyses, βs > 1.28, *Z*s > 3.66, *p*s < .001, except when controlling for regularity awareness or influence awareness, βs < 0.90, *Z*s < 2.16, *p*s > .056. We observed no indirect effects on behavioral intention scores. The direct effect on behavioral intention scores was statistically significant for all analyses, βs > 0.16, *Z*s > 2.44, *p*s < .031, except when controlling for regularity awareness, β = 0.16, *Z* = 1.81, *p* = .11.

For well-known brands, analyses were restricted to IAT and self-reported evaluation scores because a learning effect was only observed on these measures. We observed no indirect effects on IAT scores, βs < 0.15, *Z*s < 1.94, *p*s > .095. The direct effect on IAT scores was statistically significant for all analyses, βs > 0.29, *Z*s > 4.29, *p*s < .001, except when controlling for regularity awareness, β = 0.17, *Z* = 1.89, *p* = .095. We observed indirect effects on self-reported evaluation scores for influence awareness, ab_{ps} = 0.29, and demand compliance, ab_{ps} = 0.27, βs > 0.70, *Z*s > 2.77, *p*s < .021. The direct effect on self-reported evaluation scores was statistically significant for all analyses, βs > 0.86, *Z*s > 2.59, *p*s < .026, except when controlling for regularity awareness, influence awareness, or demand compliance, βs < 0.67, *Z*s < 2.21, *p*s > .062.

Table D-13. *Rank ordered results for the magnitude of direct and indirect effects in the EC information simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.26 (0.09)	0.26 (0.11)	2.93 (*p* = .007)	2.27 (*p* = .043)	0.52
Demand compliance IAT	0.07 (0.05)	0.45 (0.08)	1.52 (*p* = .18)	5.61 (*p* < .001)	0.14

Influence awareness IAT	0.07 (0.06)	0.45 (0.09)	1.15 (p = .29)	5.20 (p <.001)	0.14
Reactance IAT	0.02 (0.04)	0.50 (0.07)	0.58 (p = .62)	6.77 (p < .001)	0.04
Hypothesis awareness IAT	0.01 (0.03)	0.51 (0.07)	0.33 (p = .74)	7.46 (p < .001)	0.02
Self-reported evaluation scores					
Regularity awareness	1.91 (0.54)	0.71 (0.58)	3.56 (p <.001)	1.23 (p = .26)	0.59
Influence awareness self-report	1.73 (0.41)	0.89 (0.41)	4.24 (p < .001)	2.15 (p =.056)	0.54
Demand compliance self-report	1.33 (0.37)	1.29 (0.35)	3.60 (p < .001)	3.67 (p <.001)	0.41
Hypothesis awareness self-report	0.13 (0.23)	2.50 (0.45)	0.55 (p =.63)	5.54 (p <.001)	0.04
Reactance self-report	-0.35 (0.26)	2.97 (0.49)	-1.36 (p =.23)	6.10 (p < .001)	-0.11
Behavioral intention scores					
Demand compliance self-report	0.11 (0.05)	0.16 (0.06)	2.10 (p = .060)	2.44 (p =.030)	0.24
Regularity awareness	0.10 (0.08)	0.16 (0.09)	1.29 (p =.25)	1.81 (p =.11)	0.23
Influence awareness self-report	0.10 (0.06)	0.17 (0.06)	1.67 (p = .14)	2.63 (p =.017)	0.22
Hypothesis awareness self-report	-0.02 (0.03)	0.28 (0.07)	-0.50 (p =.64)	4.18 (p <.001)	-0.04
Reactance self-report	-0.06 (0.04)	0.32 (0.07)	-1.51 (p =.18)	4.79 (p < .001)	-0.13
Well-known brands					
IAT scores					
Regularity awareness	0.14 (0.07)	0.17 (0.09)	1.93 (p = .095)	1.89 (p = .095)	0.32
Influence awareness IAT	0.01 (0.04)	0.30 (0.07)	0.25 (p = .85)	4.31 (p <.001)	0.02
Reactance IAT	0.00 (0.03)	0.31 (0.06)	0.08 (p = .94)	4.84 (p < .001)	0.01
Hypothesis awareness IAT	-0.01 (0.03)	0.33 (0.06)	-0.56 (p = .64)	5.31 (p < .001)	-0.03
Demand compliance IAT	-0.02 (0.03)	0.33 (0.07)	-0.68 (p = .59)	4.93 (p < .001)	-0.05
Self-reported evaluation scores					
Regularity awareness	0.77 (0.41)	0.58 (0.46)	1.87 (p =.095)	1.27 (p = .25)	0.30
Influence awareness self-report	0.75 (0.26)	0.60 (0.34)	2.88 (p = .016)	1.78 (p =.099)	0.29

Demand compliance self-report	0.70 (0.25)	0.66 (0.30)	2.78 (p = .020)	2.20 (p = .062)	0.27
Hypothesis awareness self-report	0.49 (0.23)	0.87 (0.34)	2.15 (p = . 064)	2.59 (p =.025)	0.19
Reactance self-report	0.42 (0.23)	0.93 (0.34)	1.83 (p =.097)	2.71 (p = .020)	0.17

AA information. For novel brands, we observed indirect effects on IAT scores for regularity awareness, ab_{ps} = 0.93, and influence awareness, ab_{ps} = 0.41, βs > 0.21, Zs > 3.55, ps < .004 (Table D-14). The direct effect on IAT scores was statistically significant for all analyses, βs > 0.26, Zs > 3.10, ps < .004, except when controlling for regularity awareness, β = -0.01, Z = -0.11, p = .95. We observed indirect effects on self-reported evaluation scores for regularity awareness, ab_{ps} = 0.97, influence awareness, ab_{ps} = 0.72, demand compliance, ab_{ps} = 0.64, and hypothesis awareness, ab_{ps} = 0.28, βs > 1.07, Zs > 3.33, ps < .003. The direct effect on self-reported evaluation scores was statistically significant for all analyses, βs > 1.21, Zs > 2.96, ps < .005, except when controlling for regularity awareness, β = 0.24, Z = 0.42, p = .81. We observed indirect effects on behavioral intention scores for regularity awareness, ab_{ps} = 0.99, influence awareness, ab_{ps} = 0.53, demand compliance, ab_{ps} = 0.38, and hypothesis awareness, ab_{ps} = 0.19, βs > 0.10, Zs > 2.25, ps < .034. The direct effect on behavioral intention scores was statistically significant for all analyses, βs > 0.23, Zs > 2.93, ps < .005, except when controlling for regularity awareness, β = -0.04, Z = -0.31, p = .88.

For well-known brands, analyses were restricted to IAT and self-reported evaluation scores because a learning effect was only observed on these measures. We observed no indirect effects on IAT scores, βs < 0.14, Zs < 1.87, ps > .13. The direct effect on IAT scores was statistically significant for all analyses, βs > 0.21, Zs > 2.87, ps < .021, except when controlling for m regularity awareness (ab_{ps} = 0.30), influence awareness (ab_{ps} = 0.17), and demand compliance (ab_{ps} = 0.10), βs < 0.19, Zs < 2.41, ps > .053. We observed indirect effects on self-reported evaluation scores for

influence awareness, ab_{ps} = 0.29, and demand compliance, ab_{ps} = 0.27, βs > 0.75, *Z*s > 2.66, *p*s < .032. There was no direct effect on self-reported evaluation scores, βs < 0.83, *Z*s < 2.14, *p*s > .093, except when controlling for reactance, β = 1.45, *Z* = 1.45, *p* = .020.

Table D-14. *Rank ordered results for the magnitude of direct and indirect effects in the AA information simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.47 (0.09)	-0.01 (0.09)	5.50 (*p* < .001)	-0.11 (*p* = .95)	0.93
Influence awareness IAT	0.21 (0.06)	0.26 (0.08)	3.56 (*p* < .001)	3.10 (*p* =.003)	0.41
Demand compliance IAT	0.10 (0.05)	0.37 (0.08)	1.98 (*p* = .061)	4.67 (*p* < .001)	0.19
Reactance IAT	0.00 (0.03)	0.46 (0.07)	0.10 (*p* = .95)	6.41 (*p* < .001)	0.01
Hypothesis awareness IAT	-0.01 (0.02)	0.47 (0.07)	-0.23 (*p* = .91)	7.02 (*p* < .001)	-0.01
Self-reported evaluation scores					
Regularity awareness	3.79 (0.59)	0.24 (0.59)	6.39 (*p* <.001)	0.42 (*p* = .81)	0.97
Influence awareness self-report	2.82 (0.46)	1.22 (0.41)	6.14 (*p* < .001)	2.97 (*p* =.004)	0.72
Demand compliance self-report	2.50 (0.43)	1.54 (0.39)	5.90 (*p* < .001)	3.91 (*p* <.001)	0.64
Hypothesis awareness self-report	1.08 (0.32)	2.96 (0.50)	3.34 (*p* =.002)	5.97 (*p* <.001)	0.28
Reactance self-report	0.00 (0.31)	4.04 (0.58)	-0.01 (*p* =.99)	7.03 (*p* < .001)	0.00
Behavioral intention scores					
Regularity awareness	0.59 (0.10)	-0.04 (0.12)	5.79 (*p* <.001)	-0.31 (*p* =.88)	0.99
Influence awareness self-report	0.32 (0.07)	0.24 (0.08)	4.52 (*p* < .001)	2.94 (*p* =.004)	0.53
Demand compliance self-report	0.23 (0.07)	0.33 (0.07)	3.52 (*p* < .001)	4.64 (*p* <.001)	0.38
Hypothesis awareness self-report	0.11 (0.05)	0.45 (0.08)	2.26 (*p* =.033)	5.50 (*p* <.001)	0.19

Reactance self-report	-0.09 (0.05)	0.65 (0.09)	-1.51 (p =.095)	4.79 (p < .001)	-0.15
Well-known brands					
IAT scores					
Regularity awareness	0.13 (0.11)	0.09 (0.13)	1.21 (p = .31)	0.73 (p = .49)	0.30
Influence awareness IAT	0.07 (0.04)	0.15 (0.08)	1.86 (p = .13)	1.90 (p =.13)	0.17
Demand compliance IAT	0.05 (0.04)	0.18 (0.08)	1.19 (p = .31)	2.40 (p = .053)	0.10
Reactance IAT	0.02 (0.03)	0.21 (0.07)	0.58 (p = .57)	2.87 (p = .020)	0.03
Hypothesis awareness IAT	-0.02 (0.01)	0.24 (0.07)	-1.06 (p = .37)	3.63 (p < .001)	-0.03
Self-reported evaluation scores					
Demand compliance self-report	0.81 (0.27)	0.48 (0.38)	2.96 (p = .020)	1.26 (p = .31)	0.29
Regularity awareness	0.77 (0.62)	0.52 (0.66)	1.25 (p =.31)	0.78 (p = .48)	0.28
Influence awareness self-report	0.75 (0.28)	0.54 (0.42)	2.66 (p = .032)	1.29 (p =.31)	0.27
Hypothesis awareness self-report	0.47 (0.24)	0.82 (0.39)	1.97 (p = . 12)	2.13 (p =.094)	0.17
Reactance self-report	-0.16 (0.20)	1.45 (0.48)	-0.83 (p =.48)	3.05 (p = .020)	-0.06

ME. For novel brands, analyses for ME effects were restricted to IAT scores because a learning effect was only observed on this measure (Table D-15). We did not observe any indirect effects on IAT scores for any of the types of awareness, βs < 0.05, Zs < 1.21, ps > .39. The direct effect was statistically significant for all analyses, βs > 0.15, Zs > 2.55, ps < .034, except when controlling for regularity awareness (ab_{ps} = 0.10), and influence awareness (ab_{ps} = 0.09), βs < 0.14, Zs < 1.88, ps > .14.

For well-known brands, there were no effects of ME on any of the outcomes.

Table D-15. *Rank ordered results for the magnitude of direct and indirect effects in the ME simple mediation models in Experiment 2.*

	Estimate (SE)	*Z (p-value)*	ab_{ps}

	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.04 (0.05)	0.13 (0.08)	0.69 (p = .55)	1.60 (p = .22)	0.10
Influence awareness IAT	0.04 (0.04)	0.13 (0.07)	0.97 (p = .47)	1.87 (p =.15)	0.09
Hypothesis awareness IAT	0.02 (0.01)	0.15 (0.06)	1.20 (p = .38)	2.56 (p = .033)	0.04
Reactance IAT	-0.01 (0.03)	0.17 (0.06)	-0.17 (p = .87)	2.74 (p = .030)	-0.01
Demand compliance IAT	-0.03 (0.03)	0.19 (0.06)	0.80 (p = .53)	3.02 (p = .030)	-0.07

EC. For novel brands, we observed indirect effects on IAT scores for regularity awareness, ab_{ps} = 0.79, and influence awareness, ab_{ps} = 0.32, βs > 0.16, Zs > 2.58, ps < .015 (Table D-16). The direct effect on IAT scores was statistically significant for all analyses, βs > 0.35, Zs > 4.08, ps < .001, except when controlling for regularity awareness, β = 0.12, Z = 1.11, p = .31. We observed indirect effects on self-reported evaluation scores for regularity awareness, ab_{ps} = 0.65, influence awareness, ab_{ps} = 0.66, hypothesis awareness, ab_{ps} = 0.41, and demand compliance, ab_{ps} = 0.22, βs > 0.80, Zs > 2.56, ps < .015. The direct effect on self-reported evaluation scores was statistically significant for all analyses, βs > 2.00, Zs > 3.41, ps < .003. We observed indirect effects on behavioral intention scores for regularity awareness, ab_{ps} = 0.51, and influence awareness, ab_{ps} = 0.49, βs > 0.29, Zs > 3.05, ps < .004. The direct effect on behavioral intention scores was statistically significant for all analyses, βs > 0.32, Zs > 2.84, ps < .009.

