Received: 12 October 2020 | Revised: 10 November 2020 | Accepted: 10 November 2020

DOI: 10.1002/arcp.1067

Check for updates

REVIEW

CONSUMER PSYCHOLOGY REVIEW WILEY

Metacognitive experiences as information: Processing fluency in consumer judgment and decision making

Norbert Schwarz[1,2,3] | Madeline Jalbert[1,2] | Tom Noah[1,2] | Lynn Zhang[1,2]

[1]University of Southern California, Mind & Society Center, Los Angeles, CA, USA

[2]University of Southern California, Department of Psychology, Los Angeles, CA, USA

[3]University of Southern California, Marshall School of Business, Los Angeles, CA, USA

Correspondence
Norbert Schwarz, University of Southern California, Los Angeles, CA, USA.
Email: norbert.schwarz@usc.edu

Abstract

Thinking is accompanied by metacognitive experiences of ease or difficulty. People draw on these experiences as a source of information that can complement or challenge the implications of declarative information. We conceptualize the operation of metacognitive experiences within the framework of feelings-as-information theory and review their implications for judgments relevant to consumer behavior, including popularity, trust, risk, truth, and beauty.

KEYWORDS

decision making, fluency, judgment, meta-cognition, social cognition,

1 | INTRODUCTION

Every component of forming a judgment or making a decision can feel easy or difficult. New information can be easy or difficult to see, read, or hear; previously acquired information can be easy or difficult to retrieve; written or spoken language can be easy or difficult to comprehend; mental representations of targets and standards can be easy or difficult to form; inferences can be easy or difficult to arrive at, arguments easy or difficult to generate, and choices easy or difficult to make. As hundreds of experiments across the cognitive and behavioral sciences document, the subjective experience of ease or difficulty has consequences. It can itself serve as a source of information in judgment and choice, can qualify the implications of other accessible information, and can influence which processing strategies people choose. In this review, we highlight key insights from several decades of research into the fluent or disfluent processing of information, identify open questions, and suggest promising avenues for further investigation.

We first review variables that influence processing fluency (Section 2) and conceptualize the use of metacognitive experiences in judgment and decision making in the framework of feelings-as-information theory (Schwarz, 2012). We then illustrate the breadth of fluency effects with a selection of findings that bear on diverse aspects of consumer behavior (Section 3). Subsequently, we turn to the role of metacognitive experiences in people's assessments of truth and their influence on the acceptance, sharing, and correction of (mis)information (Section 4). Section 5 revisits the role of metacognitive experiences in esthetic appreciation and discusses judgments related to beauty.

Our selection emphasizes issues of judgment and decision making likely to be of interest to consumer researchers and neglects extensive work on metacognitive experiences in memory and learning (for reviews, see Dimmitt & McCormick, 2012; Dunlosky & Bjork, 2008; Dunlosky & Metcalfe, 2009; Koriat, 2007). Moreover, we prioritize conceptual integration and illustrative examples over complete coverage of the multitude of available findings and apologize to those whose experiments have not been included.

2 | METACOGNITIVE EXPERIENCES AS INFORMATION

2.1 | Sources of ease and difficulty

Numerous variables can influence the ease of information processing. Visual and auditory attributes of a stimulus can influence the speed and accuracy of low-level processes concerned with the identification of the stimulus' physical identity and form. Examples include figure-ground contrast (e.g., Reber & Schwarz, 1999); the readability of handwriting (e.g., Greifeneder et al., 2010) and print fonts (e.g., Song & Schwarz, 2008a); the clarity of auditory presentations (e.g., Newman & Schwarz, 2018) and familiarity of a speaker's accent (e.g., Lev-Ari &

Keysar, 2010) or the duration of stimulus presentation (e.g., Whittlesea et al., 1990). The associated metacognitive experience is often referred to as *perceptual fluency* (Jacoby, Kelley & Dywan, 1989). Other variables influence the speed and accuracy of high-level processes concerned with the identification of stimulus meaning and its relation to semantic knowledge structures. Some of these variables are attributes of the stimulus, such as the complexity (e.g., Lowrey, 1998) or coherence (e.g., Topolinski, 2012) of a message and the compatibility of stimulus elements with applicable metaphors (e.g., Cian et al., 2015). Other variables reflect contextual influences, such as the consistency of the stimulus with its context (e.g., Masson & Caldwell, 1998), the contextual accessibility of applicable knowledge (e.g., Lee & Labroo, 2004), and the frequency of concept collocations in the corpus of natural language (e.g., Zhang & Schwarz, 2020). The associated metacognitive experience of ease or difficulty is often referred to as *conceptual fluency* (Whittlesea, 1993).

How fluently a stimulus can be processed is also influenced by perceiver variables, from the perceiver's color vision (e.g., Álvaro et al., 2015), applicable knowledge (e.g., Bransford & Johnson, 1972) and cultural expertise (Oyserman, 2019) to temporary or chronic differences in the perceiver's cognitive ability and motivation. Perceiver variables can influence perceptual and/or conceptual fluency and frequently involve stimulus x perceiver interactions. For example, depending on one's native language, some words are harder to pronounce than others (e.g., Newman et al., 2014) and some word collocations feel more familiar (e.g., Siyanova-Chanturia et al., 2011); writing feels more difficult when using one's non-dominant hand (Briñol & Petty, 2003); and figure-ground contrast can depend on one's color vision (Álvaro et al., 2015). Additionally, stimuli may be harder to process in situations where cognitive capacity is limited. Limited cognitive capacity may result from a myriad of factors—from multitasking (e.g., Lin et al., 2016) to sleep deprivation (e.g., Lim & Dinges, 2010), depression (McDermott & Ebmeier, 2009), and poverty (Mani et al., 2013)—leading to decreased processing speed and increased experiences of disfluency. In addition, incidental bodily sensations can elicit feelings of ease or difficulty. For example, tensing the corrugator during task performance (as in furrowing one's brow) makes anything seem harder, from recalling examples of one's behavior (e.g., Stepper & Strack, 1993) to generating arguments (e.g., Sanna et al., 2002) and recognizing names (e.g., Strack & Neumann, 2000).

These diverse stimuli, context, and perceiver variables have qualitatively similar effects (for reviews, see Alter & Oppenheimer, 2009a; Winkielman et al., 2003), which reflects that different sources of (dis) fluency result in similar phenomenal experiences. Hence, we refer to *processing fluency* without distinguishing between its perceptual and conceptual components.

2.2 | What the experience conveys

Easy processing is more pleasant than difficult processing and elicits a spontaneous positive affective response (Section 2.2.1). The processing experience also conveys that what one does is easy or difficult. What people conclude from this depends on which of many potentially applicable lay theories of mental processes they bring to bear, that is, their metacognitive knowledge (Section 2.2.2).

2.2.1 | Affective response

Easy processing is accompanied by a spontaneous affective response that can be captured with psychophysiological measures as well as self-reports. In a classic study, Winkielman and Cacioppo (2001) presented degraded drawings of common objects and facilitated or impaired perception through a preceding matching or mismatching prime. Using electromyography (EMG) they found that easy processing was accompanied by increased zygomaticus (smiling muscle) activity and concluded that "mind at ease puts a smile on the face" (Winkielman & Cacioppo, 2001, p. 989). Increased zygomaticus activation has also been observed when fluency is manipulated through repeated exposure (e.g., Harmon-Jones & Allen, 2001) or prototypicality (e.g., Winkielman et al., 2006). Conversely, Topolinski et al. (2009) observed increased corrugator (frowning muscle) activity when participants processed disfluent material. Self-reports of momentary feelings (e.g., Monahan et al., 2000) parallel the psychophysiological findings, although conscious awareness of an affective response is not always observed (Janiszewski, 1993; Zajonc, 1980).

Reviewing diverse findings bearing on the fluency-affect link, Winkielman et al. (2003) concluded that processing fluency is hedonically marked and experienced as positive. Several factors are likely to contribute to this. High fluency may elicit positive affect because it is associated with progress toward successful recognition of the stimulus, error-free processing, or the availability of appropriate knowledge structures to interpret the stimulus (Carver & Scheier, 1990; Derryberry & Tucker, 1994; Ramachandran & Hirstein, 1999). High fluency may also elicit positive affect because it signals that an external stimulus is familiar, and thus unlikely to be harmful (Zajonc, 1968, 1998)—"if you know it, it hasn't eaten you yet" as Zajonc used to put it.

The elicited affective response can serve as a source of information in related judgments, paralleling the influence of other sources of affective experience (for a review, see Schwarz & Clore, 2007). In contrast to what some researchers concluded, this does not imply that fluent processing will always result in more positive evaluations. Affective responses are a source of information and what people conclude from that information depends on its perceived diagnosticity and the accessible inference rule used, which is a function of context and task (e.g., Kim et al., 2010; Martin et al., 1997).

2.2.2 | Metacognitive knowledge: Lay theories of mental process

Because thinking can be easy or difficult for many reasons, it is often unclear to the individual why a given metacognitive experience

arises. For example, a text may be difficult to follow because the reader is tired and distracted, because the lighting is poor, or because the arguments are incoherent. What people infer from a given metacognitive experience depends on which of many potentially applicable lay theories of mental processes they apply. People's lay theories of mental processes are usually correct in the sense that they correctly describe conditions that can make processing easy or difficult. However, the respective variable may not have been the one at work in the present case.

Consistent with the pragmatic (James, 1890) and situated (Smith & Semin, 2004) nature of cognition, an applicable lay theory is usually brought to mind by the task at hand and allows the person to arrive at an answer that seems "obvious" in the given context (Schwarz, 2004, 2010). Other potentially applicable theories receive little attention, consistent with the general observation that information search is truncated once a satisfactory judgment has been achieved (Einhorn & Hogarth, 1986; Wyer, 1974)—nevertheless, one of those neglected lay theories might have guided the person's inferences had it come to mind first. This renders inferences from metacognitive experiences highly malleable. People correctly assume, for example, that familiar (previously seen) material is easier to process than novel material. Hence, they erroneously "recognize" a novel stimulus as one they have previously seen whenever the stimulus is easy to process, even when this ease results solely from other variables, such as the clarity or duration of stimulus presentation (Whittlesea et al., 1990). People also correctly assume that is easier to perceive a stimulus that is shown with high rather than low clarity or for a long rather than short time. Hence, they erroneously infer higher clarity or longer duration when the stimulus is easy to process due to previous exposure (e.g., Whittlesea et al., 1990; Witherspoon & Allan, 1985). Accordingly, presentation variables can give rise to "illusions of memory", just as memory variables can give rise to "illusions of perception" (for a review, see Kelley & Rhodes, 2002). In both cases, the task ("Have you seen this before?" versus "For how long has this been shown?") brings an applicable lay theory of mental processes to mind, which is applied to the current subjective experience.

At present, little is known about people's sensitivity to the applicability of different lay theories under naturalistic conditions. The observation that lay theories about what makes mental processes easy or difficult are mostly correct indicates that processing fluency *can* provide ecologically valid information (for reviews, see Herzog & Hertwig, 2013; Unkelbach & Greifeneder, 2013). However, people's insensitivity to the source of their fluency experience challenges the hope that this information is *used* in ecologically sensible ways. The available studies indicate that people can draw different inferences from the same metacognitive experience because the experimenter insinuates different lay theories (e.g., Briñol et al., 2006; Winkielman & Schwarz, 2001), the dependent variable brings different lay theories to mind (e.g., Whittlesea et al., 1990) or participants are taught an applicable lay theory through many experimental trials (e.g., Unkelbach, 2007). The latter induction of a lay theory is sometimes credited as being more ecologically valid (e.g., Corneille et al., 2020) but its effects are indistinguishable from other manipulations that render applicable lay theories accessible. Moreover, lay theories that are learned through many experimental trials do not seem to generalize beyond the specific experimental setting and fluency variable used (e.g., Silva et al., 2016); we return to this issue in our discussion of fluency effects on judgments of truth. What is crucial is not how a lay theory is acquired, but which lay theory is accessible and applicable in context. Hence, lay theories that are brought to mind by the judgment task itself enjoy an advantage in terms of generalization across situations.

2.3 | Does the experience bear on the target of judgment?

The use of metacognitive experiences in judgment follows the logic of feelings-as-information theory (for a review, see Schwarz, 2012), which was initially developed to conceptualize the role of affect in evaluative judgment (Schwarz & Clore, 1983, 2003). The theory assumes that people attend to their feelings (metacognitive experiences, moods, emotions, and bodily sensations) as a source of information, which they use like any other information. Whether the feeling provides valid information depends on whether it is elicited by the object of judgment or due to some incidental influence, that is, whether the feeling is "integral" to the judgment or "incidental" in Bodenhausen's (1993) terminology. For example, the experience of difficulty provides ecologically valid information about the unfamiliarity of an argument when it results from a lack of previous exposure, but not when it results from a poor print font or any other incidental variable.

Because people are more sensitive to their feelings than to the source of their feelings, they often misread incidental feelings as bearing on the object of judgment, unless their attention is explicitly drawn to an incidental source (for reviews, see Schwarz, 2012; Schwarz & Clore, 2007). Whenever a feeling is attributed to an incidental source, its informational value is undermined and the otherwise observed influence attenuated or eliminated. For example, realizing that a text is difficult to process because the print font is hard to read eliminates the influence of processing fluency on judgment and choice (Novemsky et al., 2007), just as realizing one's bad mood is due to rainy weather eliminates its influence on unrelated judgments (Schwarz & Clore, 1983). Conversely, experiencing a feeling despite opposing influences increases its perceived informational value. For example, finding recall easy despite allegedly distracting music enhances the impact of easy retrieval (Schwarz et al., 1991).

Finally, people are more sensitive to changes in sensory input than to stable states, as known since the early days of perception research (for a review, see Berelson & Steiner, 1964). They also consider changes more informative than stable states, consistent with the covariation principle of attribution research (Kelley, 1972). Accordingly, metacognitive experiences are more influential when people experience *changes* in fluency, e.g., when one target is more fluently processed than another. This makes within-participant

manipulations, where fluency changes from one stimulus to the next, more powerful than between-participant manipulations, where some participants are only exposed to easy to process and others only to difficult to process material (for reviews, see Dechêne et al., 2010; Wänke & Hansen, 2015).

2.4 | The relative impact of experiential and declarative information

As the term implies, "metacognitive" experiences emerge from the dynamics of information processing, which is a reminder that there are always two sources of information: the information being processed and the experience this processing elicits. Which of these sources of information is likely to exert more influence under which conditions?

2.4.1 | Processing motivation and ability influence reliance on feelings

One answer to this question is consistent with familiar assumptions of most dual-process models, from Petty and Cacioppo's (1986) elaboration likelihood model to Strack and Deutsch's (2004) reflective-impulsive model and Kahneman's (2011) discussion of fast and intuitive (system 1) and slow but systematic (system 2) thinking. A systematic use of declarative information is most likely when processing motivation and cognitive ability are high, and the opportunity to engage in intense processing is unconstrained by time pressure (e.g., Pham et al., 2001; Siemer & Reisenzein, 1998), cognitive load (e.g., Albarracín & Kumkale, 2003), and related variables; conversely, intuitive processing and reliance on one's metacognitive experiences and other feelings increase when processing motivation, ability and/or opportunity are low (for reviews, see Greifeneder et al., 2011; Greifeneder & Schwarz, 2014). However, several caveats are needed.

Most studies addressing the relative impact of declarative information and metacognitive experience relied on the ease of retrieval paradigm (Schwarz et al., 1991), which explicitly pitches thought content and retrieval fluency against one another. For example, participants may be asked to list a few or many examples of their assertive behavior before evaluating their own assertiveness. Participants who rely on the accessible declarative information should judge themselves more assertive after recalling many than only a few examples. However, recalling many examples is more difficult than recalling a few; hence, participants who rely on their metacognitive experience should judge themselves as less assertive after recalling many. Empirically, the judgment is consistent with the implications of recalled content when recall is easy, but opposite to the implications of recalled content when recall is difficult, unless the informational value of the recall experience is called into question through misattribution manipulations (Schwarz et al., 1991; for a meta-analysis of 263 experiments, see Weingarten & Hutchinson, 2018). These opposing effects made the paradigm attractive for studying the relative reliance on content and ease in judgment formation. The bulk of the available studies indicates that reliance on accessible declarative information is higher, and reliance on ease of retrieval lower, under conditions of high personal relevance of the topic (e.g., Greifeneder, 2007; Haddock, 2002; Rothman & Schwarz, 1998), high accuracy motivation (e.g., Aarts and Dijksterhuis (1999), and high need for cognition (e.g., Florack & Zoabi, 2003). Conversely, impairing people's processing capacity through cognitive load (e.g., Greifeneder & Bless, 2007) increases reliance on the experience and decreases reliance on accessible content.

Note, however, that people may also bring their metacognitive experience to bear on the validity of the content of their thoughts (Briñol & Petty, 2009), which results in more confidence in what they recalled when recall was easy rather than difficult. Because such assessments of confidence are more likely under high importance and high need for cognition, this provides an indirect pathway for metacognitive experiences to influence judgment under conditions of systematic processing (e.g., Tormala et al., 2002; Wänke & Bless, 2000).

2.4.2 | Feelings influence processing motivation

Thinking is for doing (James, 1890) and mental processes are tuned to the requirements at hand. Consistent with this assumption, people are more likely to engage in detail-oriented effortful processing when something seems wrong than when things seem to be going fine (e.g., Vallacher & Wegner, 1987). Feelings play a key role in this tuning process and numerous variables—from the perceiver's mood (e.g., Bless et al., 1990) and the color of the paper on which a task is printed (e.g., Sinclair et al., 1998) to exposure to culturally disfluent stimuli (e.g., Lin et al., 2019) —can influence processing motivation and strategy (for a review, see Schwarz & Clore, 2007). Using the ease of retrieval paradigm, Ruder and Bless (2003) found that participants in a happy mood were more likely to rely on their metacognitive experience, whereas participants in a sad mood were more likely to rely on recalled content. As reviewed in Section 4, disfluency can itself be a problem signal that increases detailed analysis (e.g., Song & Schwarz, 2008b). Overall, this privileges reliance on declarative information in situations that seem problematic but reliance on experiential information, including metacognitive experiences, in situations that seem benign.

2.4.3 | Feelings in a social context: Power and state of mind

One marker of a potentially problematic situation is that others have control over one's outcomes, whereas oneself can do little to influence the outcomes of others. This undesirable constellation characterizes situations of low power (Cartwright, 1959; Thibaut & Kelley, 1959), whereas the opposite characterizes situations of

high power. Testing the influence of power on strategies of information processing, Guinote and her colleagues (for a review, see Guinote, 2015) consistently found that being high in power increases reliance on one's feelings, whereas being low in power reduces it. In ease of retrieval experiments, participants who feel powerful—either due to a temporary manipulation or a chronic disposition—rely more on their metacognitive experience than participants who feel powerless (Weick & Guinote, 2008). Presumably, powerful individuals can afford to process information selectively, whereas powerless individuals need to pay attention to multiple sources of information and interpret information beyond its face value to increase predictability and control (Guinote, 2007, 2015). Similarly, Yahalom and Schul (2013) observed that concerns about the potential involvement of another person in the situation reduces reliance on ease of retrieval and increases reliance on retrieved content. For example, when participants were led to believe that the task they were requested to complete was selected randomly, they based their judgments on experienced ease of recall, but when led to believe that another person had selected the task for them, they relied on recalled content.

Even the mere feeling of being observed by another person can be sufficient to reduce reliance on one's metacognitive experience. Noah et al. (2018a) replicated a series of fluency experiments (including ease of recall and ease of reading) under conditions of privacy and anonymity versus conditions where people felt observed. Whereas the usual fluency effects replicated under conditions of privacy (which resembled the conditions of the original experiments), feeling observed undermined participants' reliance on their metacognitive experiences. Merely thinking about how others may perceive them reduced participants' reliance on their own internal states as a source of information (Noah et al., 2018a). Extending these findings to bodily sensations in the form of facial feedback, Noah et al. (2018b) found that turning on a video camera was sufficient to undermine the otherwise observed impact of facial feedback on judgments of amusement (Strack et al., 1988). Noah and colleagues' findings suggest that people who feel observed may adopt an external perspective on themselves (Hass, 1984) that privileges information that is accessible to an observer and impairs the use of private information to which the observer has no access, such as one's metacognitive experiences and bodily sensations.

2.5 | Measuring processing fluency

Ease of processing can be assessed with objective and subjective measures. Objective measures include the use of reaction time (for example, to assess retrieval fluency; Schooler & Hertwig, 2005), and eye-tracking (for example, to assess the difficulty of reading and visual navigation; Bae, 2019; Chrobot, 2014). Note, however, that objective measures do not necessarily capture the subjective experience—whether something feels easy or difficult depends at least as much on the perceiver's expectations or preceding experience as on objective speed. Hence, the subjective experience of fluent processing is a better predictor of judgment than objective fluency in form of processing time (e.g., Forster et al., 2013). Accordingly, measures that focus on the subjective experience are usually preferred, e. g., in form of a direct question about how easy or difficult a text was to read.

More complex multi-item self-report measures have been developed (Graf et al., 2018; Kostyk et al., 2019). To validate their measure, Graf et al. (2018) replicated nine experiments with diverse fluency manipulations and showed that the effects were mediated by participants' self-reported fluency experience. Their single-item measure (a rating with the verbal end anchors “difficult” and “easy”) performed as well as a five-item measure. Recall, however, that people do not draw on their fluency experience when they become aware that it may be due to an incidental source. Hence, any measure that may draw attention to the manipulation needs to follow the last dependent variable of interest—or else a reviewer's well-intentioned recommendation to capture the presumed mediator before the dependent variable may thwart the very effect one hoped to find.

2.6 | Summary

In sum, numerous variables can influence processing fluency. Easy processing is pleasant and elicits a positive affective response. The experience also informs the person that the task is easy or difficult. The subjective experience is not considered informative for the judgment at hand when it is (correctly or incorrectly) attributed to another source. What specifically people infer from their subjective experience of effort and/or affect depends on the inference rule they apply. In addition, people's relative reliance on declarative and experiential information is influenced by their processing motivation and capacity and their perception of the current situation as problematic or benign. Whereas these influences are consistent with decades of related research, recent experiments further suggest that feeling observed may elicit an outside perspective on the self that impairs reliance on internal information that is not accessible to an observer.

3 | FLUENCY AND CONSUMER JUDGMENT

We now turn to the influence of processing fluency on select judgments of interest to consumer researchers. In this section, we address judgments of effort and familiarity and their implications for related concepts. We then turn to two broader themes, namely judgments involved in assessing the truth of a claim (Section 4) and the esthetic appeal of an object (Section 5). Given the overlap in the underlying processes, our arrangement of topics is somewhat arbitrary. We chose it solely to facilitate the discussion of key conceptual issues and many studies could show up in different sections. It will also become apparent that it is often difficult to determine which component of the overall fluency experience is crucial for an observed influence: the experienced ease of processing, the affect that accompanies it, or both.

3.1 | Effort and its implications

People are more likely to engage in an activity when it seems easy and pleasant rather than difficult and demanding. To gauge the effort required, they may run a mental simulation of the activity, which may feel fluent or disfluent due to incidental variables. In an initial demonstration, Song and Schwarz (2008a) presented participants with a cooking recipe or an exercise routine and asked them how long they think the activity will take, how complicated it will be, and whether they want to try it. When the description was printed in an easy to read font (Arial 12) they inferred that the activity will be faster, easier, and more pleasant than when it was printed in a difficult to read font (Brush455 BT12, Mistral 12), and were more willing to try the activity. Put simply, they mistook the difficulty of reading as indicative of the difficulty of doing.

Whenever a task appears difficult, the opportunity to delegate it to a skilled service provider may seem attractive. Indeed, Thompson and Ince (2013) found that consumers perceive a task as more demanding, the service provider as more skilled, and the service offered as more valuable when it is described in a difficult to read font. However, this increase in consumers' valuation of the service can backfire when the expectations of high effort and competence elicited by a disfluent description are not met by the provider's actual performance (Thompson & Ince, 2013). Similarly, Magnini and Kim (2016) observed that potential diners perceive restaurants as more up-scale and able to deliver outstanding service when the menu describes the dishes in harder to read font.