For well-known brands, analyses were restricted to IAT and self-reported evaluation scores because a learning effect was only observed on these measures. We observed an indirect effects on IAT scores for demand compliance, ab_{ps} = 0.21, β = 0.09, Z = 2.48, p = .032. The direct effect on IAT scores was statistically significant for all analyses, βs > 0.21, Zs > 2.78, ps < .012. We observed indirect effects on self-reported evaluation scores for influence awareness, ab_{ps} = 0.44, and demand

compliance, $ab_{ps} = 0.40$, $\beta s > 1.02$, $Zs > 4.00$, $ps < .001$. The direct effect on self-reported evaluation scores was statistically significant for all analyses, $\beta s > 1.02$, $Zs > 2.34$, $ps < .041$, except when controlling for regularity awareness, influence awareness, or demand compliance, $\beta s < 1.35$, $Zs < 1.94$, $ps > .095$.

Table D-16. *Rank ordered results for the magnitude of direct and indirect effects in the EC simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.41 (0.09)	0.12 (0.11)	4.52 ($p < .001$)	1.11 ($p = .31$)	0.79
Influence awareness IAT	0.17 (0.06)	0.36 (0.09)	2.58 ($p = .014$)	4.09 ($p < .001$)	0.32
Reactance IAT	0.08 (0.04)	0.45 (0.08)	1.84 ($p = .085$)	5.86 ($p < .001$)	0.16
Demand compliance IAT	0.03 (0.05)	0.50 (0.08)	0.74 ($p = .48$)	6.47 ($p < .001$)	0.06
Hypothesis awareness IAT	-0.01 (0.03)	0.54 (0.08)	-0.40 ($p = .69$)	6.81 ($p < .001$)	-0.03
Self-reported evaluation scores					
Influence awareness self-report	2.42 (0.47)	2.01 (0.48)	5.19 ($p < .001$)	4.20 ($p = .002$)	0.66
Regularity awareness	2.38 (0.54)	2.05 (0.60)	4.37 ($p < .001$)	3.42 ($p < .001$)	0.65
Hypothesis awareness self-report	1.49 (0.54)	2.94 (0.68)	2.76 ($p = .009$)	4.34 ($p < .001$)	0.41
Demand compliance self-report	0.81 (0.32)	3.62 (0.47)	2.57 ($p = .014$)	7.75 ($p < .001$)	0.22
Reactance self-report	-0.41 (0.30)	4.84 (0.55)	-1.36 ($p = .19$)	8.77 ($p < .001$)	-0.11
Behavioral intention scores					
Regularity awareness	0.30 (0.10)	0.33 (0.12)	3.06 ($p = .003$)	2.83 ($p = .008$)	0.51
Influence awareness self-report	0.29 (0.08)	0.34 (0.10)	3.55 ($p < .001$)	3.59 ($p < .001$)	0.49
Hypothesis awareness self-report	0.16 (0.09)	0.48 (0.11)	1.71 ($p = .11$)	4.20 ($p < .001$)	0.27

Demand compliance self-report	0.08 (0.05)	0.55 (0.09)	1.69 (p = .11)	6.09 (p <.001)	0.14
Reactance self-report	-0.08 (0.05)	0.71 (0.10)	-1.69 (p =.11)	7.17 (p < .001)	-0.14
Well-known brands					
IAT scores					
Demand compliance IAT	0.09 (0.03)	0.22 (0.07)	2.48 (p = .032)	3.29 (p = .003)	0.21
Influence awareness IAT	0.06 (0.04)	0.25 (0.07)	1.46 (p = .24)	3.70 (p <.001)	0.13
Regularity awareness	0.04 (0.08)	0.26 (0.10)	0.49 (p = .73)	2.79 (p = .011)	0.10
Reactance IAT	0.03 (0.03)	0.27 (0.07)	0.99 (p = .50)	3.94 (p < .001)	0.08
Hypothesis awareness IAT	0.02 (0.03)	0.29 (0.07)	0.58 (p = .70)	4.21 (p < .001)	0.04
Self-reported evaluation scores					
Influence awareness self-report	1.12 (0.28)	0.14 (0.35)	4.03 (p < .001)	0.39 (p =.77)	0.44
Demand compliance self-report	1.02 (0.25)	0.24 (0.33)	4.00 (p < .001)	0.74 (p = .61)	0.40
Reactance self-report	0.24 (0.27)	1.02 (0.44)	0.89 (p =.54)	2.34 (p = .040)	0.10
Hypothesis awareness self-report	-0.07 (0.43)	1.32 (0.56)	-0.15 (p = .88)	2.38 (p =.038)	-0.03
Regularity awareness	-0.08 (0.56)	1.34 (0.70)	-0.15 (p =.88)	1.93 (p = .096)	-0.03

AA. For novel brands, we observed indirect effects on IAT scores for regularity awareness, ab_{ps} = 0.82, , β = 0.37, Z = 5.98, p <.001 (Table D-17). The direct effect on IAT scores was statistically significant for all analyses, βs > 0.20, Zs > 3.11, ps < .008, except when controlling for regularity awareness, β = -0.09, Z = -1.12, p = .28. We observed indirect effects on self-reported evaluation scores for by regularity awareness, ab_{ps} = 0.72, influence awareness, ab_{ps} = 0.36, βs > 0.76, Zs > 3.23, ps < .005. The direct effect on self-reported evaluation scores was statistically significant for all analyses, βs > 0.57, Zs > 2.39, ps < .03, except when controlling for regularity awareness and influence awareness, βs < 0.28, Zs < 1.41, ps > .19. We observed indirect effects on behavioral intention scores for regularity awareness, ab_{ps} = 0.70, influence awareness, ab_{ps} = 0.47, and hypothesis awareness, ab_{ps} = 0.16, βs > 0.06, Zs > 3.41, ps < .035. The direct effect on

behavioral intention scores was not statistically significant for any analyses, βs < 0.09, *Z*s < 1.84, *p*s > .11, except when controlling for reactance, β = 0.12, *Z* = 2.42, *p* = .034.

For well-known brands, analyses were restricted to IAT scores because an AA effect was only observed on this measure. We observed indirect effects on IAT scores for regularity awareness, ab_{ps} = 0.21, and reactance, ab_{ps} = 0.21, βs > 0.05, *Z*s > 2.23, *p*s < .043. The direct effect on IAT scores was statistically significant for all analyses, βs > 0.24, *Z*s > 4.46, *p*s < .001, except when controlling for regularity awareness, β = 0.15, *Z* = 1.76, *p* = .11.

Table D-17. *Rank ordered results for the magnitude of direct and indirect effects in the AA simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.37 (0.06)	-0.09 (0.08)	5.98 (*p* < .001)	-1.12 (*p* = .28)	0.82
Influence awareness IAT	0.08 (0.04)	0.20 (0.06)	2.15 (*p* = .055)	3.12 (*p* =.007)	0.18
Reactance IAT	0.04 (0.03)	0.24 (0.06)	1.31 (*p* = .22)	3.95 (*p* < .001)	0.09
Demand compliance IAT	0.03 (0.04)	0.25 (0.07)	0.71 (*p* = .50)	3.89 (*p* < .001)	0.06
Hypothesis awareness IAT	-0.01 (0.01)	0.29 (0.06)	-1.50 (*p* = .18)	5.10 (*p* < .001)	-0.02
Self-reported evaluation scores					
Regularity awareness	1.52 (0.29)	-0.49 (0.60)	5.18 (*p* <.001)	-1.46 (*p* = .19)	0.72
Influence awareness self-report	0.77 (0.24)	0.27 (0.19)	3.24 (*p* = .004)	1.40 (*p* =.20)	0.36
Demand compliance self-report	0.46 (0.21)	0.58 (0.24)	2.22 (*p* = .051)	2.40 (*p* =.034)	0.22
Reactance self-report	0.33 (0.20)	0.71 (0.25)	1.62 (*p* =.16)	2.84 (*p* = .014)	0.15
Hypothesis awareness self-report	0.22 (0.13)	0.82 (0.28)	1.71 (*p* = .14)	2.95 (*p* =.009)	0.10
Behavioral intention scores					

Regularity awareness	0.25 (0.05)	-0.12 (0.05)	5.09 (p < .001)	-2.40 (p =.034)	0.70
Influence awareness self-report	0.16 (0.04)	-0.04 (0.03)	3.95 (p < .001)	-1.29 (p =.22)	0.47
Hypothesis awareness self-report	0.06 (0.02)	0.07 (0.05)	2.42 (p =.034)	1.54 (p = .18)	0.16
Demand compliance self-report	0.05 (0.03)	0.08 (0.04)	1.42 (p = .19)	1.83 (p =.11)	0.13
Reactance self-report	0.01 (0.03)	0.12 (0.05)	0.32 (p =.75)	2.42 (p = .034)	0.03
Well-known brands					
IAT scores					
Regularity awareness	0.15 (0.07)	0.15 (0.09)	2.30 (p = .042)	1.76 (p = .11)	0.36
Demand compliance IAT	0.04 (0.03)	0.26 (0.06)	1.47 (p = .16)	4.47 (p < .001)	0.10
Influence awareness IAT	0.04 (0.03)	0.27 (0.05)	1.46 (p = .16)	4.90 (p <.001)	0.10
Reactance IAT	0.05 (0.02)	0.25 (0.06)	2.24 (p = .042)	4.49 (p < .001)	0.08
Hypothesis awareness IAT	-0.01 (0.01)	0.32 (0.05)	-1.25 (p = .21)	6.08 (p < .001)	-0.03

Persuasion. For novel brands, we observed indirect effects on IAT scores for regularity awareness, ab_{ps} = 0.60, β = 0.27, Z = 3.51, p <.001 (Table D-18). The direct effect on IAT scores was statistically significant for all analyses, βs > 0.20, Zs > 2.81, ps < .014, except when controlling for regularity awareness, or influence awareness (ab_{ps} = 0.13), βs < 0.17, Zs < 2.22, ps > .054. We observed indirect effects on self-reported evaluation scores for regularity awareness, ab_{ps} = 0.99, influence awareness, ab_{ps} = 0.47, and hypothesis awareness, ab_{ps} = 0.16, βs > 0.44, Zs > 2.38, ps < .037. The direct effect on self-reported evaluation scores was statistically significant for all analyses, βs > 0.98, Zs > 2.76, ps < .014, except when controlling for regularity awareness, β = -0.46, Z = -1.05, p =.40. We observed an indirect effect on behavioral intention scores for regularity awareness, ab_{ps} = 0.95, β = 0.48, Z = 5.78, p <.001. The direct effect on behavioral intention scores was not statistically significant for any analyses, βs < 0.17, Zs < 1.95, ps > .087, except when controlling for demand compliance, β = 0.24, Z = 3.10, p = .007.

For well-known brands, there were no effects of Persuasion on any of the outcomes.

Table D-18. *Rank ordered results for the magnitude of direct and indirect effects in the Persuasion simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.27 (0.08)	-0.05 (0.09)	3.51 ($p < .001$)	-0.48 ($p = .66$)	0.60
Influence awareness IAT	0.06 (0.05)	0.16 (0.07)	1.24 ($p = .33$)	2.21 ($p = .054$)	0.13
Reactance IAT	0.02 (0.03)	0.20 (0.07)	0.63 ($p = .62$)	2.81 ($p = .013$)	0.05
Hypothesis awareness IAT	0.01 (0.01)	0.21 (0.06)	0.54 ($p = .66$)	3.39 ($p = .004$)	0.02
Demand compliance IAT	-0.00 (0.04)	0.22 (0.08)	-0.08 ($p = .94$)	2.86 ($p = .011$)	-0.01
Self-reported evaluation scores					
Regularity awareness	2.73 (0.42)	-0.46 (0.44)	6.57 ($p < .001$)	-1.05 ($p = .40$)	0.99
Influence awareness self-report	1.29 (0.35)	0.98 (0.36)	3.65 ($p < .001$)	2.77 ($p = .014$)	0.47
Hypothesis awareness self-report	0.45 (0.19)	1.82 (0.42)	2.39 ($p = .036$)	4.35 ($p < .001$)	0.16
Reactance self-report	0.14 (0.21)	2.13 (0.44)	0.70 ($p = .62$)	4.86 ($p < .001$)	0.05
Demand compliance self-report	0.06 (0.26)	2.22 (0.39)	0.21 ($p = .86$)	5.67 ($p < .001$)	0.02
Behavioral intention scores					
Regularity awareness	0.48 (0.08)	-0.29 (0.10)	5.78 ($p < .001$)	-2.97 ($p = .009$)	0.95
Influence awareness self-report	0.14 (0.07)	0.05 (0.08)	1.98 ($p = .085$)	0.61 ($p = .62$)	0.27
Hypothesis awareness self-report	0.04 (0.03)	0.15 (0.09)	1.27 ($p = .060$)	1.73 ($p = .13$)	0.08
Reactance self-report	0.03 (0.05)	0.16 (0.08)	0.69 ($p = .62$)	1.94 ($p = .088$)	0.06
Demand compliance self-report	-0.06 (0.05)	0.24 (0.08)	-1.10 ($p = .39$)	3.10 ($p = .007$)	-0.11

Multiple mediation models

We fitted mediation models which include different types of awareness that were significant in the simple mediation models as multiple mediators for each learning precedure. ME information was excluded from the analyses because no types of awareness had significant indirect effects for this learning precudere.