Such findings suggest that materials designed to motivate consumers to engage in an activity are more effective when they are easy to process (Okuhara et al., 2017; Song & Schwarz, 2008), unless the exertion of effort is part of the consumer's goals (Labroo & Kim, 2009). Conversely, materials designed to motivate the purchase of service are more effective when they are difficult to process (Thompson & Ince, 2013) and hence suggest that the task is demanding and better left to others. As always, the impact of a given metacognitive experience depends on the specifics of the task and context.

3.2 | Familiarity and its implications

Familiar things are easier to recognize, read, pronounce, and remember. People are aware of this and infer familiarity from ease of processing, even to the extent of erroneously "recognizing" fluently processed items as having been previously presented (Whittlesea et al., 1990). This fluency-familiarity link influences many other judgments for which familiarity can serve as an input. We address three judgments that are particularly relevant for consumer behavior, namely judgments of popularity, trust, risk, and liking.

3.2.1 | Popularity, fame, and consensus

If something is famous and popular, it is likely that one has heard or seen it before. Hence, a famous actor, a widely held opinion, or a widely used product should be familiar. This predicts that fluently processed materials will seem more famous, popular, and widely shared than disfluently processed ones. Numerous findings are consistent with this prediction. Manipulating fluency through previous exposure, Jacoby, Kelley, Brown et al. (1989), Jacoby, Kelley and Dywan (1989) found that people infer from the apparent familiarity of an individual's name that the person is probably famous. Similarly, people infer from previous exposure to an opinion that the opinion is widely shared (Weaver et al., 2007), just as previous exposure to an object leads to the impression that others are probably also familiar with it (Kwan et al., 2015). Such effects are not limited to manipulations of previous exposure but also observed for other fluency manipulations. For example, consumers perceive products with difficult to pronounce brand names as less popular than products with easy to pronounce ones (Valsesia & Schwarz, 2020).

Whether perceived popularity is advantageous depends on consumers' goals. Disfluently processed products are perceived as less common, more innovative (Cho & Schwarz, 2006), and more suitable for special occasions (Pocheptsova et al., 2010), which may be why house buyers prefer properties on streets with less fluent names (Agarwal et al., 2020). Disfluent brand names are also preferred by consumers with high uniqueness goals, who want to stand out from the crowd, whereas consumers with high affiliation goals prefer the familiarity signaled by fluent product names (Valsesia & Schwarz, 2020).

3.2.2 | Trust and credibility

Trust is essential to many aspects of well-functioning societies and markets. Without trust that others will reciprocate, cooperative relationships are difficult to establish and maintain, which deprives communities of the benefits of the division of labor and impairs material standards of living. When consumers have no confidence that a product will be as promised or that the seller will honor her return policy, they are unlikely to become customers. These dynamics have been described from evolutionary (Christakis, 2019), economic (Arrow, 1974; Smith, 1776), sociological (Luhmann, 1979) and legal perspectives (Sitkin & Roth, 1993), which all recognize the pivotal role of familiarity. Trust develops in repeated exchanges over time; is higher among kin and members of cohesive communities than among strangers; and higher when all participants are subject to a shared mechanism of social sanctioning (for a review, see Christakis, 2019). On the one hand, the importance of trust across all domains of life suggests that people may have developed robust procedures for assessing others' trustworthiness, making it unlikely that they are swayed by superficial characteristics, such as the ease with which they can pronounce others' names. On the other hand, many attributes of shared community membership influence not only actual familiarity but also ease of processing, which makes fluency experiences a valid (but fallible) indicator of familiarity.

Empirically, incidental manipulations of processing fluency are sufficient to influence trust. Using investment in economic trust

games as the dependent variable, Zürn and Topolinski (2017) had participants play with confederates who were assigned either real or artificially created names of differential fluency. Across five experiments, participants invested more resources when the alleged partner had a fluent name, even when participants knew that their partner's screen name was assigned by the experimenter. Fluency's influence on trusting behavior was attenuated, but not eliminated when the game was incentivized. Similarly, Silva et al. (2017) manipulated the fluency of the screen handles of eBay sellers by varying their pronounceability and complexity. Crossing name fluency with high or low seller reputation ratings, they consistently found additive effects of both variables on different measures of trust. Across ten experiments, consumers perceived sellers as more trustworthy and more likely to deliver a product that is as advertised, to honor their return policies, and to keep customers' credit card information safe when the seller had a fluent name. These positive assessments of the seller's trustworthiness were also reflected in a higher willingness to buy. Throughout, the influence of name fluency and reputation ratings was additive and of similar size. Further illustrating the benefits of a fluent name, Newman et al. (2014) extracted easy and difficult to pronounce names from media materials in several regions of the world (e.g., Adrian Babeshko versus Yevgeny Dherzhinsky for Eastern Europe) and assessed whether participants trusted the person's answer to a trivia question. They obtained additive effects of region and name fluency. While their New Zealand participants trusted respondents from different regions of the world to different degrees, within each region they trusted respondents with fluent names more than respondents with disfluent names.

People also seem more honest and trustworthy the more often one has seen them, even when the exposure was limited to a portrait photo (Brown et al., 2002), an influence that could be observed with delays of up to 2 weeks between exposure and judgment. Note, however, that the fluency with which a person's face can be processed also depends on the perceiver's task. When the person shows an ambiguous emotional expression, for example, it is easier to determine whether a photo does or does not show a face than to determine whether the face is angry or sad. Hence, the portrayed person should seem more trustworthy when the perceiver merely tried to distinguish face from non-face photos than when the perceiver tried to determine the emotional expression of the face. Winkielman et al. (2015) found consistent support for this prediction across five experiments. Their findings highlight that the same stimulus can give rise to distinctly different social judgments depending on whether the task makes processing easy or difficult.

Other fluency variables similarly affect trust and credibility. Speakers with easy to understand accents are believed more than speakers with difficult to understand accents (Lev-Ari & Keysar, 2010), and scientists' conference presentations and radio interviews are more compelling when the recordings have higher audio quality (Newman & Schwarz, 2018). Not only do the scientists themselves seem smarter, but even the importance of their research topic improves with the audio quality (Newman & Schwarz, 2018).

This fluency-familiarity-trust link has behavioral consequences. For example, people are more likely to self-disclose undesirable traits, behaviors, and opinions when the request comes in an easy to read font (Alter & Oppenheimer, 2009b). Familiar individuals are more persuasive spokespersons for a cause, even if their familiarity merely results from previous exposure to a photo or the photo's perceptual clarity (Weisbuch & Mackie, 2009). Bearers of fluent names also seem likely to enjoy career advantages. For example, Laham et al. (2012, study 5) observed in a sample of 500 lawyers from 10 large law firms that lawyers with easier to pronounce last names held higher status positions within the firm. Finally, the credibility and trustworthiness of a source figure prominently in judging the truth of claims, which we discuss in Section 4.

3.2.3 | Risk

In many domains of life, perceived risk decreases as familiarity with the potential threat increases (Breakwell, 2007). Because familiarity is associated with many other perceiver, target, and context variables, its role is difficult to isolate. Fluency manipulations allow researchers to avoid the ambiguities resulting from these confounds. Using this strategy, Song and Schwarz (2009) found that fictitious food additives were perceived as less familiar and more harmful when their names were difficult rather than easy to pronounce. Moreover, the influence of pronunciation fluency on judgments of risk was mediated by perceived familiarity. Subsequent work showed that drugs with easy to pronounce names are perceived as safer and having fewer side-effects (Dohle & Siegrist, 2014), which encourages the consumption of higher doses (Dohle & Montoya, 2017). The advantages of fluent, and disadvantages of disfluent, product names are undermined when perceivers are led to see disfluent names as a marker of technologically advanced products that they have not encountered before, thus turning a lack of familiarity into a promise of progress (Cho, 2015). In related work, Newman et al. (2014, Experiment 1) sampled easy or difficult to pronounce real names from different regions of the world and asked participants whether they would hire the person as a tour guide when visiting the person's home country. As expected, potential tour guides with easier to pronounce names were perceived as the safer choice, being less dangerous and less likely to include things in the tour that may make the traveler sick.

Analyses of stock market transactions further show that the influence of pronunciation fluency on perceived risk is sufficient to influence investors' actual market behavior. Analyzing the performance of initial public offerings on the New York Stock Exchange, Alter and Oppenheimer (2006) found that stocks with easy to pronounce ticker symbols (e.g., KAR) outperformed stocks with difficult to pronounce ticker symbols (e.g., RDO). Investing $1,000 in a basket of stocks with fluent ticker symbols would have yielded an excess profit of $85.35 over a basket with disfluent ticker symbols on the first day of trading. This advantage dropped to $20.25 by the end of the first year, presumably reflecting that more diagnostic

information became available. Drawing on a database of 14,926 companies, 18,585 unique company names, and 133,400 firm-years, Green and Jame (2013) documented numerous additional investment effects that are compatible with the assumption that fluent names reduce perceived risk. Specifically, "companies with short, easy to pronounce names have higher breadth of ownership, greater share turnover, lower transaction price impacts, and higher valuation ratios. Corporate name changes increase fluency on average, and fluency improving name changes are associated with increases in breadth of ownership, liquidity, and firm value. Name fluency also affects other investment decisions, with fluently named closed-end funds trading at smaller discounts and fluent mutual funds attracting greater fund flows" (Green & Jame, 2013, p. 813).

A few caveats are needed. Bahník and Vranka (2017) noted that several studies into the perception of medications and food additives used the original Song and Schwarz (2009) materials. Testing whether the fluency-risk relationship holds with other product names, Bahník and Vranka (2017) replicated the effect with the original stimuli but not with other stimuli. Some of their novel stimuli were names of existing medications, presented with a typo to make them hard to pronounce; such manipulations do not necessarily undermine perceived familiarity, which can serve as a reminder that familiarity is multidetermined and not solely a function of fluency. Moreover, people are particularly sensitive to changes in processing experience. Hence, the impact of a given stimulus depends not only on its own fluency but also on the fluency of other stimuli in the set, which makes effect sizes sensitive to context variation (as discussed in Section 2.3; Wänke & Hansen, 2015). Finally, difficult to pronounce words only result in a subjective experience of disfluency when the reader subvocalizes the word or even tries to pronounce it. When subvocalization is impaired through other mouth movements (e.g., chewing gum), pronunciation-based fluency effects are eliminated (Topolinski & Strack, 2010).

3.2.4 | Liking

As most consumer researchers are aware, fluent processing enhances liking and preference (see Section 5). This may reflect that familiar things seem less risky (Section 3.2.3) and/or that fluent processing elicits positive affect (Section 2.2.1). The relationship between familiarity and positive affect is bidirectional—familiar things elicit more positive affect (e.g. Zajonc, 1968) and positive affect makes novel things seem more familiar (e.g., Claypool et al., 2008; Garcia-Marques et al., 2004).

As numerous studies indicate, advertisements and products that facilitate fluent processing improve attitudes toward the advertisement (e.g., Storme et al., 2015), the product (e.g., Chae & Hoegg, 2013; Leonhardt et al., 2015), and the brand (e.g., Lee & Labroo, 2004). For example, a bottle of wine is more appealing when its label contains visual elements (e.g., a picture of a frog) that is compatible with a concept (e.g., frog) they were asked to visualize earlier, in an ostensibly unrelated task (Labroo et al., 2008). Wine even tastes better when its label is printed in an easy rather than difficult to read font (Gmuer et al., 2015). We return to these issues in our discussion of esthetic experience (Section 5).

3.3 | Summary

As the reviewed examples illustrate, processing fluency is an influential input into many judgments of interest to consumer researchers. In most cases, the influence can be traced to two closely related variables, namely the positive affect and/or the sense of familiarity elicited by the processing experience. The relationship between these variables is bidirectional—familiar stimuli elicit a more positive affective response (e.g., Monahan et al., 2000), and being in a positive affective state makes novel stimuli seem more familiar (e.g., Garcia-Marques et al., 2004). Depending on the judgment task, familiarity and affect may exert parallel influences (e.g., on judgments of liking or trust) or opposing influences (e.g., when fluent products are rejected because they are not sufficiently unique). The relative contributions of affect and familiarity could be separated through misattribution manipulations that target either affect or familiarity, which is a promising avenue for future research. Under natural conditions, however, both variables are associated and their relative impact will depend on the specific task at hand.

4 | FLUENCY AND TRUTH

Disinformation campaigns related to Brexit and the 2016 presidential elections in the United States fostered a broad interest in how people determine whether something is likely to be true. Here, we highlight the role of metacognitive experiences in the acceptance and correction of misinformation (for extended discussions, see Brashier & Marsch, 2020; Lewandowsky et al., 2012; Schwarz, 2015, and the contributions in Forgas & Baumeister, 2019; Greifeneder et al., 2020).

4.1 | Assessing truth

In most situations of daily life, people proceed on the tacit assumption that speakers are cooperative communicators whose contributions are relevant to the ongoing conversation, truthful, informative, and clear (Grice, 1975; Schwarz, 1994; Sperber & Wilson, 1986). This makes the acceptance of claims the default in most situations, unless salient cues suggest that closer scrutiny may be needed. When people assess the truth of a claim, they are likely to rely on a subset of five criteria that dominate truth testing (Schwarz, 2015): (a) Is the claim compatible with other things I know? (b) Is the claim coherent and internally consistent? (c) Does the claim come from a credible source? (d) Do other people agree with this claim? (e) Is there sufficient supporting evidence? Each of these criteria can be assessed based on declarative as well as experiential information.

A claim is more likely to seem true when it is *compatible* with other things one knows. Whether this is the case can be evaluated by checking the information against one's knowledge, an elaborative strategy that requires motivation and time (Petty & Cacioppo, 1986). A less demanding indicator is provided by processing fluency. When something is incompatible with one's beliefs, it makes one stumble—it takes longer to read and is harder to make sense of (Taber & Lodge, 2006; Winkielman et al., 2012). It also elicits a negative affective response, as shown in research on cognitive consistency (e.g., Festinger, 1957). Accordingly, one's processing experience and affective response can serve as valid but fallible indicators of whether a proposition is likely to be at odds with other things one believes.

A given claim is also more likely to be accepted as true when it fits a broader story that lends *coherence* to its elements, as observed in research on mental models (for a review, see Johnson-Laird, 2012) and analyses of jury decision making (Pennington & Hastie, 1993). Coherence can be determined through a systematic analysis of the relationships between different pieces of declarative information or by attending to one's processing experience: coherent stories are easier to process than stories with internal contradictions (Johnson-Laird, 2012), which makes ease of processing a valid but fallible indicator of coherence. Hence, people draw on their fluency experience when they evaluate how well things "go together" (Topolinski, 2012), as observed in judgments of semantic coherence (Topolinski & Strack, 2008, 2009) and syllogistic reasoning (Morsanyi & Handley, 2012).

Claims are also more likely to be accepted as true when they come from a credible and trustworthy source. As decades of persuasion research illustrate, evaluations of *source credibility* can be based on declarative information that bears, for example, on the communicator's expertise, education, achievement, or institutional affiliation and the presence or absence of conflicting interests (for a review, see Eagly & Chaiken, 1993). But as reviewed in Section 3.2.2, intuitive judgments of trustworthiness and credibility can also be based on feelings of familiarity elicited by incidental fluency variables, such as an easy to pronounce name (Newman et al., 2014; Silva et al., 2017), easy to understand accent (Lev-Ari & Keysar, 2010) or high-quality audio (Newman & Schwarz, 2018).

To assess the likely truth of a claim, people also consider whether others believe it—if many people agree, there's probably something to it. This *social consensus* (Festinger, 1950, 1954) or social proof (Cialdini, 2009) criterion is central to many social influence processes. People are more confident in their beliefs if they are shared by others (e.g., Newcomb, 1943), more likely to endorse a message if many others have done so before (Cialdini, 2009), and place more trust in what they remember if others' memories converge (e.g., Ross et al., 1998). Conversely, perceiving dissent undermines message acceptance, which makes reports on real or fabricated controversies an efficient strategy for swaying public opinion (Lewandowsky et al., 2012). As reviewed in Section 3.2.1, people often assess consensus by relying on processing fluency, which gives incidental fluency variables the power to shift perceptions of public opinion (Weaver et al., 2007).

Finally, people's confidence in a belief increases with the *amount of supporting evidence*. Support can be assessed through an external search, as in a scientific literature review, or through recall of pertinent information from memory. In either case, the more evidence there is, the easier it should be to find some. This lay theory is at the heart of Tversky and Kahneman's (1973) availability heuristic. Unfortunately, supportive information may easily come to mind because it has been endlessly repeated or is very vivid and memorable, making support seem strong for the wrong reason. Moreover, attention to *what* comes to mind and attention to the *ease* with which it comes to mind will often lead to different conclusions (as discussed in Section 2.4). On the one hand, reliance on the substantive arguments brought to mind results in higher confidence the more arguments one retrieves or generates. On the other hand, reliance on ease of recall results in lower confidence the more arguments one tries to come up with because finding many arguments is difficult (e.g., Haddock et al., 1999; for reviews, see Schwarz, 1998, 2004).

These truth criteria give fluently processed information numerous advantages. When the truth is judged based on experiential rather than declarative information, fluently processed claims feel more familiar, more compatible with one's beliefs, more internally consistent, more widely held, better supported, and more likely to have come from a credible source.

4.2 | Enhancing perceived truth

This analysis predicts that any variable that facilitates fluent processing will increase the perceived truth of a claim, unless perceivers become aware of the incidental nature of the fluency experience (Section 2.3) or other variables encourage analytic processing (Section 2.3). The available evidence is consistent with this prediction.

4.2.1 | Repetition

Stimulated by the wisdom of demagogues, the most extensively studied fluency variable in this domain is message *repetition* (for a meta-analysis, see Dechêne et al., 2010). Since Hasher et al. (1977) provided experimental evidence that repetition of a claim increases its later acceptance as true, this "illusory truth effect" has been replicated across many domains, from trivia statements (Bacon, 1979) to marketing claims (Hawkins & Hoch, 1992) and political beliefs (Arkes et al., 1989). Moreover, it has been obtained with time delays between exposure and judgment ranging from minutes (Begg & Armour, 1991) to months (Brown & Nix, 1996). Repetition effects are even observed among people who know that the claim is false—if only they thought about it more carefully (Fazio et al., 2015). For example, repeating the claim that "The Atlantic Ocean is the largest

ocean on Earth" increases its acceptance even among people who know that the Pacific is larger.

Importantly, illusory truth effects do not require previous exposure to the exact claim that one is evaluating. Instead, turns of phrase that are familiar from other contexts can facilitate the processing of a substantively novel claim, making the new claim feel familiar and true (Zhang & Schwarz, 2020). Hence, claims composed of phrases that co-occur more frequently in the corpus of language are more likely to be believed (Zhang & Schwarz, 2020). Worse, even exposing people to true information can increase the likelihood that they later accept a superficially similar, but substantively incompatible, statement as true (Garcia-Marques et al., 2015). When tested immediately, participants who had been told that "crocodiles sleep with their eyes closed" were less likely to accept the opposite claim ("crocodiles sleep with their eyes open") as true than participants who had never heard about the sleep habits of crocodiles. One week later, however, participants who had heard about crocodiles were more likely to endorse either claim as true than those who had not heard about crocodiles. Put simply, as the details fade from memory, even information that contradicts a claim can seem more familiar than information one has never heard of. After a few days pass, people are also more likely to accept a claim as true the more often they have been told that it is false (Skurnik et al., 2005). Unfortunately, older consumers are particularly vulnerable to this effect, reflecting age-related memory impairment (Skurnik et al., 2011).

The impact of repetition is attenuated, but not eliminated, when people are warned that some of the claims they are about to see will be false (Jalbert et al., 2021). However, such warnings only reduce illusory truth effects when they precede exposure to the claims—warning people after they have seen the claims has no discernable influence (Jalbert et al., 2021). Illusory truth effects are also attenuated when people are in a sad mood (Koch & Forgas, 2012), consistent with the observation that perceiving one's current situation as problematic privileges reliance on declarative inputs (Section 2.4).

4.2.2 | Other fluency manipulations

If repetition effects are driven by changes in processing fluency, any other variable that facilitates processing should similarly enhance the perceived truthfulness of a claim. In a first test of this implication, Reber and Schwarz (1999) found that a given claim (e.g., "Orsono is a city in Chile") was more likely to be accepted as true when the color contrast of the presentation made it easy rather than difficult to read. Subsequent research provided converging evidence, from the influence of print fonts and color contrast (e.g., Garcia-Marques et al., 2016; Parks & Toth, 2006; Reber & Schwarz, 1999; Silva et al., 2016) to accent (Lev-Ari & Keysar, 2010), audio quality (Newman & Schwarz, 2018), and rhyme (McGlone & Tofighbakhsh, 2000). Even a photo without any probative value can increase acceptance of a statement (Newman et al., 2012), provided the photo makes it easier to imagine what the statement is about (for a comprehensive review, see Newman & Zhang, 2020). When the photo impairs fluent processing of the statement it decreases its acceptance (Zhang et al., 2021).

These diverse manipulations share that they influence the fluency of processing the target claim. Going beyond these observations, Oyserman and colleagues (for a review, see Oyserman, 2019) exposed participants to culturally disfluent materials (e.g., pictures of a wedding where the bride and groom were dressed in purple) that were unrelated to any of their specific tasks. They found that cultural disfluency decreased intuitive processing (Mourey et al., 2015) and the acceptance of inherence claims (Lin et al., 2019), consistent with the assumption that cultural disfluency provides a problem signal that fosters systematic processing (Section 2.4.2).

4.2.3 | When fluency signals falsity

As discussed in Section 2.2.2, what people infer from their metacognitive experience depends on which of several applicable lay theories they apply. Applicable lay theories can be learned in context, e.g., when experimenters associate a particular color contrast with statements that are clearly marked as true or false and teach participants this association over the course of many trials. Under such conditions, participants infer that statements presented in the respective format are false, even if they can be processed fluently (e.g., Silva et al., 2016; Unkelbach, 2007). This effect is specific to the learned association and does not reliably generalize to other fluency manipulations (Silva et al., 2016). We also surmise that it is limited to the experimental context in which it has been learned and does not generalize beyond the experiment. Presumably, simply telling participants that in the present experiment, all statements presented in this format are false would have the same effect.

More important, Corneille et al. (2020) showed that repetition-induced fluency can increase the likelihood that a claim is considered "fake news". In their experiments, participants were asked, "Do you believe that this statement has been previously used as a Fake News on social media?" (Corneille et al., 2020, p. 3). As expected, participants were more likely to believe so when the statement felt familiar due to earlier exposures. This effect was only observed when the task conveyed that familiarity may be indicative of social media exposure to fake news; without that framing, participants judged repeated statements as true, replicating the otherwise observed relationship.

4.3 | Summary

In sum, the criteria of compatibility, coherence, consensus, source credibility, and support figure prominently in lay assessments of truth (Schwarz, 2015). In each case, processing is less fluent when the criterion is not met. This makes processing fluency a valid but fallible indicator of the extent to which a claim satisfies the criteria. Because people are more sensitive to their metacognitive experience than to the source of their experience, incidental fluency

manipulations can reliably affect people's perceptions of truth, leading them to accept false statements simply because they are easy to process. While we assume that these criteria guide truth judgment in most situations, other criteria and lay theories can be brought to bear. Thus, a statement's apparent familiarity can also suggest that it may be fake news that has been spread on social media (Corneille et al., 2020). As emphasized in Section 2.2., metacognitive experiences provide information and what people conclude from that information depends on which lay theory they apply (Schwarz, 2004).

4.4 | Implications for social media and public opinion

The reviewed work bears on the efficiency of social media in spreading misinformation and the failure of many interventions in correcting misinformation. Most social media messages are short, written in simple language, and presented in optics that are easy to read, which facilitates fluent processing. These messages are posted by one's friends, a credible source, whose beliefs are usually compatible with one's own. The messages are liked by other friends, confirming social consensus, and reposted, ensuring multiple repeated exposures. With each exposure, processing becomes easier and perceptions of consensus, coherence and compatibility increase. Comments and related posts provide additional supporting evidence and further enhance familiarity. At the same time, the accumulating likes and reposts ensure that the filtering mechanism of the feed makes exposure to opposing information less and less likely. The result is an information diet that feels increasingly "true", fostering a high sense of expertise and confidence, which contributes to what Ross and Ward (1996) described as "naïve realism"—the belief that the world is the way I see it and whoever disagrees is either ill-informed or ill-intentioned.