EC Information. For EC information (Table D-19), for novel brands, we observed indirect effects on self-reported evaluations for influence awareness, $ab_{ps} = 0.35$, regularity awareness, $ab_{ps} = 0.45$, and demand compliance, $ab_{ps} = 0.30$, $\beta s > 0.97$, $Zs > 2.64$, $ps < .012$.

For well-known brands, we observed no significant indirect effects.

Table D-19. *Rank ordered results for the magnitude of direct and indirect effects in the EC information multiple mediation models.*

	Estimate (SE)	*Z (p-value)*	ab_{ps}
Novel brands			
Self-reported evaluation scores			
Regularity awareness	1.47 (0.55)	2.65 (p =.011)	0.45
Influence awareness self-report	1.13 (0.40)	2.80 (p = .010)	0.35
Demand compliance self-report	0.98 (0.35)	2.93 (p =.010)	0.31
Direct	-0.96 (0.56)	-1.74 (p =.081)	-0.30
Well-known brands			
Self-reported evaluation scores			
Demand compliance self-report	0.55 (0.25)	2.22 (p = .078)	0.22
Influence awareness self-report	0.48 (0.25)	1.94 (p = .078)	0.19
Direct	0.32 (0.33)	0.98 (p = .326)	0.14

AA information. For AA information (Table D-20), for novel brands, we observed indirect effects on IAT scores for regularity awareness, $ab_{ps} = 0.86$, and influence awareness, $ab_{ps} = 0.35$, $\beta s > 0.18$, $Zs > 3.16$, $ps < .004$. For self-reported evaluation scores, we observed indirect effects

for regularity awareness, $ab_{ps} = 0.58$, demand compliance, $ab_{ps} = 0.40$, and influence awareness, $ab_{ps} = 0.37$, $\beta s > 1.44$, $Zs > 3.44$, $ps < .002$. For behavioral intention scores, we observed indirect effects for regularity awareness, $ab_{ps} = 0.30$, and influence awareness, $ab_{ps} = 0.76$, $\beta s > 0.17$, $Zs > 2.28$, $ps < .038$.

For well-known brands, we observed an indirect effect on self-reported evaluation scores for demand compliance, $ab_{ps} = 0.23$, $\beta = 0.65$, $Z = 2.62$, $p = .027$.

Table D-20. R*ank ordered results for the magnitude of direct and indirect effects in the AA information multiple mediation models.*

	Estimate (SE)	*Z (p-value)*	ab_{ps}
Novel brands			
IAT scores			
Regularity awareness	0.44 (0.09)	4.92 ($p < .001$)	0.86
Influence awareness IAT	0.18 (0.06)	3.16 ($p = .003$)	0.35
Direct	-0.15 (0.10)	-1.57 ($p = .153$)	-0.30
Self-reported evaluation scores			
Regularity awareness	2.25 (0.65)	3.46 ($p = .001$)	0.58
Demand compliance self-report	1.58 (0.39)	4.04 ($p < .001$)	0.40
Influence awareness self-report	1.45 (0.42)	3.45 ($p = .001$)	0.37
Hypothesis awareness self-report	0.27 (0.28)	0.98 ($p = .356$)	0.07
Direct	-1.51 (0.57)	-2.63 ($p = .016$)	-0.39
Behavioral intention scores			
Regularity awareness	0.45 (0.12)	3.77 ($p = .001$)	0.76
Influence awareness self-report	0.18 (0.08)	2.28 ($p = .037$)	0.30
Demand compliance self-report	0.10 (0.07)	1.50 ($p = .157$)	0.17
Hypothesis awareness self-report	0.02 (0.05)	0.31 ($p = .754$)	0.02

Direct	-0.19 (0.12)	-1.64 (p = .145)	-0.32
Well-known brands			
Self-reported evaluation scores			
Demand compliance self-report	0.65 (0.25)	2.62 (p = .027)	0.23
Influence awareness self-report	0.45 (0.24)	1.84 (p = .098)	0.16
Direct	1.29 (0.40)	3.25 (p = .661)	0.07

ME. No multiple mediation analyses were performed for ME.

EC. For EC (Table D-21), for novel brands, we observed indirect effects on IAT scores only for regularity awareness, ab_{ps} = 0.74, β = 0.38, Z = 4.26, p < .001. For self-reported evaluation scores, we observed indirect effects for regularity awareness, ab_{ps} = 0.42, and influence awareness, ab_{ps} = 0.50, βs > 1.50, Zs > 2.71, ps < .019. For behavioral intention scores, we observed indirect effects for regularity awareness, ab_{ps} = 0.40, and influence awareness, ab_{ps} = 0.46, βs > 0.24, Zs > 2.40, ps < .036.

For well-known brands, we observed an indirect effect on IAT scores for demand compliance, ab_{ps} = 0.21, β = 0.09, Z = 2.48, p = .016. For self-reported evaluation scores, we observed indirect effects for demand compliance, ab_{ps} = 0.32, and influence awareness, ab_{ps} = 0.28, βs > 0.70, Zs > 2.99, ps < .006.

Table D-21. *Rank ordered results for the magnitude of direct and indirect effects in the EC multiple mediation models.*

	Estimate (SE)	*Z (p-value)*	ab_{ps}
Novel brands			
IAT scores			
Regularity awareness	0.38 (0.09)	4.26 (p < .001)	0.74
Influence awareness IAT	0.13 (0.06)	2.05 (p = .073)	0.24

Direct	0.02 (0.12)	0.20 (p = .926)	0.04
Self-reported evaluation scores			
Influence awareness self-report	1.81 (0.47)	3.89 (p = .001)	0.50
Regularity awareness	1.51 (0.57)	2.72 (p = .018)	0.42
Demand compliance self-report	0.41 (0.32)	1.28 (p = .275)	0.41
Hypothesis awareness self-report	0.68 (0.53)	1.28 (p = .275)	0.18
Direct	-0.04 (0.63)	-0.06 (p = .951)	-0.01
Behavioral intention scores			
Influence awareness self-report	0.25 (0.08)	3.05 (p = .008)	0.46
Regularity awareness	0.24 (0.10)	2.41 (p = .035)	0.40
Direct	0.14 (0.12)	1.19 (p = .287)	0.25
Well-known brands			
IAT scores			
Demand compliance IAT	0.09 (0.03)	2.48 (p = .016)	0.21
Direct	0.22 (0.07)	5.30 (p = .003)	0.53
Self-reported evaluation scores			
Demand compliance self-report	0.81 (0.23)	3.54 (p = .002)	0.32
Influence awareness self-report	0.70 (0.23)	2.99 (p = .005)	0.28
Direct	-0.25 (0.35)	-0.72 (p = .475)	-0.10

AA. For AA (Table D-22), for novel brands, we observed indirect effects on IAT scores only for regularity awareness, $ab_{ps} = 0.82$, $\beta = 0.37$, $Z = 5.98$, $p < .001$. For self-reported evaluation scores, we observed indirect effects for regularity awareness, $ab_{ps} = 0.65$, and influence awareness, $ab_{ps} = 0.30$, βs > 0.63, $Zs > 2.90$, $ps < .006$. For behavioral intention scores, we observed indirect effects for regularity awareness, $ab_{ps} = 0.55$, and influence awareness, $ab_{ps} = 0.41$, βs > 0.13, $Zs > 3.88$, $ps < .001$.

For well-known brands, we observed an indirect effect on IAT scores for regularity awareness, $ab_{ps} = 0.39$, and for reactance, $ab_{ps} = 0.13$, $\beta s > 0.05$, $Zs > 2.44$, $ps < .018$.

Table D-22. *Rank ordered results for the magnitude of direct and indirect effects in the AA multiple mediation models.*

	Estimate (SE)	*Z (p-value)*	ab_{ps}
Novel brands			
IAT scores			
Regularity awareness	0.37 (0.06)	5.98 ($p < .001$)	0.82
Direct	-0.09 (0.08)	-1.12 ($p = .263$)	-0.20
Self-reported evaluation scores			
Regularity awareness	1.37 (0.28)	4.82 ($p < .001$)	0.65
Influence awareness self-report	0.64 (0.22)	2.91 ($p = .005$)	0.30
Direct	-0.98 (0.31)	-3.15 ($p = .002$)	-0.46
Behavioral intention scores			
Regularity awareness	0.19 (0.04)	4.59 ($p < .001$)	0.55
Influence awareness self-report	0.14 (0.04)	3.89 ($p < .001$)	0.41
Hypothesis awareness self-report	0.04 (0.02)	1.98 ($p = .053$)	0.11
Direct	-0.25 (0.05)	-4.63 ($p < .001$)	-0.71
Well-known brands			
IAT scores			
Regularity awareness	0.17 (0.07)	2.50 ($p = .017$)	0.39
Reactance IAT	0.06 (0.02)	2.44 ($p = .017$)	0.13
Direct	0.08 (0.09)	0.92 ($p = .354$)	0.20

Persuasion. For Persuasion (Table D-23), for novel brands, we observed indirect effects on IAT scores only for regularity awareness, $ab_{ps} = 0.60$, $\beta = 0.27$, $Z = 3.61$, $p = .001$. For

self-reported evaluation scores, we observed indirect effects for regularity awareness, $ab_{ps} = 0.92$, and influence awareness, $ab_{ps} = 0.38$, $\beta s > 1.05$, $Zs > 3.34$, $ps < .003$. For behavioral intention scores, we observed an indirect effect for regularity awareness, $ab_{ps} = 0.95$, $\beta = 0.48$, $Z = 5.78$, $p = .004$.

For well-known brands, we observed there were no significant indirect effects.

Table D-23. *Rank ordered results for the magnitude of direct and indirect effects in the Persuasion multiple mediation models.*

	Estimate (SE)	*Z (p-value)*	ab_{ps}
Novel brands			
IAT scores			
Regularity awareness	0.27 (0.07)	3.61 ($p = .001$)	0.60
Direct	-0.05 (0.09)	-0.49 ($p = .663$)	-0.10
Self-reported evaluation scores			
Regularity awareness	2.55 (0.42)	6.10 ($p < .001$)	0.92
Influence awareness self-report	1.06 (0.32)	3.35 ($p = .002$)	0.38
Hypothesis awareness self-report	0.07 (0.16)	0.44 ($p = .663$)	0.03
Direct	-1.41 (0.47)	-3.00 ($p = .004$)	-0.51
Behavioral intention scores			
Regularity awareness	0.48 (0.08)	5.78 ($p < .001$)	0.95
Direct	-0.29 (0.10)	-2.97 ($p = .004$)	-0.57

Appendix E: Moderation analyses: individual components of indirect effects

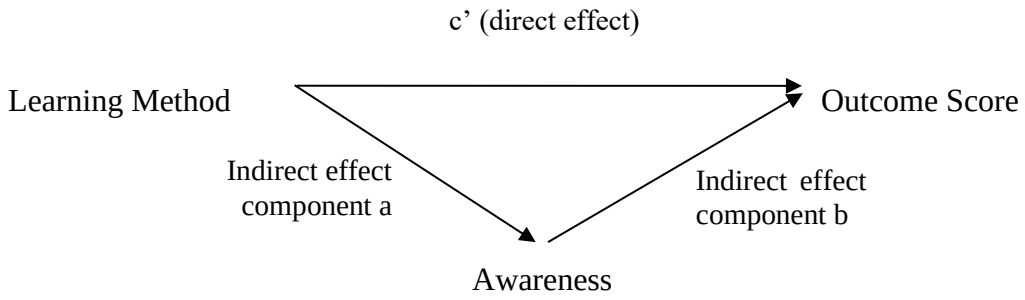


Figure E1. Mediation model

Experiment 1

Simple mediation models

Table E1. *Individual components for the indirect effects in the ME information simple mediation models.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
IAT scores					
Regularity awareness	1.75 (0.06)	0.20 (0.12)	30.70 ($p < .001$)	1.71 ($p = .14$)	0.83
Hypothesis awareness IAT	0.10 (0.04)	0.18 (0.11)	2.71 ($p = .006$)	1.66 ($p = .14$)	0.04
Demand compliance IAT	0.36 (0.07)	0.00 (0.10)	5.51 ($p < .001$)	0.04 ($p = .97$)	0.00
Reactance IAT	0.33 (0.06)	-0.04 (0.10)	5.24 ($p < .001$)	-0.43 ($p = .74$)	-0.03
Influence awareness IAT	0.40 (0.07)	-0.11 (0.09)	5.80 ($p < .001$)	-1.28 ($p = .25$)	-0.10

Table E2. *Individual components for the indirect effects in the EC information simple mediation models.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	