Public information campaigns usually aim to correct false beliefs by confronting them with facts, consistent with content-focused theories of message learning. Unfortunately, only a small segment of the population will care enough to engage with the details, which will quickly fade from memory. Under such conditions, correction attempts may spread misleading information to audiences who may otherwise not have been exposed to it but will now find the false claims a bit easier to process when they hear them again. This way, the attempt to correct the erroneous beliefs of a few may prepare numerous others to accept those beliefs through repeated exposure (Schwarz, Sanna, Skurnik, & Yoon, 2007). Hence, repeating false information is almost always a bad idea. Better correction strategies involve making the truth as fluent as possible (for recommendations, see Schwarz, Newman, & Leach, 2016).

The observed role of fluency in intuitive judgments of truth also explains why poets and scientists alike have proposed that truth and beauty are closely related. We next turn to beauty and discuss its relationship to truth in Section 5.3.

5 | FLUENCY AND BEAUTY: ESTHETIC APPRECIATION, PLEASURE, AND ENGAGEMENT

Inspired by Titchener's (1910) hypothesis of the "warm glow" of familiarity and Zajonc's (1968) demonstration of mere exposure effects, numerous researchers explored the role of fluency related variables in consumer preference, assessing a wide variety of measures. Not surprisingly, the results depend on the measure used—not everything one finds pretty and likeable is also interesting and not everything that's interesting is something one would choose to buy. The basic issues have been addressed in millennia of theorizing about the nature of beauty.

5.1 | Flavors of esthetic appreciation: Beauty emerges from the perceiver's processing experience

Scholarly debate in philosophy and arts has located beauty either in the beholden, emphasizing attributes of the object, or in the beholder, emphasizing attributes of the perceiver (for reviews, see Feagin, 1995; Tatarkiewicz, 1971). The objectivist approach to esthetics motivated empirical research programs that aimed to identify objective features responsible for esthetic appeal, predominantly in the visual domain (Arnheim, 1974; Fechner, 1876; Gombrich, 1995; Solso, 1994). The most prominent among them are simplicity, symmetry, balance, clarity, contrast, and proportions. More recent research proposed additional candidates, such as prototypicality or averageness of the form (e.g., Halberstadt & Rhodes, 2000; Langlois & Roggman, 1990; Martindale, 1984). The subjectivist view emphasized that beauty is in the eye of the beholder and assigned a crucial role to the perceiver's exposure history, expertise, and cultural taste (for discussions, see Kubovy, 1999; Tatarkiewicz, 1971). Drawing on these traditions, other philosophical analyses (e.g., Ingarden, 1985; Merleau-Ponty, 1964) have taken an interactionist perspective and suggested that beauty emerges from the way perceivers and objects relate (for diverse approaches, see the contributions in Levinson, 2003).

Reviewing findings from the objectivist and subjectivist traditions, Reber et al. (2004) noted that the key variables identified in both traditions share one feature: they are likely to facilitate processing of the stimulus. Building on that observation, they proposed that an object is perceived as pretty and pleasing when it is fluently processed, which is a function of stimulus, perceiver, and context variables. Their fluency theory of beauty emphasizes esthetic pleasure and liking as measures of beauty, integrates previously identified object and perceiver variables, and predicts a role for numerous incidental variables that would otherwise not be considered relevant to esthetic experience (Section 5.1.1). Their approach did not address esthetic interest and engagement; for example, a photo of a pleasant sunset would qualify as eliciting esthetic pleasure despite eliciting little intellectual interest and having limited artistic value. Turning to the role of fluency in

esthetic interest and engagement, Graf and Landwehr (2015) proposed a dual-process model that follows Reber et al.'s (2004) theory for the experience of esthetic pleasure and suggests a more processing intensive path for the experience of esthetic interest and engagement (Section 5.2). Note that both of these theories pertain to the esthetic experience of the perceiver; they do not address artistic value, as assessed by art experts (for discussions of esthetic versus artistic value, see Ingarden, 1964; Lopes, 2011; Stecker, 2012).

5.1.1 | Esthetic pleasure

The fluency theory of beauty (Reber et al., 2004) assumes that objects are perceived as pleasing when they are easy to process. Relevant stimulus variables include the object attributes familiar from experimental esthetics, from contrast to the Gestalt laws (for a review, see Arnheim, 1974). The perceiver variables include the perceiver's sensory abilities, exposure history, and chronically or temporarily accessible applicable knowledge. The context variables include a wide range of mostly incidental influences, from the immediate context in which a stimulus is presented to its compatibility with culturally shared metaphors and the collocation frequency of related concepts in the corpus of natural language. We first revisit the classic mere exposure effect (Zajonc, 1968), note the many variants of repetition experienced in daily life, and address important moderators (Section 5.1.1.1). Subsequently, we turn to fluency variables that have received less attention, including metaphor matching (Section 5.1.1.2) and knowledge accessibility (Section 5.1.1.3).

Stimulus repetition: Variants of mere exposure

Challenging the learning theories of the time, Zajonc (1968) observed that the more often participants saw a novel stimulus, the more appealing they found it even in the absence of any reinforcement. This mere exposure effect has been obtained with a variety of stimuli, including ideographs and words (e.g., Zajonc, 1968), faces (e.g., Zebrowitz et al., 2008), music (e.g., Peretz et al., 1998; Ward et al., 2014), and works of art (e.g., Cutting, 2003); it can be captured with measures of judgment, choice, and physiological response (for an early meta-analysis, see Bornstein, 1989). Its emergence does not require stimulus recognition (Janiszewski, 1993; Kunst-Wilson & Zajonc, 1980). Mere exposure effects are undermined when presentation frequency is salient (Bornstein & D'Agostino, 1992) or perceivers are induced to misattribute the positive affective response elicited by fluent processing to an irrelevant source (Fang et al., 2007).

In consumer research, mere exposure is usually considered a determinant of what individual consumers like; less attention is devoted to how the frequency of exposure to goods in the marketplace shapes consumers' collective taste without consumers' insight. To appreciate the latter issue, consider Cutting's (2003) investigation of preferences for paintings from the late 19th century French Impressionist canon. Using the frequency with which a given painting appeared in a corpus of 980 art books, six studies showed that adults' preferences were "correlated with differences in image frequencies, but not with recognition, complexity, or prototypicality judgments" (Cutting, 2003, p. 319). This observation, made more than a century after the creation of the paintings, suggests that "the repeated presentation of images to an audience without its necessarily focused awareness or remembrance makes mere exposure a prime vehicle for canon maintenance. Tacitly and incrementally over time, this broadcast teaches the public to like the images, to prefer them, eventually to recognize them as part of the canon, and to want to see them again. In turn, it seems likely that this implicit education also reinforces the choices made by professionals in what they present to that public. The public's appreciation rewards museums, scholars, and the publishing industry by demonstrating an interested and responsive audience. And so it goes, with mere exposure cyclically reinforcing the canons through generations of authors and curators, on the one hand, and of museum goers and book buyers, on the other" (Cutting, 2003, p. 335). Repeated exposure and the resulting differences in fluency are also at the heart of cultural and temporal differences in esthetic preference—the more frequently people are exposed to novel art, be it avantgarde art or artforms of a different culture, the more they come to like it (for a review, see Reber et al., 2004).

The observed relationship between familiarity and positive affect is bidirectional: familiar objects elicit a positive affective response that informs their evaluation and novel objects seem more familiar when the perceiver feels good. For example, familiar (previously seen) faces are perceived as happier (Claypool et al., 2007), just as happily smiling faces are perceived as more familiar (Garcia-Marques et al., 2004). This warm glow of familiarity (Titchener, 1910) is not limited to the previously seen stimulus itself but also informs judgments of related stimuli. For example, exposure to other-race faces increases subsequent liking for new faces from the same racial group (Zebrowitz et al., 2008). Previous exposure to a face also influences the evaluation of products associated with the face. For example, Cho and Schwarz (2010) asked participants to evaluate eyewear or earrings displayed on the regular or mirror image of a familiar or unfamiliar other. When the person in the image was another student from the same small class, participants evaluated the products more favorably, and reported a higher purchase intention, when they were displayed on the person's regular image (which they had encountered in class) than on the person's mirror image (which they had not encountered in class). Image format exerted no influence when the person in the image was unfamiliar, thus giving neither image a mere exposure advantage (see also Cho & Schwarz, 2012).

Several moderators of mere exposure effects are worth noting. As discussed in Section 2.3, people are more sensitive to changes in fluency than to a steady signal; hence, fluency effects are more reliably obtained in within-participant than in between-participant designs (Wänke & Hansen, 2015). This also holds for the mere exposure effect, which can only be observed when previously encountered and novel stimuli are mixed at the time of measurement (Dechêne et al., 2009). The implications of this regularity for displaying art

works and consumer products in a way that maximizes appreciation are obvious and await empirical exploration in natural settings.

Moreover, affect and cognition research has shown that people are more likely to explore novel and unfamiliar ideas and environments in contexts they consider benign than in contexts they consider problematic. Because benign contexts are usually associated with (mildly) positive feelings, whereas problematic contexts are usually associated with a shift to negative feelings, changes in feeling play a key role in informing people about the likely nature of their current situation (for a review, see Schwarz, 2002). One may therefore expect that a preference for the familiar is particularly pronounced when negative feelings signal a problematic situation but attenuated when positive feelings signal a benign situation. Empirically, this is the case. De Vries et al. (2010) found that participants in an experimentally induced sad mood liked easy to process prototypical objects (dot patterns) more than less prototypical ones. However, this preference for the familiar (prototypical) was not observed when participants were put into a happy mood. Using a subliminal mere exposure paradigm, Gillebaart et al. (2012) similarly observed that familiar targets were liked more than novel targets under conditions of prevention motivation, but not under conditions of promotion motivation.

Note, however, that these findings do not imply that a problematic situation will always invite an endorsement of the familiar. The participants in the above studies (De Vries et al., 2010; Gillebaart et al., 2012) made inconsequential liking judgments for stimuli that offered little substantive information—dot patterns and letter strings. When the task offers meaningful declarative information as an alternative input, people may turn to that information at the expense of experiential information as reviewed in Section 2.4. For example, the problem signal provided by a sad mood can shift people from relying on ease of recall to relying on recalled content in reasoning tasks (Ruder & Bless, 2003) and can reduce the impact of repetition on judgments of truth (Koch & Forgas, 2012). Understanding how the perception of one's current situation as benign or problematic affects the use of metacognitive experiences for different judgment tasks provides an important agenda for future research.

Beyond mere exposure

From a fluency perspective, repeated exposure is just one of many variables that influence processing fluency. Hence, any other fluency enhancing variable should similarly enhance esthetic appreciation, paralleling our discussion of repetition effects on judgments of truth (Section 4.2.1). Empirically, this is the case (for a review, see Reber et al., 2004). For example, priming participants with the contour of an object facilitates its identification (as indexed by faster reaction times) and enhances liking (Reber et al., 1998). Adopting this priming procedure, Forster, Leder, and Ansorge (2013, 2016) aimed to shed light on the relative contributions of objective fluency (response speed) and its subjective experience (measured with, "How easy was the perception of the presented stimulus?") on liking. They found that "objectively more fluent images were indeed judged as more fluent and were also liked more. Moreover, differences in liking were even stronger when data were analyzed according to felt fluency" rather than objective fluency (Forster et al., 2013, p. 280).

Semantic primes can serve the same function. For example, people like ambiguous drawings (e.g., of a lock) more when they are preceded by a semantic prime (e.g., the word "key") that facilitates perception (Winkielman et al., 2003). Building on this observation, Belke et al. (2010) presented paintings with bogus titles that either facilitated or impaired processing. Compared to a condition without titles, titles that facilitated the processing of representational paintings increased appreciation of the art relative to a condition without titles, whereas titles that impaired the processing of representational paintings hurt appreciation. However, titles are less likely to facilitate the processing of abstract paintings and do not reliably affect the pleasure derived from them (e.g., Leder et al., 2006).

How fluently a given stimulus can be processed also depends on what the perceiver attempts to do with the stimulus. Suppose, for example, that the target object is a picture of a human face with an ambiguous emotional expression. When asked to distinguish between pictures that show a human face and pictures that do not, the ambiguity of the face's emotional expression will not interfere with the task, but when asked to distinguish between pictures that show a happy or a sad face, ambiguity of emotional expression will make the task more difficult. Accordingly, the ambiguity of facial expression should affect how appealing one finds the picture in the latter case, but not in the former. Winkielman et al. (2015) found consistent support for this prediction. In their experiments, the same target seemed more attractive (and more trustworthy) the more the categorization task allowed for fluent processing.