IAT scores					
Regularity awareness	1.77 (0.05)	0.37 (0.15)	34.03 (p <.001)	2.41 (p =.019)	1.08
Influence awareness IAT	0.97 (0.08)	0.20 (0.07)	12.30 (p <.001)	2.86 (p = .006)	0.32
Demand compliance IAT	0.50 (0.07)	0.15 (0.07)	7.03 (p <.001)	2.12 (p = .039)	0.12
Hypothesis awareness IAT	0.46 (0.07)	0.02 (0.07)	6.66 (p <.001)	0.32 (p = .75)	0.01
Reactance IAT	0.30 (0.06)	-0.09 (0.10)	5.08 (p <.001)	-0.90 (p = .39)	-0.04
Self-reported evaluation scores					
Regularity awareness	1.77 (0.05)	1.94 (0.70)	34.03 (p <.001)	2.76 (p =.009)	1.01
Influence awareness self-report	0.89 (0.08)	3.40 (0.48)	11.20 (p < .001)	7.10 (p <.001)	0.89
Demand compliance self-report	0.66 (0.08)	2.57 (0.59)	8.62 (p < .001)	4.37 (p <.001)	0.50
Hypothesis awareness self-report	0.80 (0.08)	1.44 (0.55)	9.96 (p <.001)	2.64 (p =.010)	0.34
Reactance self-report	0.50 (0.07)	-1.76 (0.50)	7.10 (p <.001)	-3.55 (p < .001)	-0.26
Behavioral intention scores					
Regularity awareness	1.77 (0.05)	0.25 (0.12)	34.03 (p <.001)	1.99 (p =.052)	0.99
Influence awareness self-report	0.89 (0.08)	0.28 (0.07)	11.20 (p < .001)	3.75 (p <.001)	0.55
Demand compliance self-report	0.66 (0.08)	0.23 (0.08)	8.62 (p <.001)	2.71 (p =.010)	0.34
Hypothesis awareness self-report	0.80 (0.08)	0.04 (0.07)	9.96 (p <.001)	0.52 (p =.62)	0.07
Reactance self-report	0.50 (0.07)	-0.18 (0.07)	7.10 (p < .001)	-2.58 (p =.013)	-0.20

Table E3. *Individual components for the indirect effects in the AA information simple mediation models..*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
IAT scores					
Regularity awareness	1.88 (0.04)	0.38 (0.26)	45.79 (p <.001)	1.47 (p =.14)	1.30
Influence awareness IAT	0.85 (0.08)	0.16 (0.08)	10.33 (p <.001)	2.05 (p = .040)	0.24

Hypothesis awareness IAT	0.34 (0.06)	0.17 (0.10)	5.25 (p <.001)	1.73 (p = .084)	0.17
Demand compliance IAT	0.61 (0.08)	-0.04 (0.09)	7.70 (p <.001)	-0.46 (p = .64)	-0.05
Reactance IAT	0.35 (0.06)	-0.13 (0.10)	5.74 (p <.001)	-1.25 (p = .21)	-0.08
Self-reported evaluation scores					
Influence awareness self-report	1.02 (0.08)	3.91 (0.51)	12.48 (p <.001)	7.67 (p <.001)	0.92
Regularity awareness	1.88 (0.04)	1.76 (1.20)	48.61 (p <.001)	1.47 (p =.14)	0.77
Demand compliance self-report	0.83 (0.08)	3.93 (0.60)	10.19 (p <.001)	6.61 (p <.001)	0.76
Hypothesis awareness self-report	0.53 (0.08)	2.04 (0.69)	7.01 (p <.001)	2.98 (p = .003)	0.25
Reactance self-report	0.50 (0.08)	-0.78 (0.58)	6.59 (p <.001)	-1.35 (p = .18)	-0.09
Behavioral intention scores					
Regularity awareness	1.88 (0.04)	0.32 (0.27)	47.98 (p <.001)	1.20 (p =.23)	0.94
Influence awareness self-report	1.02 (0.09)	0.47 (0.09)	11.84 (p < .001)	5.47 (p =.30)	0.75
Demand compliance self-report	0.83 (0.08)	0.46 (0.09)	10.05 (p <.001)	4.92 (p <.001)	0.60
Hypothesis awareness self-report	0.53 (0.08)	0.24 (0.11)	7.01 (p <.001)	2.21 (p = .027)	0.19
Reactance self-report	0.50 (0.07)	0.11 (0.10)	6.81 (p <.001)	1.06 (p = .30)	0.08

Table E4. *Individual components for the indirect effects in the EC simple mediation models.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
IAT scores					
Regularity awareness	1.51 (0.08)	0.21 (0.11)	18.46 (p <.001)	1.93 (p =.054)	0.55
Influence awareness IAT	1.23 (0.09)	0.14 (0.09)	13.36 (p <.001)	1.58 (p =.12)	0.31
Reactance IAT	0.44 (0.08)	0.05 (0.11)	5.85 (p <.001)	0.48 (p = .63)	0.04
Hypothesis awareness IAT	0.72 (0.09)	0.02 (0.09)	7.89 (p <.001)	0.22 (p = .83)	0.02
Demand compliance IAT	0.44 (0.08)	0.01 (0.10)	5.92 (p <.001)	0.07 (p = .94)	0.01
Self-reported evaluation scores					

Influence awareness self-report	1.39 (0.09)	2.55 (0.45)	16.17 (p <.001)	5.63 (p <.001)	0.92
Regularity awareness	1.51 (0.08)	2.20 (0.61)	18.74 (p < .001)	3.60 (p <.001)	0.86
Demand compliance self-report	0.55 (0.08)	1.66 (0.63)	6.56 (p < .001)	2.64 (p = .008)	0.24
Reactance self-report	0.55 (0.08)	-0.61 (0.53)	6.60 (p <.001)	-1.13 (p = .26)	-0.09
Hypothesis awareness self-report	1.57 (0.08)	-0.23 (1.57)	20.91 (p <.001)	-0.28 (p =.003)	-0.09
Behavioral intention scores					
Regularity awareness	1.51 (0.08)	0.42 (0.12)	18.80 (p <.001)	3.56 (p <.001)	1.08
Influence awareness self-report	1.39 (0.09)	0.27 (0.09)	15.97 (p <.001)	3.10 (p =.002)	0.63
Hypothesis awareness self-report	1.57 (0.07)	0.09 (0.15)	21.28 (p <.001)	0.61 (p =.54)	0.44
Demand compliance self-report	0.55 (0.08)	0.21 (0.11)	6.52 (p <.001)	1.85 (p =.064)	0.20
Reactance self-report	0.55 (0.08)	-0.22 (0.11)	6.82 (p <.001)	-1.87 (p =.049)	-0.21

Table E5. *Individual components for the indirect effects in the AA simple mediation models.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
IAT scores					
Regularity awareness	1.14 (0.09)	0.12 (0.08)	12.07 (p <.001)	1.53 (p =.13)	0.30
Demand compliance IAT	0.37 (0.07)	0.19 (0.11)	5.27 (p <.001)	1.78 (p =.075)	0.15
Influence awareness IAT	0.64 (0.08)	0.07 (0.09)	7.62 (p <.001)	0.78 (p =.44)	0.10
Hypothesis awareness IAT	0.02 (0.01)	0.09 (0.05)	1.10 (p = .27)	1.58 (p = .12)	0.00
Reactance IAT	0.28 (0.06)	-0.11 (0.15)	4.59 (p <.001)	-0.74 (p = .46)	-0.07
Self-reported evaluation scores					
Influence awareness self-report	0.67 (0.09)	1.59 (0.43)	7.57 (p <.001)	3.67 (p <.001)	0.51
Regularity awareness	1.14 (0.09)	0.84 (0.35)	12.69 (p <.001)	2.41 (p =.016)	0.46
Demand compliance self-report	0.44 (0.08)	1.03 (0.59)	5.78 (p <.001)	1.74 (p =.083)	0.22
Hypothesis awareness self-report	0.43 (0.07)	0.59 (0.50)	5.76 (p <.001)	1.17 (p =.24)	0.12

Reactance self-report	0.44 (0.07)	-0.03 (0.35)	5.94 (p <.001)	-0.08 (p = .94)	-0.01
Behavioral intention scores					
Influence awareness self-report	0.67 (0.09)	0.16 (0.07)	7.82 (p <.001)	2.30 (p =.021)	0.31
Regularity awareness	1.14 (0.09)	0.09 (0.06)	12.81 (p <.001)	1.55 (p =.12)	0.29
Hypothesis awareness self-report	0.43 (0.07)	0.09 (0.08)	5.77 (p <.001)	1.10 (p =.27)	0.11
Demand compliance self-report	0.44 (0.08)	0.07 (0.08)	5.69 (p <.001)	0.96 (p =.34)	0.09
Reactance self-report	0.44 (0.08)	-0.11 (0.04)	5.78 (p <.001)	-2.69 (p =.007)	-0.14

Table E6. *Individual components for the indirect effects in the Persuasion simple mediation models.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
IAT scores					
Regularity awareness	1.82 (0.05)	0.44 (0.10)	36.37 (p < .001)	4.25 (p <.001)	1.50
Influence awareness IAT	1.35 (0.08)	0.05 (0.07)	16.27 (p < .001)	0.82 (p = .41)	0.14
Hypothesis awareness IAT	0.21 (0.05)	0.15 (0.07)	4.08 (p < .001)	2.17 (p = .030)	0.06
Demand compliance IAT	0.56 (0.07)	0.00 (0.08)	7.84 (p < .001)	-0.06 (p = .95)	0.00
Reactance IAT	0.41 (0.07)	-0.12 (0.08)	5.97 (p < .001)	-1.39 (p = .17)	-0.09
Self-reported evaluation scores					
Regularity awareness	1.82 (0.05)	3.97 (0.69)	36.34 (p < .001)	5.75 (p < .001)	1.30
Influence awareness self-report	1.51 (0.08)	3.13 (0.69)	19.88 (p < .001)	4.52 (p < .001)	0.85
Demand compliance self-report	0.69 (0.08)	1.10 (0.56)	8.73 (p < .001)	1.97 (p = .049)	0.14
Hypothesis awareness self-report	0.64 (0.08)	0.68 (0.59)	8.01 (p < .001)	1.15 (p = .25)	0.08
Reactance self-report	0.46 (0.07)	-1.48 (0.66)	6.15 (p <.001)	-2.25 (p = .024)	-0.12
Behavioral intention scores					
Regularity awareness	1.82 (0.05)	0.32 (0.21)	35.63 (p <.001)	1.52 (p =.13)	0.83

Influence awareness self-report	1.51 (0.07)	0.30 (0.10)	20.58 (p <.001)	3.04 (p =.002)	0.65
Hypothesis awareness self-report	0.64 (0.08)	-0.02 (0.10)	8.11 (p < .001)	-0.23 (p = .82)	-0.02
Reactance self-report	0.46 (0.07)	-0.09 (0.12)	6.14 (p < .001)	-0.80 (p = .43)	-0.06
Demand compliance self-report	0.69 (0.08)	-0.07 (0.10)	8.44 (p <.001)	-0.75 (p = .46)	-0.07

Multiple mediation models

Table E7. *Individual components for the indirect effects in the EC information multiple mediation models.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
IAT scores					
Regularity awareness	1.77 (0.06)	0.37 (0.15)	32.36 (p <.001)	2.41 (p =.016)	1.08
Influence awareness IAT	0.97 (0.08)	0.20 (0.07)	12.24 (p < .001)	2.79 (p = .005)	0.32
Self-reported evaluation scores					
Influence awareness self-report	0.89 (0.07)	2.51 (0.54)	10.90 (p < .001)	5.17 (p <.001)	0.65
Regularity awareness	1.77 (0.05)	1.14 (0.78)	33.65 (p <.001)	1.47 (p =.14)	0.60
Demand compliance self-report	0.66 (0.08)	1.62 (0.54)	8.63 (p < .001)	3.20 (p =.002)	0.31
Hypothesis awareness self-report	0.80 (0.08)	0.55 (0.42)	9.74 (p <.001)	1.27 (p =.19)	0.13
Reactance self-report	0.50 (0.07)	-1.69 (0.48)	7.00 (p <.001)	-3.52 (p < .001)	-0.25
Behavioral intention scores					
Influence awareness self-report	0.89 (0.08)	0.21 (0.09)	10.60 (p < .001)	2.83 (p = .005)	0.42
Demand compliance self-report	0.66 (0.08)	0.16 (0.08)	8.83 (p <.001)	2.00 (p =.046)	0.24
Reactance self-report	0.50 (0.07)	-0.17 (0.07)	7.00 (p < .001)	-2.68 (p =.007)	-0.19

Table E8. *Individual components for the indirect effects in the AA information multiple mediation models.*

	Estimate (SE)	*Z (p-value)*	ab_{ps}

	Component a	*Component b*	*Component a*	*Component b*	
Self-reported evaluation scores					
Influence awareness self-report	1.02 (0.08)	2.66 (0.52)	12.29 (p <.001)	5.11 (p <.001)	0.63
Demand compliance self-report	0.83 (0.08)	2.80 (0.57)	10.06 (p <.001)	4.94 (p <.001)	0.54
Hypothesis awareness self-report	0.53 (0.07)	1.08 (0.56)	7.41 (p <.001)	1.92 (p = .055)	0.13
Behavioral intention scores					
Influence awareness self-report	1.02 (0.09)	0.35 (0.10)	11.73 (p < .001)	3.69 (p <.001)	0.56
Demand compliance self-report	0.83 (0.09)	0.32 (0.10)	9.56 (p <.001)	3.14 (p = .002)	0.42