As a final example, we consider a special type of repetition, namely the repetitiveness of the lyrics of popular songs. Analyzing the role of lyrics in the popularity of songs, Nunes et al. (2015) found that lexical repetition (e.g., "a good song is a good song is a good song") increases the ease with which lyrics can be processed. This, in turn, benefits the popularity of the songs. Using data from Billboard's Hot 100 singles chart from 1958–2012, Nunes et al. (2015) showed that more repetitive songs were more likely to reach #1, and did so in a shorter time, than less repetitive songs.

Metaphor congruency effects

The priming studies reviewed in the preceding section showed that a target object is easier to process when it is preceded by matching rather than mismatching visual (e.g., Reber et al., 1998) or semantic (e.g., Belke et al., 2010; Winkielman et al., 2003) primes. We surmise that the same principle underlies a broad range of congruency effects as a discussion of metaphor congruency may illustrate.

Conceptual metaphors ground abstract concepts in concrete domains with which people have direct sensory experience (Lakoff & Johnson, 1999; for reviews, see Landau, 2017; Schwarz & Lee, 2019). For example, we talk about valence in terms of verticality, feel "down" or "on top of the world", and look "up" to good people but "down" at bad ones. As Meier et al. (2004) showed, valenced words are processed faster and with fewer errors when their spatial display matches the metaphorical valence-verticality link, giving positive

words an advantage when presented at the top of the screen and negative words when presented at the bottom of the screen. According to fluency theory, this difference in processing fluency should translate into differential esthetic appreciation. To test this prediction Zhang et al. (2019) presented pairs of happy and sad faces in a visual arrangement that matched (happy face above sad face) or mismatched (sad face above happy face) the valence-verticality metaphor. As expected, metaphor congruent arrangements were strongly preferred. Verticality also figures prominently in metaphorical distinctions between rationality and emotionality, reflecting that the head (rationality) is above the gut (emotionality; for a review, see Cian et al., 2015). Consistent with this metaphor, consumers prefer arrangements where rational materials are placed above emotional materials (Cian et al., 2015).

Other experiments relied on the relationship between time and space—people look "ahead" to the future, but "back" to the past (Boroditsky, 2000; Tenbrink, 2011). In two-dimensional space, the past precedes the future in the direction of writing; e.g., for speakers of English, the past is to the left of the future. As expected, American participants preferred pairs of historic and modern photos that matched the space-time metaphor over pairs that did not when asked to select the better arrangement (Zhang et al., 2019). The benefits of space-time matching also extend to the evaluation of consumer products. Chae and Hoegg (2013) presented advertisements for self-improvement products (e.g., a weight loss program) with before-after pictures that illustrated the efficiency of the product. English speaking consumers evaluated the product more favorably when the before-image was placed to the left of the after-picture than when the ordering was reversed. English speaking consumers also evaluated antique furnishings more favorably when displayed on the left, but modern furnishings when displayed on the right; this preference reversed for Hebrew speakers, who write from right to left.

5.2 | Esthetic interest and engagement

Whereas the fluency theory of beauty (Reber et al., 2004) predicts that esthetic appreciation increases with ease of processing, other theories predict that esthetic appreciation is most pronounced at medium levels of complexity (e.g., Berlyne, 1970; Hekkert et al., 2003), which entails a relationship between fluency and appreciation that follows an inverted U-shape. The empirical results are mixed and support for both predictions has been obtained. One contributor to the mixed findings is individual differences in preference for complexity (Güçlütürk et al., 2016), which can reflect differences in expertise and cognitive capacity. Not surprisingly, complex stimuli become easier to process as domain expertise and previous exposure increases (e.g., Smith & Melara, 1990; for a review, see Reber et al., 2004). Complex stimuli are also easier to process when cognitive capacity is high, as Sherman et al. (2015) observed. Using a sample of 120 visual artworks from different periods, cultures, and styles, they found that "art appreciation is increased when the level of visual complexity within an artwork is compatible with the viewer's visual working memory capacity" (Sherman et al., 2015, p. 898). A second contributor to the mixed findings is that not all complex stimuli are difficult to process. Some have a high degree of internal repetition, which leads to more fluent, rather than disfluent, processing (Joye et al., 2016). This is compatible with an influential view in esthetic theorizing that holds that beauty is attained through "simplicity in complexity" (Dickie, 1997) as well as the observation that fluency experiences are context sensitive, with a given familiar stimulus seeming more attractive when presented in the context of novel ones (Dechêne et al., 2009). Moreover, perceivers who enjoy complex abstract artworks, imposing low visual fluency, may only do so when they can easily understand them, that is, when they experience high conceptual fluency (Ball et al., 2018).

Complicating this picture is a lack of agreement on what esthetic appreciation entails. Whereas Reber et al. (2004) emphasized esthetic pleasure and liking, other approaches emphasize interest, engagement, and assessments of originality and creativity as components of esthetic experience. Not surprisingly, different judgment tasks result in different outcomes. For example, a fluently processed work of art may be judged as pleasing and beautiful based on the elicited affect but may simultaneously seem too familiar to qualify as original and creative, paralleling the observation that fluently processed products seem less innovative (e.g., Cho & Schwarz, 2006). Testing this possibility, Christensen et al. (2020) obtained mixed results across seven experiments with different fluency manipulations. Easy processing increased judgments of beauty as well as creativity when fluency was manipulated through exposure frequency or figure-ground contrast, whereas high prototypicality increased judgments of beauty without influencing judgments of creativity. A positive effect of disfluency on judgments of creativity was only observed when fluency was manipulated through stimulus complexity, a variable that had inconsistent effects on judgments of beauty. Such divergences are to be expected when judgments of beauty are based on the affective response to the stimulus (as reviewed in Section 5.1.1.1) but judgments of creativity on the perceived originality of the stimulus. Moreover, the observation that perceived creativity increased with stimulus complexity does not necessarily implicate (dis)fluency as the key driver. Stimuli of different complexity also differ on dimensions unrelated to ease of processing, which makes it important to use manipulations of complexity that reduce the range of possible alternative accounts. At present, the ambiguity of complexity manipulations applies to most studies that suggest an inverted U-shape relationship between fluency and beauty based on Berlyne's (1970) theorizing.

Motivated by these issues, Graf and Landwehr (2015, 2017) presented a dual-process perspective on fluency-based esthetics, the pleasure-interest model of esthetic liking (PIA). Their model follows Reber et al.'s (2004) predictions for conditions of low processing motivation or ability but assumes that disfluency will elicit interest under conditions of high processing motivation and ability. From this perspective, perceivers who lack motivation or cognitive resources prefer fluent stimuli, which perceivers with high motivation and

cognitive resources may find boring. We consider these assumptions plausible and compatible with findings in other areas of metacognitive research (Section 3.2.1). Initial tests of the model support the prediction that well-ordered and easy to process patterns are liked more, whereas stimuli that require effort to detect order elicit interest (Muth et al., 2019). Similarly, Flavell et al. (2020) observed that camouflaged objects were liked more when they were easy to identify, but evaluated as more interesting when they were hard to identify.

5.3 | Beauty and truth

From a poet's assertion that "beauty is truth, truth beauty" (Keats, 1820) to a Nobel Prize winning scientist's claim that "you can recognize truth by its beauty and simplicity" (Feynman, 1981), beauty has often been offered as a heuristic for assessing truth. The intuitive appeal of this heuristic reflects that the same metacognitive experience of fluency can serve as input into both judgments (Schwarz, 2006). Indeed, the same fluency manipulations can increase the perceived beauty of an object as well as the perceived truth of a claim, as reviewed in Sections 4 and 5. In a recent test of this assumption, Kara-Yakoubian et al. (2020) presented substantively equivalent claims in the esthetically pleasing form of an antimetabole, that is, an A-B-B-A pattern (e.g., "Success is what you want. Happiness is what you get.") or a less pleasing form of equivalent semantic meaning (e.g., "Success is getting what you wish. Happiness is wanting what you get."). As expected, the esthetically more pleasing forms were processed faster (indicating higher objective fluency) and rated as more accurate descriptions of human behavior. Similarly, McGlone and Tofighbakhsh (2000) found that substantively equivalent statements were judged as truer when they rhymed than when they did not.

Going beyond the numerous observations of parallel effects of diverse fluency manipulations on judgments of beauty and judgments of truth, Vogel et al. (2020) explored how repetition and figure-ground contrast influence these judgments when both types of fluency are manipulated simultaneously. Their repetition manipulation consisted of exposure to an initial statement (e.g., "The second of Gulliver's travels led to Brobdingnag.") that was repeated in paraphrased form at test (e.g., "Brobdingnag was the second place Gulliver went to in his journeys."). Using the paraphrase at test privileges the conceptual component of the fluency experience, given the differences in surface appearance. In addition, the statements at test were presented in high or low color contrast, thus manipulating the perceptual component of the fluency experience. Using these orthogonal manipulations, Vogel et al. (2020) observed an influence of repetition (but not color contrast) on judgments of truth and an influence of color contrast (but not repetition) on judgments of beauty. They concluded from this observation that people can differentiate between different sources of fluency and draw on the more applicable source when two are experienced simultaneously and pitched against one another. This increases the impact of conceptual fluency on judgments of truth and of perceptual fluency on judgments of beauty. However, when only one source of fluency is present, people draw on this experience for either judgment, as reviewed in Sections 4 and 5.

At present, Vogel et al.'s. (2020) results are the most persuasive evidence for the possibility of judgment-specific effects of different fluency manipulations. That these effects are only observed when two different sources of fluency are instantiated simultaneously raises new questions about how people differentiate between different components of their experience and challenges the assumption that the phenomenal experience is similar across manipulations. The assumed ability of easy differentiation between sources of fluency also stands in stark contrast to the core observation that people misread incidental fluency experiences as bearing on their task and only discount their experience when their attention is drawn to its incidental nature. Future research may shed light on these issues.

5.4 | Summary

As our selective review of fluency and beauty indicates, the metacognitive experience of fluent processing is a major determinant of esthetic pleasure and liking. Variables that have long been known to be esthetically pleasing, such as symmetry and contrast, as well as variables that have not been considered of esthetic relevance, such as semantic priming and metaphor congruency, enhance liking by facilitating fluent processing. Throughout, ease of processing increases, whereas difficulty of processing decreases, esthetic pleasure as reflected in self-reports of liking and psychophysiological measures of positive affective response. However, less fluently processed stimuli may elicit more interest and may seem more original, paralleling the observation that disfluent products seem more innovative and more suited for special occasions (Section 3).

6 | CODA

Theories of judgment and decision making usually focus on declarative information, such as the product attributes people consider or the arguments they generate. However, we cannot understand the impact of the declarative information without considering its interplay with experiential information, from moods and emotions to bodily sensations and metacognitive experiences (Schwarz, 2012). Focusing on the metacognitive experiences of ease and difficulty, the research we covered in this review paints a mixed portrait of the sophistication of human judgment. On the one hand, people monitor their own thought processes and attend to declarative information and the accompanying feelings as relevant sources of information. The inferences they draw from that information are guided by lay theories of mental processes that are usually correct and consistent with psychological research. Moreover, the recruitment of applicable lay theories is context sensitive and different tasks invite the selection of different inference rules, which are usually appropriate. On

the other hand, people are insensitive to where their metacognitive experiences come from and tend to take their feelings at face value. Unless their attention is explicitly drawn to it, they routinely fail to recognize the influence of incidental variables (from print fonts and figure–ground contrast to rhyme) and treat their experience as integral to their task, much as has been observed for the influence of moods and other feelings. As a result, experiential information figures prominently in feats of human insight as well as disasters of human gullibility.