Table E9. *Individual components for the indirect effects in the EC multiple mediation models.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Self-reported evaluation scores					
Influence awareness self-report	1.39 (0.08)	2.01 (0.54)	16.47 (p <.001)	3.71 (p <.001)	0.72
Regularity awareness	1.51 (0.08)	1.65 (0.68)	18.42 (p < .001)	2.42 (p =.015)	0.64
Demand compliance self-report	0.55 (0.08)	1.12 (0.64)	6.57 (p < .001)	1.75 (p = .081)	0.16
Behavioral intention scores					
Regularity awareness	1.51 (0.08)	0.37 (0.12)	18.64 (p <.001)	3.07 (p =.002)	0.97
Influence awareness self-report	1.39 (0.09)	0.19 (0.09)	15.92 (p <.001)	2.09 (p =.036)	0.45

Table E10. *Individual components for the indirect effects in the AA multiple mediation models.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Self-reported evaluation scores					
Influence awareness self-report	0.67 (0.08)	1.51 (0.41)	8.01 (p <.001)	3.70 (p < .001)	0.49
Regularity awareness	1.14 (0.09)	0.65 (0.31)	12.97 (p <.001)	2.13 (p =.033)	0.36
Behavioral intention scores					

Reactance self-report	0.44 (0.08)	-0.11 (0.04)	5.89 (p <.001)	-2.78 (p =.005)	-0.14

Table E11. *Individual components for the indirect effects in the Persuasion multiple mediation models.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
IAT scores					
Regularity awareness	1.82 (0.05)	0.44 (0.11)	37.03 (p < .001)	4.59 (p <.001)	1.50
Self-reported evaluation scores					
Regularity awareness	1.82 (0.05)	3.19 (0.74)	37.89 (p < .001)	4.33 (p < .001)	1.04
Influence awareness self-report	1.51 (0.08)	2.75 (0.67)	21.19 (p < .001)	4.19 (p = .001)	0.74
Behavioral intention scores					
Influence awareness self-report	1.51 (0.07)	0.30 (0.10)	20.50 (p <.001)	3.09 (p =.002)	0.65

Experiment 2

Simple mediation models

Table E-12. *Individual components for the indirect effects in the ME information simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
IAT scores					
Reactance IAT	0.41 (0.05)	0.13 (0.07)	7.62 (p < .001)	1.91 (p = .092)	0.13
Influence awareness IAT	0.44 (0.06)	0.06 (0.06)	7.92 (p < .001)	0.89 (p = .497)	0.06
Regularity awareness	1.02 (0.07)	0.02 (0.06)	15.40 (p < .001)	0.30 (p = .848)	0.04
Demand compliance IAT	0.49 (0.06)	0.01 (0.07)	8.55 (p < .001)	0.11 (p = .927)	0.01
Hypothesis awareness IAT	0.06 (0.02)	-0.07 (0.12)	2.73 (p = .012)	-0.55 (p = .726)	-0.01

Self-reported evaluation scores					
Regularity awareness	1.02 (0.07)	0.48 (0.20)	15.40 ($p < .001$)	2.47 ($p = .024$)	0.34
Influence awareness self-report	0.48 (0.06)	0.54 (0.29)	8.44 ($p < .001$)	1.86 ($p = .098$)	0.18
Demand compliance self-report	0.38 (0.05)	0.08 (0.25)	7.27 ($p < .001$)	0.31 ($p = .848$)	0.02
Hypothesis awareness self-report	0.13 (0.03)	-0.03 (0.32)	4.03 ($p < .001$)	-0.09 ($p = .927$)	-0.00
Reactance self-report	0.46 (0.06)	-0.22 (0.24)	8.14 ($p < .001$)	-0.89 ($p = .497$)	-0.07

Table E-13. *Individual components for the indirect effects in the EC information simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
IAT scores					
Regularity awareness	1.34 (0.07)	0.20 (0.07)	20.32 ($p < .001$)	2.96 ($p = .005$)	0.52
Demand compliance IAT	0.77 (0.07)	0.09 (0.06)	11.24 ($p < .001$)	0.54 ($p = .166$)	0.14
Influence awareness IAT	0.99 (0.07)	0.07 (0.06)	14.13 ($p < .001$)	1.15 ($p = .288$)	0.14
Reactance IAT	0.57 (0.06)	0.04 (0.07)	9.00 ($p < .001$)	0.58 ($p = .623$)	0.04
Hypothesis awareness IAT	0.37 (0.05)	0.02 (0.07)	6.72 ($p < .001$)	0.33 ($p = .742$)	0.02
Self-reported evaluation scores					
Regularity awareness	1.34 (0.07)	1.43 (0.40)	20.32 ($p < .001$)	3.61 ($p < .001$)	0.59
Influence awareness self-report	0.96 (0.07)	1.81 (0.41)	13.60 ($p < .001$)	4.47 ($p < .001$)	0.54
Demand compliance self-report	0.75 (0.07)	1.78 (0.47)	10.97 ($p < .001$)	3.81 ($p < .001$)	0.41
Hypothesis awareness self-report	0.42 (0.06)	0.30 (0.55)	7.27 ($p < .001$)	0.55 ($p = .624$)	0.04
Reactance self-report	0.55 (0.06)	-0.63 (0.46)	8.78 ($p < .001$)	-1.38 ($p = .211$)	-0.11
Behavioral intention scores					
Demand compliance self-report	0.75 (0.07)	0.14 (0.07)	10.97 ($p < .001$)	2.14 ($p = .050$)	0.24
Regularity awareness	1.34 (0.07)	0.08 (0.06)	20.32 ($p < .001$)	1.29 ($p = .238$)	0.23

Influence awareness self-report	0.96 (0.07)	0.10 (0.06)	13.60 ($p < .001$)	1.68 ($p = .134$)	0.22
Hypothesis awareness self-report	0.42 (0.06)	-0.04 (0.08)	7.27 ($p < .001$)	-0.50 ($p = .637$)	-0.04
Reactance self-report	0.55 (0.06)	-0.11 (0.07)	8.78 ($p < .001$)	-1.52 ($p = .166$)	-0.13
Well-known brands					
IAT scores					
Regularity awareness	1.25 (0.07)	0.11 (0.06)	18.46 ($p < .001$)	1.94 ($p = .074$)	0.32
Influence awareness IAT	0.69 (0.07)	0.02 (0.06)	10.41 ($p < .001$)	0.25 ($p = .847$)	0.02
Reactance IAT	0.46 (0.06)	0.01 (0.07)	7.81 ($p < .001$)	0.08 ($p = .939$)	0.01
Hypothesis awareness IAT	0.30 (0.05)	-0.05 (0.08)	6.03 ($p < .001$)	-0.56 ($p = .641$)	-0.03
Demand compliance IAT	0.48 (0.06)	-0.04 (0.06)	8.03 ($p < .001$)	-0.68 ($p = .582$)	-0.05
Self-reported evaluation scores					
Regularity awareness	1.25 (0.07)	0.62 (0.33)	18.46 ($p < .001$)	1.88 ($p = .076$)	0.30
Influence awareness self-report	0.57 (0.06)	1.33 (0.44)	9.13 ($p < .001$)	3.02 ($p = .005$)	0.29
Demand compliance self-report	0.40 (0.06)	1.75 (0.58)	7.14 ($p < .001$)	3.01 ($p = .005$)	0.27
Hypothesis awareness self-report	0.42 (0.06)	1.17 (0.52)	7.36 ($p < .001$)	2.25 ($p = .038$)	0.19
Reactance self-report	0.45 (0.06)	0.94 (0.50)	7.71 ($p < .001$)	1.88 ($p = .076$)	0.17

Table E-14. *Individual components for the indirect effects in the AA information simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
IAT scores					
Regularity awareness	1.37 (0.07)	0.35 (0.06)	20.82 ($p < .001$)	5.70 ($p < .001$)	0.93
Influence awareness IAT	0.90 (0.07)	0.23 (0.06)	12.75 ($p < .001$)	3.71 ($p < .001$)	0.41
Demand compliance IAT	0.72 (0.07)	0.14 (0.07)	10.57 ($p < .001$)	2.02 ($p = .050$)	0.19

Reactance IAT	0.42 (0.06)	0.01 (0.08)	7.28 ($p < .001$)	0.10 ($p = .950$)	0.01
Hypothesis awareness IAT	0.16 (0.04)	-0.03 (0.13)	4.16 ($p < .001$)	-0.23 ($p = .876$)	-0.01
Self-reported evaluation scores					
Regularity awareness	1.37 (0.07)	2.77 (0.41)	20.82 ($p < .001$)	6.73 ($p < .001$)	0.97
Influence awareness self-report	0.90 (0.07)	3.14 (0.45)	12.74 ($p < .001$)	7.02 ($p < .001$)	0.72
Demand compliance self-report	0.73 (0.07)	3.42 (0.49)	10.71 ($p < .001$)	7.06 ($p < .001$)	0.64
Hypothesis awareness self-report	0.52 (0.06)	2.09 (0.57)	8.36 ($p < .001$)	3.64 ($p < .001$)	0.28
Reactance self-report	0.62 (0.07)	-0.00 (0.50)	9.45 ($p < .001$)	-0.01 ($p = .994$)	0.00
Behavioral intention scores					
Regularity awareness	1.37 (0.07)	0.43 (0.07)	20.82 ($p < .001$)	6.03 ($p < .001$)	0.99
Influence awareness self-report	0.90 (0.07)	0.36 (0.07)	12.74 ($p < .001$)	4.82 ($p < .001$)	0.53
Demand compliance self-report	0.73 (0.07)	0.32 (0.09)	10.71 ($p < .001$)	3.72 ($p < .001$)	0.38
Hypothesis awareness self-report	0.52 (0.06)	0.22 (0.09)	8.36 ($p < .001$)	2.35 ($p = .023$)	0.19
Reactance self-report	0.62 (0.07)	-0.15 (0.08)	9.45 ($p < .001$)	-1.81 ($p = .079$)	-0.15
Well-known brands					
IAT scores					
Regularity awareness	1.51 (0.06)	0.09 (0.07)	23.93 ($p < .001$)	1.21 ($p = .268$)	0.30
Influence awareness IAT	0.63 (0.07)	0.12 (0.06)	9.29 ($p < .001$)	1.89 ($p = .083$)	0.17
Demand compliance IAT	0.58 (0.07)	0.08 (0.07)	8.72 ($p < .001$)	1.20 ($p = .268$)	0.10
Reactance IAT	0.41 (0.06)	0.04 (0.07)	6.91 ($p < .001$)	0.58 ($p = .563$)	0.03
Hypothesis awareness IAT	0.16 (0.04)	-0.09 (0.09)	4.04 ($p < .001$)	-1.09 ($p = .304$)	-0.03
Self-reported evaluation scores					
Demand compliance self-report	0.44 (0.06)	1.84 (0.57)	7.24 ($p < .001$)	3.24 ($p = .002$)	0.29
Regularity awareness	1.51 (0.06)	0.51 (0.41)	23.93 ($p < .001$)	1.25 ($p = .268$)	0.28
Influence awareness self-report	0.55 (0.07)	1.38 (0.49)	8.39 ($p < .001$)	2.80 ($p = .008$)	0.27

Hypothesis awareness self-report	0.32 (0.05)	1.45 (0.70)	5.98 ($p < .001$)	2.09 ($p = .057$)	0.17
Reactance self-report	0.47 (0.06)	-0.35 (0.42)	7.65 ($p < .001$)	-0.84 ($p = .421$)	-0.06

Table E-15. *Individual components for the indirect effects in the ME simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
IAT scores					
Regularity awareness	0.95 (0.08)	0.04 (0.06)	12.42 ($p < .001$)	0.96 ($p = .544$)	0.10
Influence awareness IAT	0.58 (0.07)	0.06 (0.06)	8.38 ($p < .001$)	0.98 ($p = .469$)	0.09
Hypothesis awareness IAT	0.10 (0.03)	0.14 (0.11)	3.08 ($p = .004$)	1.34 ($p = .303$)	0.04
Reactance IAT	0.39 (0.06)	-0.01 (0.08)	6.48 ($p < .001$)	-0.17 ($p = .868$)	-0.01
Demand compliance IAT	0.45 (0.06)	-0.06 (0.07)	7.02 ($p < .001$)	-0.80 ($p = .527$)	-0.07

Table E-16. *Individual components for the indirect effects in the EC simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
IAT scores					
Regularity awareness	1.29 (0.07)	0.32 (0.07)	17.56 ($p < .001$)	4.70 ($p < .001$)	0.79
Influence awareness IAT	0.95 (0.08)	0.17 (0.07)	12.43 ($p < .001$)	2.64 ($p = .010$)	0.32
Reactance IAT	0.54 (0.07)	0.15 (0.08)	7.98 ($p < .001$)	1.90 ($p = .071$)	0.16
Demand compliance IAT	0.56 (0.07)	0.06 (0.08)	8.22 ($p < .001$)	0.74 ($p = .477$)	0.06
Hypothesis awareness IAT	0.43 (0.06)	-0.03 (0.07)	6.94 ($p < .001$)	-0.40 ($p = .691$)	-0.03
Self-reported evaluation scores					
Influence awareness self-report	1.10 (0.08)	2.20 (0.40)	14.47 ($p < .001$)	5.55 ($p < .001$)	0.66