ORCID

Norbert Schwarz https://orcid.org/0000-0002-8868-7067
Madeline Jalbert https://orcid.org/0000-0003-3972-1844
Tom Noah https://orcid.org/0000-0001-9062-7357
Lynn Zhang https://orcid.org/0000-0001-9585-7258

REFERENCES

Aarts, H., & Dijksterhuis, A. (1999). How often did I do it? Experienced ease of retrieval and frequency estimates of past behavior. *Acta Psychologica*, *103*, 77–89. https://doi.org/10.1016/S0001-6918(99)00035-9

Agarwal, S., Hu, M., & Lee, A. D. (2020). Street name fluency and housing prices. *Social Science Research Network*. https://doi.org/10.2139/ssrn.3463539

Albarracín, D., & Kumkale, G. T. (2003). Affect as information in persuasion: A model of affect identification and discounting. *Journal of Personality and Social Psychology*, *84*(3), 453–469. https://doi.org/10.1037/0022-3514.84.3.453

Alter, A. L., & Oppenheimer, D. M. (2006). Predicting short-term stock fluctuations by using processing fluency. *Proceedings of the National Academy of Sciences of the United States of America*, *103*(24), 9369–9372. https://doi.org/10.1073/pnas.0601071103

Alter, A. L., & Oppenheimer, D. M. (2009a). Uniting the tribes of fluency to form a metacognitive nation. *Personality and Social Psychology Review*, *13*(3), 219–235. https://doi.org/10.1177/1088868309341564

Alter, A. L., & Oppenheimer, D. M. (2009b). Suppressing secrecy through metacognitive ease: Cognitive fluency encourages self-disclosure. *Psychological Science*, *20*(11), 1414–1420. https://doi.org/10.1111/j.1467-9280.2009.02461.x

Álvaro, L., Moreira, H., Lillo, J., & Franklin, A. (2015). Color preference in red–green dichromats. *Proceedings of the National Academy of Sciences of the United States of America*, *112*, 9316–9321. https://doi.org/10.1073/pnas.1502104112

Arkes, H. R., Hackett, C., & Boehm, L. (1989). The generality of the relation between familiarity and judged validity. *Journal of Behavioral Decision Making*, *2*, 81–94. https://doi.org/10.1002/bdm.3960020203

Arnheim, R. (1974). *Entropy and art: An essay on disorder and order*. University of California Press.

Arrow, K. J. (1974). *The limits of organization*. Norton, York.

Bacon, F. T. (1979). Credibility of repeated statements: Memory for trivia. *Journal of Experimental Psychology: Human Learning and Memory*, *5*, 241–252.

Bae, M. (2019). Influences of identified victim images on processing fluency. *Journal of Nonprofit & Public Sector Marketing*, *31*(3), 249–273. https://doi.org/10.1080/10495142.2018.1526740

Bahník, S., & Vranka, M. A. (2017). If it's difficult to pronounce, it might not be risky: The effect of fluency on judgment of risk does not generalize to new stimuli. *Psychological Science*, *28*, 427–436. https://doi.org/10.1177/0956797616685770

Ball, L. J., Threadgold, E., Marsh, J. E., & Christensen, B. T. (2018). The effects of stimulus complexity and conceptual fluency on aesthetic judgments of abstract art: Evidence for a default–interventionist account. *Metaphor and Symbol*, *33*(3), 235–252. https://doi.org/10.1080/10926488.2018.1481255

Begg, I., & Armour, V. (1991). Repetition and the ring of truth: Biasing comments. *Canadian Journal of Behavioural Science*, *23*, 195–213. https://doi.org/10.1037/h0079004

Belke, B., Leder, H., Strobach, T., & Carbon, C. C. (2010). Cognitive fluency: High-level processing dynamics in art appreciation. *Psychology of Aesthetics, Creativity, and the Arts*, *4*(4), 214–222. https://doi.org/10.1037/a0019648

Berelson, B., & Steiner, G. A. (1964). *Human behavior: An inventory of scientific findings*. Harcourt, Brace, & World.

Berlyne, D. E. (1970). Novelty, complexity, and hedonic value. *Perception & Psychophysics*, *8*(5), 279–286. https://doi.org/10.3758/BF03212593

Bless, H., Bohner, G., Schwarz, N., & Strack, F. (1990). Mood and persuasion: A cognitive response analysis. *Personality and Social Psychology Bulletin*, *16*(2), 331–345. https://doi.org/10.1177/0146167290162013

Bodenhausen, G. V. (1993). Emotions, arousal, and stereotype-based discrimination: A heuristic model of affect and stereotyping. In D. M. Mackie & D. L. Hamilton (Eds.), *Affect, cognition, and stereotyping: Interactive processes in group perception* (pp. 13–35). Academic Press.

Bornstein, R. F. (1989). Exposure and affect: Overview and meta-analysis of research, 1968–1987. *Psychological Bulletin*, *106*(2), 265–289.

Bornstein, R. F., & D'Agostino, P. R. (1992). Stimulus recognition and the mere exposure effect. *Journal of Personality and Social Psychology*, *63*(4), 545–552. https://doi.org/10.1037/0022-3514.63.4.545

Boroditsky, L. (2000). Metaphoric structuring: Understanding time through spatial metaphors. *Cognition*, *75*(1), 1–28. https://doi.org/10.1016/S0010-0277(99)00073-6

Bransford, J. D., & Johnson, M. K. (1972). Contextual prerequisites for understanding: Some investigations of comprehension and recall. *Journal of Verbal Learning and Verbal Behavior*, *11*, 717–726. https://doi.org/10.1016/S0022-5371(72)80006-9

Brashier, N. M., & Marsh, E. J.(2020). Judging truth. *Annual Review of Psychology*, *71*, 499–515. https://doi.org/10.1146/annurev-psych-010419-050807

Breakwell, G. M. (2007). *The psychology of risk*, New York, NY: Cambridge University Press.

Briñol, P., & Petty, R. E. (2003). Overt head movements and persuasion: A self-validation analysis. *Journal of Personality and Social Psychology*, *84*(6), 1123–1139. https://doi.org/10.1037/0022-3514.84.6.1123

Briñol, P., & Petty, R. E. (2009). Persuasion: Insights from the self-validation hypothesis. *Advances in Experimental Social Psychology*, *41*, 69–118.

Briñol, P., Petty, R. E., & Tormala, Z. L. (2006). The malleable meaning of subjective ease. *Psychological Science*, *17*(3), 200–206. https://doi.org/10.1111/j.1467-9280.2006.01686.x

Brown, A. S., Brown, L. A., & Zoccoli, S. L. (2002). Repetition-based credibility enhancement of unfamiliar faces. *American Journal of Psychology*, *115*, 199–209. https://doi.org/10.2307/1423435

Brown, A. S., & Nix, L. A. (1996). Turning lies into truths: Referential validation of falsehoods. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *22*, 1088–1100.

Cartwright, D. (1959). A field theoretical conception of power. In D. Cartwright (Ed.), *Studies in social power* (pp. 86–103). University of Michigan Press.

Carver, C. S., & Scheier, M. F. (1990). Origins and functions of positive and negative affect: A control-process view. *Psychological Review*, *97*(1), 19–35. https://doi.org/10.1037/0033-295X.97.1.19

Chae, B., & Hoegg, J. (2013). The future looks "right": Effects of the horizontal location of advertising images on product

attitude. *Journal of Consumer Research*, *40*(2), 223–238. https://doi.org/10.1086/669476

Cho, H. (2015). The malleable effect of name fluency on pharmaceutical drug perception. *Journal of Health Psychology*, *20*(10), 1369–1374. https://doi.org/10.1177/1359105314525486

Cho, H., & Schwarz, N. (2006). If I don't understand it, it must be new: Processing fluency and perceived product innovativeness. *Advances in Consumer Research*, *33*, 319–320.

Cho, H., & Schwarz, N. (2010). I like those glasses on you, but not in the mirror: Fluency, preference, and virtual mirrors. *Journal of Consumer Psychology*, *20*(4), 471–475. https://doi.org/10.1016/j.jcps.2010.07.004

Cho, H., & Schwarz, N. (2012). When I like my picture, I like your product: Misattribution using interactive virtual mirrors. *Journal of Interactive Marketing*, *26*, 235–243. https://doi.org/10.1016/j.intmar.2012.03.003

Christakis, N. A. (2019). *Blueprint: The evolutionary origins of a good society*. Hachette UK.

Christensen, B. T., Ball, L. J., & Reber, R. (2020). Perceptual fluency effects in judgments of creativity and beauty: Creative objects are perceived fluently yet they are visually complex. *Journal of Cognitive Psychology*, *32*(1), 45–66. https://doi.org/10.1080/20445911.2019.1689986

Chrobot, N. (2014, March). The role of processing fluency in online consumer behavior: Evaluating fluency by tracking eye movements. In *Proceedings of the symposium on eye tracking research and applications* (pp. 387–388). New York, NY: ACM Press.

Cialdini, R. B. (2009). *Influence: Science and practice* (Vol. *4*). Pearson Education.

Cian, L., Krishna, A., & Schwarz, N. (2015). Positioning rationality and emotion: Rationality is up and emotion is down. *Journal of Consumer Research*, *42*(4), 632–651. https://doi.org/10.1093/jcr/ucv046

Claypool, H. M., Hall, C. E., Mackie, D. M., & Garcia-Marques, T. (2008). Positive mood, attribution, and the illusion of familiarity. *Journal of Experimental Social Psychology*, *44*(3), 721–728. https://doi.org/10.1016/j.jesp.2007.05.001

Claypool, H. M., Hugenberg, K., Housley, M. K., & Mackie, D. M. (2007). Familiar eyes are smiling: On the role of familiarity in the perception of facial affect. *European Journal of Social Psychology*, *37*(5), 856–866. https://doi.org/10.1002/ejsp.422

Corneille, O., Mierop, A., & Unkelbach, C. (2020). Repetition increases both perceived truth and fakeness of information: An ecological account. *Cognition*, *205*, 104470. https://doi.org/10.1016/j.cognition.2020.104470

Cutting, J. E. (2003). Gustave Caillebotte, French impressionism, and mere exposure. *Psychonomic Bulletin & Review*, *10*(2), 319–343. https://doi.org/10.3758/BF03196493

De Vries, M., Holland, R. W., Chenier, T., Starr, M. J., & Winkielman, P. (2010). Happiness cools the warm glow of familiarity: Psychophysiological evidence that mood modulates the familiarity-affect link. *Psychological Science*, *21*(3), 321–328. https://doi.org/10.1177/0956797609359878

Dechêne, A., Stahl, C., Hansen, J., & Wänke, M. (2009). Mix me a list: Context moderates the truth effect and the mere-exposure effect. *Journal of Experimental Social Psychology*, *45*, 1117–1122. https://doi.org/10.1016/j.jesp.2009.06.019

Dechêne, A., Stahl, C., Hansen, J., & Wänke, M. (2010). The truth about the truth: A meta-analytic review of the truth effect. *Personality and Social Psychology Review*, *14*(2), 238–257. https://doi.org/10.1177/1088868309352251

Derryberry, D., & Tucker, D. M. (1994). Motivating the focus of attention. In P. M. Neidenthal & S. Kitayama (Eds.), *The heart's eye: Emotional influences in perception and attention* (pp. 167–196). Academic Press.

Dickie, G. (1997). *Introduction to aesthetics*. Oxford University Press.

Dimmitt, C., & McCormick, C. B. (2012). Metacognition in education. In K. R. Harris, S. Graham & T. Urdan (Eds.), *APA educational psychology handbook* (Vol. *1*, pp. 157–187). American Psychological Association. https://doi.org/10.1037/13273-007

Dohle, S., & Montoya, A. K. (2017). The dark side of fluency: Fluent names increase drug dosing. *Journal of Experimental Psychology: Applied*, *23*(3), 231–239.

Dohle, S., & Siegrist, M. (2014). Fluency of pharmaceutical drug names predicts perceived hazardousness, assumed side effects and willingness to buy. *Journal of Health Psychology*, *19*(10), 1241–1249. https://doi.org/10.1177/1359105313488974

Dunlosky, J., & R. A. Bjork (Eds.) (2008). *Handbook of metamemory and memory*. Psychology Press.

Dunlosky, J., & Metcalfe, J. (2009). *Metacognition*. Sage.

Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Harcourt Brace Jovanovich.

Einhorn, H., & Hogarth, R. (1986). Judging probable cause. *Psychological Bulletin*, *99*, 3–19. https://doi.org/10.1037/0033-2909.99.1.3

Fang, X., Singh, S., & Ahluwalia, R. (2007). An examination of different explanations for the mere exposure effect. *Journal of Consumer Research*, *34*(1), 97–103. https://doi.org/10.1086/513050

Fazio, L. K., Brashier, N. M., Payne, B. K., & Marsh, E. J. (2015). Knowledge does not protect against illusory truth. *Journal of Experimental Psychology: General*, *144*, 993–1002. https://doi.org/10.1037/xge0000098

Feagin, S. L. (1995). Paintings and their places. *Australasian Journal of Philosophy*, *73*(2), 260–268. https://doi.org/10.1080/00048409512346591

Fechner, G. T. (1876). *Vorschule der Aesthetik* (Vol. *1*). Breitkopf & Härtel.