Regularity awareness	1.29 (0.07)	1.85 (0.41)	17.56 ($p < .001$)	4.52 ($p < .001$)	0.65
Hypothesis awareness self-report	1.21 (0.08)	1.23 (0.44)	16.15 ($p < .001$)	2.80 ($p = .007$)	0.41
Demand compliance self-report	0.55 (0.07)	1.47 (0.54)	8.10 ($p < .001$)	2.73 ($p = .010$)	0.22
Reactance self-report	0.65 (0.07)	-0.63 (0.46)	9.16 ($p < .001$)	-1.37 ($p = .183$)	-0.11
Behavioral intention scores					
Regularity awareness	1.29 (0.07)	0.23 (0.08)	17.56 ($p < .001$)	3.11 ($p = .003$)	0.51
Influence awareness self-report	1.10 (0.08)	0.26 (0.07)	14.47 ($p < .001$)	3.66 ($p < .001$)	0.49
Hypothesis awareness self-report	1.21 (0.08)	0.13 (0.08)	16.15 ($p < .001$)	1.72 ($p = .097$)	0.27
Demand compliance self-report	0.55 (0.07)	0.14 (0.08)	8.10 ($p < .001$)	1.73 ($p = .097$)	0.14
Reactance self-report	0.65 (0.07)	-0.13 (0.08)	9.16 ($p < .001$)	-1.71 ($p = .097$)	-0.14
Well-known brands					
IAT scores					
Demand compliance IAT	0.53 (0.07)	0.16 (0.06)	7.96 ($p < .001$)	2.62 ($p = .014$)	0.21
Influence awareness IAT	0.59 (0.07)	0.09 (0.06)	8.63 ($p < .001$)	1.48 ($p = .199$)	0.13
Regularity awareness	1.38 (0.07)	0.03 (0.06)	19.84 ($p < .001$)	0.50 ($p = .686$)	0.10
Reactance IAT	0.54 (0.07)	0.06 (0.06)	8.06 ($p < .001$)	1.00 ($p = .425$)	0.08
Hypothesis awareness IAT	0.47 (0.06)	0.04 (0.06)	7.37 ($p < .001$)	0.58 ($p = .659$)	0.04
Self-reported evaluation scores					
Influence awareness self-report	0.54 (0.07)	2.08 (0.45)	8.17 ($p < .001$)	4.68 ($p < .001$)	0.44
Demand compliance self-report	0.35 (0.06)	2.90 (0.54)	6.22 ($p < .001$)	5.42 ($p < .001$)	0.40
Reactance self-report	0.69 (0.07)	0.35 (0.40)	9.68 ($p < .001$)	0.89 ($p = .469$)	0.10
Hypothesis awareness self-report	1.17 (0.07)	-0.06 (0.37)	15.77 ($p < .001$)	-0.15 ($p = .881$)	-0.03
Regularity awareness	1.38 (0.07)	-0.06 (0.41)	19.84 ($p < .001$)	-0.15 ($p = .881$)	-0.03

Table E-17. *Individual components for the indirect effects in the AA simple mediation models in Experiment 2.*

	Estimate (SE)	*Z (p-value)*	ab_{ps}

	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
IAT scores					
Regularity awareness	1.07 (0.06)	0.35 (0.05)	16.71 ($p < .001$)	6.47 ($p < .001$)	0.82
Influence awareness IAT	0.60 (0.06)	0.14 (0.06)	10.06 ($p < .001$)	2.21 ($p = .035$)	0.18
Reactance IAT	0.44 (0.05)	0.10 (0.08)	8.17 ($p < .001$)	1.32 ($p = .199$)	0.09
Demand compliance IAT	0.62 (0.06)	0.04 (0.06)	10.46 ($p < .001$)	0.71 ($p = .494$)	0.06
Hypothesis awareness IAT	0.03 (0.02)	-0.26 (0.12)	2.02 ($p = .054$)	-2.22 ($p = .035$)	-0.02
Self-reported evaluation scores					
Regularity awareness	1.07 (0.06)	1.43 (0.26)	16.71 ($p < .001$)	5.53 ($p < .001$)	0.72
Influence awareness self-report	0.64 (0.06)	1.20 (0.36)	10.59 ($p < .001$)	3.39 ($p = .002$)	0.36
Demand compliance self-report	0.51 (0.06)	0.89 (0.39)	9.08 ($p < .001$)	2.29 ($p = .031$)	0.22
Reactance self-report	0.55 (0.06)	0.59 (0.36)	9.48 ($p < .001$)	1.65 ($p = .115$)	0.15
Hypothesis awareness self-report	0.29 (0.05)	0.75 (0.42)	6.41 ($p < .001$)	1.78 ($p = .091$)	0.10
Behavioral intention scores					
Regularity awareness	1.07 (0.06)	0.23 (0.04)	16.71 ($p < .001$)	5.41 ($p < .001$)	0.70
Influence awareness self-report	0.64 (0.06)	0.26 (0.06)	10.59 ($p < .001$)	4.25 ($p < .001$)	0.47
Hypothesis awareness self-report	0.29 (0.05)	0.19 (0.07)	6.41 ($p < .001$)	2.61 ($p = .013$)	0.16
Demand compliance self-report	0.51 (0.06)	0.09 (0.06)	9.08 ($p < .001$)	1.44 ($p = .167$)	0.13
Reactance self-report	0.55 (0.06)	0.02 (0.05)	9.48 ($p < .001$)	0.32 ($p = .753$)	0.03
Well-known brands					
IAT scores					
Regularity awareness	1.25 (0.06)	0.12 (0.05)	19.69 ($p < .001$)	2.31 ($p = .003$)	0.36
Demand compliance IAT	0.49 (0.06)	0.09 (0.06)	8.71 ($p < .001$)	1.49 ($p = .153$)	0.10
Influence awareness IAT	0.36 (0.05)	0.11 (0.07)	7.34 ($p < .001$)	1.48 ($p = .153$)	0.10

Reactance IAT	0.35 (0.05)	0.15 (0.06)	7.12 ($p < .001$)	2.37 ($p = .030$)	0.12
Hypothesis awareness IAT	0.06 (0.02)	-0.18 (0.13)	2.68 ($p = .014$)	-1.39 ($p = .166$)	-0.03

Table E-18. *Individual components for the indirect effects in the Persuasion simple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
IAT scores					
Regularity awareness	1.18 (0.07)	0.23 (0.06)	16.52 ($p < .001$)	3.70 ($p < .001$)	0.60
Influence awareness IAT	0.69 (0.07)	0.08 (0.07)	9.99 ($p < .001$)	1.25 ($p = .278$)	0.13
Reactance IAT	0.45 (0.06)	0.04 (0.07)	7.42 ($p < .001$)	0.63 ($p = .587$)	0.05
Hypothesis awareness IAT	0.15 (0.03)	0.06 (0.11)	3.40 ($p = .002$)	0.54 ($p = .628$)	0.02
Demand compliance IAT	0.64 (0.07)	-0.01 (0.06)	9.42 ($p < .001$)	-0.08 ($p = .937$)	-0.01
Self-reported evaluation scores					
Regularity awareness	1.18 (0.07)	2.32 (0.32)	16.52 ($p < .001$)	7.21 ($p < .001$)	0.99
Influence awareness self-report	0.94 (0.07)	1.37 (0.36)	12.90 ($p < .001$)	3.80 ($p < .001$)	0.48
Hypothesis awareness self-report	0.46 (0.06)	0.99 (0.39)	7.44 ($p < .001$)	2.52 ($p = .018$)	0.16
Reactance self-report	0.53 (0.07)	0.26 (0.39)	8.27 ($p < .001$)	0.67 ($p = .579$)	0.05
Demand compliance self-report	0.58 (0.07)	0.09 (0.45)	8.84 ($p < .001$)	0.21 ($p = .862$)	0.02
Behavioral intention scores					
Regularity awareness	1.18 (0.07)	0.41 (0.07)	16.52 ($p < .001$)	6.19 ($p < .001$)	0.95
Influence awareness self-report	0.94 (0.07)	0.15 (0.07)	12.90 ($p < .001$)	2.00 ($p = .064$)	0.27
Hypothesis awareness self-report	0.46 (0.06)	0.09 (0.07)	7.44 ($p < .001$)	1.29 ($p = .267$)	0.08
Reactance self-report	0.53 (0.07)	0.06 (0.09)	8.27 ($p < .001$)	0.69 ($p = .579$)	0.06
Demand compliance self-report	0.58 (0.07)	-0.10 (0.09)	8.84 ($p < .001$)	-1.10 ($p = .338$)	-0.11

Multiple mediation models

Table E-19. *Individual components for the indirect effects in the EC information multiple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
Self-reported evaluation scores					
Regularity awareness	1.34 (0.07)	1.09 (0.41)	20.32 ($p < .001$)	2.65 ($p = .008$)	0.45
Influence awareness self-report	0.96 (0.07)	1.18 (0.41)	13.60 ($p < .001$)	2.90 ($p = .005$)	0.35
Demand compliance self-report	0.75 (0.07)	1.32 (0.45)	10.97 ($p < .001$)	2.91 ($p = .005$)	0.31
Well-known brands					
Self-reported evaluation scores					
Influence awareness self-report	0.40 (0.06)	1.38 (0.60)	7.14 ($p < .001$)	2.32 ($p = .027$)	0.22
Demand compliance self-report	0.57 (0.06)	0.85 (0.43)	9.13 ($p < .001$)	1.96 ($p = .050$)	0.19

Table E-20 *Individual components for the indirect effects in the AA information multiple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
IAT scores					
Regularity awareness	1.37 (0.07)	0.32 (0.06)	20.82 ($p < .001$)	5.04 ($p < .001$)	0.86
Influence awareness IAT	0.90 (0.07)	0.20 (0.06)	12.75 ($p < .001$)	3.24 ($p = .001$)	0.35
Self-reported evaluation scores					
Influence awareness self-report	1.37 (0.07)	1.64 (0.47)	20.82 ($p < .001$)	3.47 ($p = .001$)	0.58
Regularity awareness	0.73 (0.07)	2.16 (0.50)	10.71 ($p < .001$)	4.30 ($p = .001$)	0.40
Demand compliance self-report	0.90 (0.07)	1.62 (0.46)	12.74 ($p < .001$)	3.52 ($p < .001$)	0.37

Hypothesis awareness self-report	0.52 (0.06)	0.52 (0.53)	8.36 ($p < .001$)	0.98 ($p = .345$)	0.07
Behavioral intention scores					
Regularity awareness	1.37 (0.07)	0.33 (0.09)	20.82 ($p < .001$)	3.76 ($p < .001$)	0.76
Influence awareness self-report	0.90 (0.07)	0.20 (0.09)	12.74 ($p < .001$)	2.28 ($p = .026$)	0.30
Demand compliance self-report	0.73 (0.07)	0.14 (0.09)	10.71 ($p < .001$)	1.51 ($p = .146$)	0.17
Hypothesis awareness self-report	0.52 (0.06)	0.03 (0.09)	8.36 ($p < .001$)	0.31 ($p = .754$)	0.02
Well-known brands					
Self-reported evaluation scores					
Influence awareness self-report	0.44 (0.06)	1.49 (0.54)	7.24 ($p < .001$)	2.73 ($p = .008$)	0.23
Demand compliance self-report	0.55 (0.07)	0.82 (0.44)	8.39 ($p < .001$)	1.85 ($p = .064$)	0.16

Table E-21. *Individual components for the indirect effects in the EC multiple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
IAT scores					
Regularity awareness	1.29 (0.07)	0.30 (0.07)	17.55 ($p < .001$)	4.39 ($p < .001$)	0.74
Influence awareness IAT	0.95 (0.08)	0.13 (0.06)	12.43 ($p < .001$)	2.08 ($p = .043$)	0.24
Self-reported evaluation scores					
Influence awareness self-report	1.10 (0.08)	1.67 (0.41)	14.47 ($p < .001$)	4.03 ($p < .001$)	0.50
Regularity awareness	1.29 (0.07)	1.20 (0.44)	17.55 ($p < .001$)	2.74 ($p = .008$)	0.42
Demand compliance self-report	1.21 (0.07)	0.56 (0.43)	16.15 ($p < .001$)	1.28 ($p = .199$)	0.18
Hypothesis awareness self-report	0.55 (0.07)	0.74 (0.56)	8.10 (p < .001)	1.30 (p = .199)	0.11
Behavioral intention scores					
Influence awareness self-report	1.10 (0.08)	0.23 (0.07)	14.47 (p < .001)	3.11 (p = .003)	0.42

Regularity awareness	1.29 (0.07)	0.18 (0.08)	17.55 (p < .001)	2.42 (p = .019)	0.40
Well-known brands					
IAT scores					
Demand compliance IAT	0.53 (0.07)	0.16 (0.06)	7.96 (*p* < .001)	2.61 (*p* = .009)	0.21
Self-reported evaluation scores					
Demand compliance self-report	0.35 (0.06)	2.31 (0.53)	6.22 (*p* < .001)	4.37 (*p* < .001)	0.32
Influence awareness self-report	0.54 (0.07)	1.30 (0.41)	8.17 (*p* < .001)	3.20 (*p* = .002)	0.28

Table E-22. *Individual components for the indirect effects in the AA multiple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
IAT scores					
Regularity awareness	1.07 (0.06)	0.35 (0.05)	16.71 (*p* < .001)	6.47 (*p* < .001)	0.82
Self-reported evaluation scores					
Regularity awareness	1.07 (0.06)	1.29 (0.26)	16.71 (*p* < .001)	5.03 (*p* < .001)	0.65
Influence awareness self-report	0.64 (0.06)	1.00 (0.34)	10.59 (*p* < .001)	2.99 (*p* = .003)	0.30
Behavioral intention scores					
Regularity awareness	1.07 (0.06)	0.18 (0.04)	16.71 (*p* < .001)	4.76 (*p* < .001)	0.55
Influence awareness self-report	0.64 (0.06)	0.22 (0.05)	10.59 (*p* < .001)	4.17 (*p* < .001)	0.41
Hypothesis awareness self-report	0.29 (0.05)	0.14 (0.07)	6.41 (*p* < .001)	2.08 (*p* = .037)	0.11
Well-known brands					
IAT scores					
Regularity awareness	1.25 (0.06)	0.13 (0.05)	19.69 (*p* < .001)	2.52 (*p* = .012)	0.39
Reactance IAT	0.35 (0.05)	0.16 (0.06)	7.12 (*p* < .001)	2.60 (*p* = .012)	0.13

Table E-23. *Individual components for the indirect effects in the Persuasion multiple mediation models in Experiment 2.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	Component a	*Component b*	*Component a*	*Component b*	
Novel brands					
IAT scores					
Regularity awareness	1.18 (0.07)	0.23 (0.06)	16.51 ($p < .001$)	3.70 ($p < .001$)	0.60
Self-reported evaluation scores					
Regularity awareness	1.18 (0.07)	2.16 (0.33)	16.52($p < .001$)	6.61 ($p < .001$)	0.92
Influence awareness self-report	0.94 (0.07)	1.13 (0.33)	12.90 ($p < .001$)	3.45 ($p = .001$)	0.38
Hypothesis awareness self-report	0.46 (0.06)	0.16 (0.36)	7.11 ($p < .001$)	0.44 ($p = .662$)	0.03
Behavioral intention scores					
Regularity awareness	1.18 (0.07)	0.41 (0.07)	16.51 ($p < .001$)	6.19 ($p < .001$)	0.95

Appendix F: Results of additional moderation analyses for IAT scores

Because awareness questions for the IAT referred to IAT performance, it is possible that participants did not understand what was meant with this term (e.g., the difference in response latency between the different pairing conditions or automatic evaluation more generally). As a result, there may be weaker relations between evaluative learning and awareness for IAT scores. To test this idea, we assessed the relations between awareness questions that referred to the self-reported ratings and the effects of the evaluative learning procedure on the IAT. The results are reported in the tables below.

Experiment 1

Table F-1. *Rank ordered results for the magnitude of direct and indirect effects in the ME information mediation models for IAT scores and all beliefs.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
IAT scores					
Contingency awareness	0.36 (0.22)	-0.07 (0.23)	1.66 (p = .20)	-0.28 (p = .97)	0.83
Demand compliance self-report	0.02 (0.04)	0.27 (0.08)	0.62 (p = .83)	3.61 (p < .001)	0.05
Hypothesis awareness self-report	0.00 (0.03)	0.29 (0.08)	0.05 (p = .97)	3.65 (p < .001)	0.00
Demand compliance IAT	0.00 (0.04)	0.29 (0.07)	0.04 (p = .97)	3.99 (p < .001)	0.00
Reactance self-report	-0.01 (0.04)	0.30 (0.08)	-0.13 (p = .97)	3.96 (p < .001)	-0.01
Influence awareness self-report	-0.01 (0.03)	0.30 (0.07)	-0.23 (p = .97)	4.11 (p < .001)	-0.02
Reactance IAT	-0.01 (0.03)	0.31 (0.07)	-0.43 (p = .94)	4.20 (p < .001)	-0.03
Influence awareness IAT	-0.04 (0.04)	0.34 (0.08)	-1.22 (p = .37)	4.17 (p < .001)	-0.10

Table F-2. *Rank ordered results for the magnitude of direct and indirect effects in the EC information mediation models for IAT scores and all beliefs.*

	Estimate (SE)	*Z (p-value)*	ab_{ps}

	ind	*dir*	*ind*	*dir*	
IAT scores					
Contingency awareness	0.65 (0.28)	0.19 (0.30)	2.36 (p =.034)	0.63 (p =.64)	1.08
Influence awareness IAT	0.19 (0.07)	0.65 (0.11)	2.77 (p =.014)	6.07 (p < .001)	0.32
Influence awareness self-report	0.19 (0.07)	0.65 (0.10)	2.81 (p =.013)	6.25 (p < .001)	0.31
Demand compliance self-report	0.15 (0.05)	0.69 (0.09)	3.18 (p =.003)	7.42 (p < .001)	0.25
Hypothesis awareness self-report	0.09 (0.06)	0.75 (0.09)	1.58 (p =.17)	8.14 (p < .001)	0.15
Demand compliance IAT	0.08 (0.04)	0.76 (0.09)	2.04 (p =.073)	8.96 (p < .001)	0.12
Hypothesis awareness IAT	0.01 (0.03)	0.83 (0.09)	0.32 (p =.78)	9.62 (p < .001)	0.01
Reactance self-report	0.00 (0.04)	0.84 (0.08)	-0.06 (p =.95)	10.39 (p < .001)	0.00
Reactance IAT	-0.03 (0.03)	0.86 (0.08)	-0.88 (p =.48)	11.11 (p < .001)	-0.04

Table F-3. *Rank ordered results for the magnitude of direct and indirect effects in the AA information mediation models for IAT scores and all beliefs.*

	Estimate		*Z*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
IAT scores					
Contingency awareness	0.72 (0.49)	-0.08 (0.51)	1.47 (p =.19)	-0.17 (p =.94)	1.30
Influence awareness self-report	0.19 (0.08)	0.44 (0.11)	2.37 (p =.030)	3.99 (p < .001)	0.34
Influence awareness IAT	0.13 (0.07)	0.52 (0.10)	2.02 (p =.066)	4.98 (p < .001)	0.24
Hypothesis awareness self-report	0.11 (0.05)	0.53 (0.09)	2.28 (p =.038)	5.92 (p < .001)	0.19
Hypothesis awareness IAT	0.06 (0.03)	0.58 (0.09)	1.69 (p =.13)	6.61 (p < .001)	0.17
Demand compliance self-report	0.07 (0.07)	0.56 (0.09)	1.13 (p =.31)	5.94 (p < .001)	0.13
Reactance self-report	0.00 (0.04)	0.63 (0.09)	0.04 (p =.99)	6.80 (p < .001)	0.00
Demand compliance IAT	-0.03 (0.05)	0.66 (0.09)	-0.48 (p =.69)	7.65 (p < .001)	-0.05
Reactance IAT	-0.04 (0.04)	0.68 (0.08)	-1.19 (p =.30)	8.01 (p < .001)	-0.08

Table F-4. *Rank ordered results for the magnitude of direct and indirect effects in the EC mediation models for IAT scores and all beliefs.*

	Estimate		*Z*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
IAT scores					
Contingency awareness	0.31 (0.17)	0.34 (0.20)	1.86 (p =.11)	1.75 (p =.13)	0.55
Influence awareness self-report	0.25 (0.13)	0.40 (0.17)	1.89 (p =.10)	2.43 (p =.032)	0.45
Influence awareness IAT	0.17 (0.11)	0.48 (0.14)	1.56 (p =.19)	3.47 (p =.003)	0.31
Hypothesis awareness self-report	0.15 (0.17)	0.51 (0.19)	0.88 (p =.46)	2.63 (p =.020)	0.27
Demand compliance self-report	0.05 (0.05)	0.61 (0.10)	0.92 (p =.45)	6.01 (p < .001)	0.08
Reactance IAT	0.02 (0.05)	0.63 (0.10)	0.48 (p =.69)	6.50 (p < .001)	0.04
Hypothesis awareness IAT	0.01 (0.07)	0.64 (0.10)	0.20 (p =.87)	6.29 (p < .001)	0.02
Demand compliance IAT	0.00 (0.04)	0.65 (0.10)	0.08 (p =.95)	6.77 (p < .001)	0.01
Reactance self-report	0.00 (0.05)	0.65 (0.10)	0.07 (p =.95)	6.48 (p < .001)	0.01

Table F-5. *Rank ordered results for the magnitude of direct and indirect effects in the AA mediation models for IAT scores and all beliefs.*

	Estimate		*Z*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
IAT scores					
Contingency awareness	0.14 (0.09)	0.15 (0.12)	1.53 (p =.20)	1.21 (p =.32)	0.30
Influence awareness self-report	0.08 (0.05)	0.20 (0.10)	1.51 (p =.20)	2.06 (p =.080)	0.18
Demand compliance IAT	0.07 (0.04)	0.21 (0.09)	1.72 (p =.15)	2.51 (p =.036)	0.15
Hypothesis awareness self-report	0.06 (0.04)	0.22 (0.09)	1.61 (p =.19)	2.44 (p =.039)	0.13
Influence awareness IAT	0.04 (0.06)	0.24 (0.09)	0.74 (p =.51)	2.61 (p =.030)	0.10
Reactance self-report	0.03 (0.04)	0.26 (0.09)	0.62 (p =.56)	2.92 (p =.012)	0.06
Hypothesis awareness IAT	0.01 (0.01)	0.28 (0.08)	0.75 (p =.51)	3.54 (p < .001)	0.00

Demand compliance self-report	-0.01 (0.04)	0.29 (0.09)	-0.17 (p =.89)	3.25 (p =.006)	-0.02
Reactance IAT	-0.03 (0.04)	0.32 (0.08)	-0.74 (p =.51)	4.04 (p < .001)	-0.07

Table F-6. *Rank ordered results for the magnitude of direct and indirect effects in the persuasion mediation models for IAT scores and all beliefs.*

	Estimate		*Z*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
IAT scores					
Contingency awareness	0.81 (0.19)	-0.08 (0.19)	4.34 (p < .001)	-0.42 (p =.73)	1.50
Influence awareness self-report	0.20 (0.12)	0.53 (0.13)	1.74 (p =.12)	4.20 (p < .001)	0.37
Demand compliance self-report	0.13 (0.05)	0.60 (0.08)	2.44 (p =.027)	7.44 (p < .001)	0.24
Influence awareness IAT	0.07 (0.09)	0.65 (0.10)	0.83 (p =.48)	6.88 (p < .001)	0.14
Hypothesis awareness self-report	0.06 (0.05)	0.66 (0.08)	1.13 (p =.33)	8.87 (p < .001)	0.11
Hypothesis awareness IAT	0.03 (0.02)	0.69 (0.08)	1.93 (p =.088)	9.05 (p < .001)	0.06
Demand compliance IAT	0.00 (0.04)	0.73 (0.08)	-0.06 (p =.95)	9.11 (p < .001)	0.00
Reactance self-report	-0.01 (0.04)	0.74 (0.08)	-0.33 (p =.78)	9.36 (p < .001)	-0.02
Reactance IAT	-0.05 (0.03)	0.77 (0.08)	-1.40 (p =.22)	9.90 (p < .001)	-0.09

Experiment 2

Table F-7. *Rank ordered results for the magnitude of direct and indirect effects in the ME information mediation models for IAT scores and all beliefs.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Influence awareness self-report	0.06 (0.03)	0.04 (0.07)	2.19 (p = .051)	0.59 (p =.60)	0.15
Reactance IAT	0.06 (0.03)	0.05 (0.06)	1.86 (p = .20)	0.78 (p = .63)	0.13

Reactance self-report	0.05 (0.03)	0.06 (0.06)	1.55 (p =.20)	0.88 (p = .44)	0.11
Influence awareness IAT	0.02 (0.03)	0.08 (0.06)	0.89 (p = .58)	1.22 (p =.45)	0.06
Regularity awareness	0.02 (0.06)	0.09 (0.07)	0.30 (p = .90)	1.16 (p = .45)	0.04
Demand compliance self-report	0.01 (0.03)	0.09 (0.06)	0.35 (p = .89)	1.48 (p =.22)	0.02
Demand compliance IAT	0.00 (0.03)	0.10 (0.06)	0.11 (p = .93)	1.60 (p = .28)	0.01
Hypothesis awareness self-report	-0.00 (0.02)	0.11 (0.06)	-0.28 (p =.85)	1.86 (p =.20)	-0.00
Hypothesis awareness IAT	-0.00 (0.01)	0.11 (0.06)	-0.54 (p = .79)	1.88 (p = .20)	-0.01
Demand compliance self-report	0.01 (0.03)	0.09 (0.06)	0.35 (p = .89)	1.48 (p =.22)	0.02
Hypothesis awareness self-report	-0.00 (0.02)	0.11 (0.06)	-0.28 (p =.85)	1.86 (p =.20)	-0.00

Table F-8. *Rank ordered results for the magnitude of direct and indirect effects in the EC information mediation models for IAT scores and all beliefs.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.26 (0.09)	0.26 (0.11)	2.93 (p = .007)	2.27 (p = .043)	0.52
Influence awareness self-report	0.14 (0.06)	0.38 (0.09)	2.45 (p = .041)	4.47 (p <.001)	0.29
Demand compliance self-report	0.08 (0.05)	0.44 (0.08)	1.73 (p = .15)	5.73 (p <.001)	0.15
Demand compliance IAT	0.07 (0.05)	0.45 (0.08)	1.52 (p = .18)	5.61 (p < .001)	0.14
Influence awareness IAT	0.07 (0.06)	0.45 (0.09)	1.15 (p = .29)	5.20 (p <.001)	0.14
Reactance IAT	0.02 (0.04)	0.50 (0.07)	0.58 (p = .62)	6.77 (p < .001)	0.04
Reactance self-report	0.02 (0.04)	0.51 (0.07)	0.42 (p =.75)	6.90 (p < .001)	0.03
Hypothesis awareness IAT	0.01 (0.03)	0.51 (0.07)	0.33 (p = .74)	7.46 (p < .001)	0.02
Hypothesis awareness self-report	0.01 (0.03)	0.51 (0.07)	0.28 (p =.77)	7.33 (p <.001)	0.02
Well-known brands					

IAT scores					
Regularity awareness	0.14 (0.07)	0.17 (0.09)	1.93 (p = .095)	1.89 (p = .095)	0.32
Reactance self-report	0.03 (0.03)	0.29 (0.06)	0.77 (p =.55)	4.50 (p < .001)	0.04
Influence awareness IAT	0.01 (0.04)	0.30 (0.07)	0.25 (p = .85)	4.31 (p <.001)	0.02
Reactance IAT	0.00 (0.03)	0.31 (0.06)	0.08 (p = .94)	4.84 (p < .001)	0.01
Demand compliance self-report	-0.00 (0.03)	0.32 (0.06)	-0.12 (p = .98)	5.00 (p < .001)	0.00
Hypothesis awareness self-report	-0.01 (0.03)	0.32 (0.06)	-0.30 (p = .87)	5.03 (p <.001)	-0.01
Influence awareness self-report	-0.01 (0.04)	0.32 (0.07)	-0.16 (p = .95)	4.76 (p <.001)	-0.01
Hypothesis awareness IAT	-0.01 (0.03)	0.33 (0.06)	-0.56 (p = .64)	5.31 (p < .001)	-0.03
Demand compliance IAT	-0.02 (0.03)	0.33 (0.07)	-0.68 (p = .59)	4.93 (p < .001)	-0.05

Table F-9. *Rank ordered results for the magnitude of direct and indirect effects in the AA information mediation models for IAT scores and all beliefs.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.47 (0.09)	-0.01 (0.09)	5.50 (p < .001)	-0.11 (p = .95)	0.93
Influence awareness self-report	0.27 (0.06)	0.20 (0.08)	4.53 (p < .001)	2.45 (p =.021)	0.50
Influence awareness IAT	0.21 (0.06)	0.26 (0.08)	3.56 (p < .001)	3.10 (p =.003)	0.41
Demand compliance self-report	0.10 (0.05)	0.36 (0.08)	1.96 (p = .060)	4.74 (p <.001)	0.19
Demand compliance IAT	0.10 (0.05)	0.37 (0.08)	1.98 (p = .061)	4.67 (p < .001)	0.19
Hypothesis awareness self-report	0.06 (0.04)	0.41 (0.08)	1.51 (p =.20)	5.45 (p <.001)	0.10
Reactance IAT	0.00 (0.03)	0.46 (0.07)	0.10 (p = .95)	6.41 (p < .001)	0.01
Hypothesis awareness IAT	-0.01 (0.02)	0.47 (0.07)	-0.23 (p = .91)	7.02 (p < .001)	-0.01
Reactance self-report	-0.05 (0.05)	0.51 (0.07)	-1.14 (p =.39)	6.91 (p < .001)	-0.09

Well-known brands

IAT scores

Regularity awareness	0.13 (0.11)	0.09 (0.13)	1.21 (p = .31)	0.73 (p = .49)	0.30
Influence awareness IAT	0.07 (0.04)	0.15 (0.08)	1.86 (p = .13)	1.90 (p =.13)	0.17
Demand compliance self-report	0.06 (0.03)	0.48 (0.38)	1.68 (p = .18)	2.41 (p =.049)	0.13
Reactance self-report	0.05 (0.03)	0.18 (0.07)	1.46 (p =.22)	2.41 (p = .049)	0.10
Demand compliance IAT	0.05 (0.04)	0.18 (0.08)	1.19 (p = .31)	2.40 (p = .053)	0.10
Influence awareness self-report	0.04 (0.03)	0.18 (0.07)	1.18 (p = .31)	2.47 (p =.046)	0.08
Hypothesis awareness self-report	0.03 (0.03)	0.19 (0.07)	1.12 (p = .32)	2.87 (p =.019)	0.06
Reactance IAT	0.02 (0.03)	0.21 (0.07)	0.58 (p = .57)	2.87 (p = .020)	0.03
Hypothesis awareness IAT	-0.02 (0.01)	0.24 (0.07)	-1.06 (p = .37)	3.63 (p < .001)	-0.03

Table F-10. *Rank ordered results for the magnitude of direct and indirect effects in the ME mediation models for IAT scores and all beliefs.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.04 (0.05)	0.13 (0.08)	0.69 (p = .55)	1.60 (p = .22)	0.10
Influence awareness IAT	0.04 (0.04)	0.13 (0.07)	0.97 (p = .47)	1.87 (p =.15)	0.09
Hypothesis awareness self-report	0.00 (0.02)	0.16 (0.06)	0.07 (p = .97)	2.72 (p = .030)	0.04
Hypothesis awareness IAT	0.02 (0.01)	0.15 (0.06)	1.20 (p = .38)	2.56 (p = .033)	0.04
Reactance IAT	-0.01 (0.03)	0.17 (0.06)	-0.17 (p = .87)	2.74 (p = .030)	-0.01
Influence awareness self-report	-0.02 (0.03)	0.18 (0.07)	-0.48 (p = .63)	2.62 (p =.032)	-0.04
Reactance self-report	-0.02 (0.04)	0.19 (0.06)	-0.17 (p = .87)	3.07 (p = .028)	-0.04
Demand compliance IAT	-0.03 (0.03)	0.19 (0.06)	0.80 (p = .53)	3.02 (p = .030)	-0.07

Demand compliance self-report	-0.06 (0.02)	0.22 (0.06)	-2.45 (p = .045)	3.65 (p = .009)	-0.13

Table F-11. *Rank ordered results for the magnitude of direct and indirect effects in the EC mediation models for IAT scores and all beliefs.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.41 (0.09)	0.12 (0.11)	4.52 (p < .001)	1.11 (p = .31)	0.79
Influence awareness self-report	0.24 (0.07)	0.29 (0.10)	3.30 (p = .003)	2.98 (p =.007)	0.44
Hypothesis awareness self-report	0.20 (0.08)	0.33 (0.11)	2.39 (p = .040)	2.93 (p =.008)	0.38
Influence awareness IAT	0.17 (0.06)	0.36 (0.09)	2.58 (p = .014)	4.09 (p <.001)	0.32
Reactance IAT	0.08 (0.04)	0.45 (0.08)	1.84 (p = .085)	5.86 (p < .001)	0.16
Demand compliance self-report	0.04 (0.04)	0.49 (0.08)	0.95 (p = .40)	5.92 (p <.001)	0.08
Demand compliance IAT	0.03 (0.05)	0.50 (0.08)	0.74 (p = .48)	6.47 (p < .001)	0.06
Hypothesis awareness IAT	-0.01 (0.03)	0.54 (0.08)	-0.40 (p = .69)	6.81 (p < .001)	-0.03
Reactance self-report	-0.02 (0.05)	0.55 (0.55)	-0.34 (p =.77)	6.59 (p < .001)	-0.04
Well-known brands					
IAT scores					
Demand compliance IAT	0.09 (0.03)	0.22 (0.07)	2.48 (p = .032)	3.29 (p = .003)	0.21
Demand compliance self-report	0.06 (0.03)	0.25 (0.06)	2.11 (p = .050)	3.93 (p < .001)	0.14
Influence awareness IAT	0.06 (0.04)	0.25 (0.07)	1.46 (p = .24)	3.70 (p <.001)	0.13
Regularity awareness	0.04 (0.08)	0.26 (0.10)	0.49 (p = .73)	2.79 (p = .011)	0.10
Reactance IAT	0.03 (0.03)	0.27 (0.07)	0.99 (p = .50)	3.94 (p < .001)	0.08
Influence awareness self-report	0.03 (0.04)	0.27 (0.06)	0.85 (p = .61)	4.27 (p <.001)	0.06
Hypothesis awareness IAT	0.02 (0.03)	0.29 (0.07)	0.58 (p = .70)	4.21 (p < .001)	0.04

Hypothesis awareness self-report	0.01 (0.07)	0.30 (0.09)	0.07 (p = .97)	3.47 (p =.003)	0.02
Reactance self-report	-0.04 (0.04)	0.34 (0.07)	-0.86 (p =.54)	4.64 (p < .001)	-0.10

Table F-12. *Rank ordered results for the magnitude of direct and indirect effects in the AA mediation models for IAT scores and all beliefs.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.37 (0.06)	-0.09 (0.08)	5.98 (p < .001)	-1.12 (p = .28)	0.82
Influence awareness IAT	0.08 (0.04)	0.20 (0.06)	2.15 (p = .055)	3.12 (p =.007)	0.18
Influence awareness self-report	0.07 (0.04)	0.21 (0.06)	1.85 (p = .070)	3.21 (p =.005)	0.15
Reactance IAT	0.04 (0.03)	0.24 (0.06)	1.31 (p = .22)	3.95 (p < .001)	0.09
Demand compliance self-report	0.04 (0.03)	0.25 (0.07)	1.08 (p = .34)	3.76 (p <.001)	0.08
Demand compliance IAT	0.03 (0.04)	0.25 (0.07)	0.71 (p = .50)	3.89 (p < .001)	0.06
Hypothesis awareness self-report	0.02 (0.03)	0.26 (0.06)	0.43 (p = .70)	4.40 (p <.001)	0.04
Hypothesis awareness IAT	-0.01 (0.01)	0.29 (0.06)	-1.50 (p = .18)	5.10 (p < .001)	-0.02
Reactance self-report	-0.02 (0.04)	0.30 (0.06)	-0.54 (p =.65)	4.69 (p < .001)	-0.04
Well-known brands					
IAT scores					
Regularity awareness	0.15 (0.07)	0.15 (0.09)	2.30 (p = .042)	1.76 (p = .11)	0.36
Demand compliance IAT	0.04 (0.03)	0.26 (0.06)	1.47 (p = .16)	4.47 (p < .001)	0.10
Influence awareness IAT	0.04 (0.03)	0.27 (0.05)	1.46 (p = .16)	4.90 (p <.001)	0.10
Reactance IAT	0.05 (0.02)	0.25 (0.06)	2.24 (p = .042)	4.49 (p < .001)	0.08
Reactance self-report	0.04 (0.03)	0.27 (0.06)	1.18 (p = .22)	4.60 (p < .001)	0.08
Influence awareness self-report	0.02 (0.02)	0.28 (0.05)	0.94 (p = .38)	5.27 (p <.001)	0.04

Demand compliance self-report	0.00 (0.02)	0.30 (0.06)	0.04 (p = .99)	5.33 (p < .001)	0.00
Hypothesis awareness IAT	-0.01 (0.01)	0.32 (0.05)	-1.25 (p = .21)	6.08 (p < .001)	-0.03
Hypothesis awareness self-report	-0.03 (0.02)	0.33 (0.06)	-1.43 (p = .18)	6.03 (p < .001)	-0.06

Table F-13. *Rank ordered results for the magnitude of direct and indirect effects in the persuasion mediation models for IAT scores and all beliefs.*

	Estimate (SE)		*Z (p-value)*		ab_{ps}
	ind	*dir*	*ind*	*dir*	
Novel brands					
IAT scores					
Regularity awareness	0.27 (0.08)	-0.05 (0.09)	3.51 (p < .001)	-0.48 (p = .66)	0.60
Influence awareness IAT	0.06 (0.05)	0.16 (0.07)	1.24 (p = .33)	2.21 (p =.054)	0.13
Hypothesis awareness self-report	0.04 (0.04)	0.18 (0.07)	1.14 (p = .37)	2.62 (p =.011)	0.08
Reactance IAT	0.02 (0.03)	0.20 (0.07)	0.63 (p = .62)	2.81 (p = .013)	0.05
Hypothesis awareness IAT	0.01 (0.01)	0.21 (0.06)	0.54 (p = .66)	3.39 (p = .004)	0.02
Reactance self-report	0.00 (0.04)	0.22 (0.07)	0.03 (p =.99)	3.04 (p = .005)	0.00
Demand compliance IAT	-0.00 (0.04)	0.22 (0.08)	-0.08 (p = .94)	2.86 (p = .011)	-0.01
Demand compliance self-report	-0.01 (0.04)	0.23 (0.07)	-0.21 (p = .86)	3.21 (p =.004)	-0.02
Influence awareness self-report	-0.04 (0.06)	0.27 (0.08)	-0.74 (p = .51)	3.35 (p =.004)	-0.08