Festinger, L. (1950). Informal social communication. *Psychological Review*, *57*(5), 271–282. https://doi.org/10.1037/h0056932

Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*(2), 117–140. https://doi.org/10.1177/001872675400700202

Festinger, L. (1957). *A theory of cognitive dissonance*. Row, Peterson.

Feynman, R. (1981). Interview in the magazine. *Horizon*. http://www.notable-quotes.com/f/feynman_richard.html

Flavell, J. C., Over, H., & Tipper, S. P. (2020). Competing for affection: Perceptual fluency and ambiguity solution. *Journal of Experimental Psychology: Human Perception and Performance*, *46*(3), 231–240. https://doi.org/10.1037/xhp0000702

Florack, A., & Zoabi, H. (2003). Risikoverhalten bei Aktiengeschäften: Wenn Anleger nachdenklich werden. (Risk behavior in share transactions: When investors think about reasons). *Zeitschrift für Sozialpsychologie*, *34*, 65–78. https://doi.org/10.1024//0044-3514.34.2.65

Forgas, J. P., & Baumeister, R. (Eds.) (2019). *The social psychology of gullibility: Conspiracy theories, fake news, and irrational beliefs*. Routledge.

Forster, M., Leder, H., & Ansorge, U. (2013). It felt fluent, and I liked it: Subjective feeling of fluency rather than objective fluency determines liking. *Emotion*, *13*(2), 280–289. https://doi.org/10.1037/a0030115

Forster, M., Leder, H., & Ansorge, U. (2016). Exploring the subjective feeling of fluency. *Experimental Psychology*, *63*, 45–58. https://doi.org/10.1027/1618-3169/a000311

Garcia-Marques, T., Mackie, D. M., Claypool, H. M., & Garcia-Marques, L. (2004). Positivity can cue familiarity. *Personality and Social Psychology Bulletin*, *30*, 585–593. https://doi.org/10.1177/0146167203262856

Garcia-Marques, T., Silva, R. R., & Mello, J. (2016). Judging the truth-value of a statement in and out of a deep processing context. *Social Cognition*, *34*, 40–54. https://doi.org/10.1521/soco.2016.34.1.40

Garcia-Marques, T., Silva, R. R., Reber, R., & Unkelbach, C. (2015). Hearing a statement now and believing the opposite later. *Journal of Experimental Social Psychology*, *56*, 126–129. https://doi.org/10.1016/j.jesp.2014.09.015

Gillebaart, M., Förster, J., & Rotteveel, M. (2012). Mere exposure revisited: The influence of growth versus security cues on evaluations of novel and familiar stimuli. *Journal of Experimental Psychology: General*, *141*(4), 699–714. https://doi.org/10.1037/a0027612

Gmuer, A., Siegrist, M., & Dohle, S. (2015). Does wine label processing fluency influence wine hedonics? *Food Quality and Preference*, *44*, 12–16. https://doi.org/10.1016/j.foodqual.2015.03.007

Gombrich, E. H. (1995). *The story of art* (16th ed.). Phaidon.

Graf, L. K., & Landwehr, J. R. (2015). A dual-process perspective on fluency-based aesthetics: The pleasure-interest model of aesthetic liking. *Personality and Social Psychology Review*, *19*(4), 395–410. https://doi.org/10.1177/1088868315574978

Graf, L. K., & Landwehr, J. R. (2017). Aesthetic pleasure versus aesthetic interest: The two routes to aesthetic liking. *Frontiers in Psychology*, *8*, 15. https://doi.org/10.3389/fpsyg.2017.00015

Graf, L. K., Mayer, S., & Landwehr, J. R. (2018). Measuring processing fluency: One versus five items. *Journal of Consumer Psychology*, *28*(3), 393–411. https://doi.org/10.1002/jcpy.1021

Green, T. C., & Jame, R. (2013). Company name fluency, investor recognition, and firm value. *Journal of Financial Economics*, *109*(3), 813–834. https://doi.org/10.1016/j.jfineco.2013.04.007

Greifeneder, R. (2007). *Reliance on accessibility experiences in judgment and decision making*. Pabst Science Publishers.

Greifeneder, R., Alt, A., Bottenberg, K., Seele, T., Zelt, S., & Wagener, D. (2010). On writing legibly: Processing fluency systematically biases evaluations of handwritten material. *Social Psychological and Personality Science*, *1*(3), 230–237. https://doi.org/10.1177/1948550610368434

Greifeneder, R., & Bless, H. (2007). Relying on accessible content versus accessibility experiences: The case of processing capacity. *Social Cognition*, *25*, 853–881. https://doi.org/10.1521/soco.2007.25.6.853

Greifeneder, R., Bless, H., & Pham, M. T. (2011). When do people rely on affective and cognitive feelings in judgment? A review. *Personality and Social Psychology Review*, *15*(2), 107–141. https://doi.org/10.1177/1088868310367640

Greifeneder, R., Jaffé, M., Newman, E. J., & Schwarz, N. (Eds.) (2020). *The psychology of fake news: Accepting, sharing, and correcting misinformation*. Routledge.

Greifeneder, R., & Schwarz, N. (2014). Metacognitive processes and subjective experience. In J. W. Sherman, B. Gawronski & Y. Trope (Eds.), *Dual-process theories of the social mind* (pp. 314–327). Guilford Press.

Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), *Syntax and semantics, Vol.3: Speech acts* (pp. 41–58). Academic Press.

Güçlütürk, Y., Jacobs, R. H. A. H., & Lier, R. V. (2016). Liking versus complexity: Decomposing the inverted U-curve. *Frontiers in Human Neuroscience*, *10*, 112. https://doi.org/10.3389/fnhum.2016.00112

Guinote, A. (2007). Behaviour variability and the situated focus theory of power. *European Review of Social Psychology*, *18*(1), 256–295. https://doi.org/10.1080/10463280701692813

Guinote, A. (2015). Social cognition of power. *APA handbook of personality and social psychology, Volume 1: Attitudes and social cognition* (pp. 547–569). American Psychological Association.

Haddock, G. (2002). It's easy to like or dislike Tony Blair: Accessibility experiences and the favorability of attitude judgments. *British Journal of Psychology*, *93*, 257–267. https://doi.org/10.1348/000712602162571

Haddock, G., Rothman, A. J., Reber, R., & Schwarz, N. (1999). Forming judgments of attitude certainty, importance, and intensity: The role of subjective experiences. *Personality and Social Psychology Bulletin*, *25*, 771–782.

Halberstadt, J., & Rhodes, G. (2000). The attractiveness of nonface averages: Implications for an evolutionary explanation of the attractiveness of average faces. *Psychological Science*, *11*(4), 285–289. https://doi.org/10.1111/1467-9280.00257

Harmon-Jones, E., & Allen, J. J. B. (2001). The role of affect in the mere exposure effect: Evidence from psychophysiological and individual differences approaches. *Personality and Social Psychology Bulletin*, *27*, 889–898. https://doi.org/10.1177/0146167201277011

Hasher, L., Goldstein, D., & Toppino, T. (1977). Frequency and the conference of referential validity. *Journal of Verbal Learning and Verbal Behavior*, *16*, 107–112. https://doi.org/10.1016/S0022-5371(77)80012-1

Hass, R. G. (1984). Perspective taking and self-awareness: Drawing an *E* on your forehead. *Journal of Personality and Social Psychology*, *46*(4), 788–798. https://doi.org/10.1037/0022-3514.46.4.788

Hawkins, S. A., & Hoch, S. J. (1992). Low-involvement learning: Memory without evaluation. *Journal of Consumer Research*, *19*, 212–225. https://doi.org/10.1086/209297

Hekkert, P., Snelders, D., & Van Wieringen, P. C. (2003). 'Most advanced, yet acceptable': Typicality and novelty as joint predictors of aesthetic preference in industrial design. *British Journal of Psychology*, *94*(1), 111–124. https://doi.org/10.1348/000712603762842147

Herzog, S. M., & Hertwig, R. (2013). The ecological validity of fluency. In C. Unkelbach & R. Greifeneder (Eds.), *The experience of thinking: How the fluency of mental processes influences cognition and behavior* (pp. 190–219). Psychology Press.

Ingarden, R. (1964). Artistic and aesthetic values. *The British Journal of Aesthetics*, *4*, 198–213. https://doi.org/10.1093/bjaesthetics/4.3.198

Ingarden, R. (1985). In P. J. McCormick (Ed.), *Selected papers in aesthetics* (pp. 107–132). Catholic University of America Press.

Jacoby, L. L., Kelley, C., Brown, J., & Jasechko, J. (1989). Becoming famous overnight: Limits on the ability to avoid unconscious influences of the past. *Journal of Personality and Social Psychology*, *56*(3), 326–338. https://doi.org/10.1037/0022-3514.56.3.326

Jacoby, L. L., Kelley, C. M., & Dywan, J. (1989). Memory attributions. In H. L. Roediger III & F. I. M. Craik (Eds.), *Varieties of memory and consciousness: Essays in honour of Endel Tulving* (pp. 391–422). Lawrence Erlbaum.

Jalbert, M., Newman, E., & Schwarz, N. (2021). Only half of what I'll tell you is true: How experimental procedures lead to an underestimation of the truth effect. *Journal of Applied Research in Memory and Cognition*.

James, W. (1890). *Principles of psychology* (Vol. *1* & *2*). Dover.

Janiszewski, C. (1993). Preattentive mere exposure effects. *Journal of Consumer Research*, *20*, 376–392. https://doi.org/10.1086/209356

Johnson-Laird, P. N. (2012). Mental models and consistency. In B. Gawronski & F. Strack (Eds.), *Cognitive consistency: A fundamental principle in social cognition* (pp. 225–243). Guilford Press.

Joye, Y., Steg, L., Ünal, A. B., & Pals, R. (2016). When complex is easy on the mind: Internal repetition of visual information in complex objects is a source of perceptual fluency. *Journal of Experimental Psychology: Human Perception and Performance*, *42*(1), 103–114.

Kahneman, D. (2011). *Thinking, fast and slow*. Macmillan.

Kara-Yakoubian, M., Walker, A. C., Sharpinskyi, K., Assadourian, G., Fugelsang, J. A., & Harris, R. A. (2020). Beauty and truth, truth and beauty: Chiasmus and the Keats heuristic. *PsyArXiv*. https://doi.org/10.31234/osf.io/c36q5

Keats, J. (1820). Ode on a Grecian urn. *Annals of the Fine Arts*, *15*.638–639.

Kelley, C. M., & Rhodes, M. G. (2002). Making sense and nonsense of experience: Attributions in memory and judgment. *Psychology of Learning and Motivation*, *41*, 293–320. https://doi.org/10.1016/S0079-7421(02)80010-X

Kelley, H. H. (1972). *Causal schemata and the attribution process*. General Learning Press.

Kim, H., Park, K., & Schwarz, N. (2010). Will this trip be really exciting? The role of incidental emotions in product evaluation. *Journal of Consumer Research*, *36*, 983–991. https://doi.org/10.1086/644763

Koch, A. S., & Forgas, J. P. (2012). Feeling good and feeling truth: The interactive effects of mood and processing fluency on truth judgments. *Journal of Experimental Social Psychology*, *48*(2), 481–485. https://doi.org/10.1016/j.jesp.2011.10.006

Koriat, A. (2007). Metacognition and consciousness. In P. D. Zelazo, M. Moscovitch & E. Thompson (Eds.), *The Cambridge handbook of*

consciousness (pp. 289–326). Cambridge University Press. https://doi.org/10.1017/CBO9780511816789.012

Kostyk, A., Leonhardt, J. M., & Niculescu, M. (2019). Processing fluency scale development for consumer research. *International Journal of Market Research*, 147078531987713. https://doi.org/10.1177/1470785319877137

Kubovy, M. (1999). On the pleasures of the mind. In D. Kahneman, E. Diener & N. Schwarz (Eds.), *Well-being: The foundations of hedonic psychology* (pp. 134–154). Russell Sage.

Kunst-Wilson, W. R., & Zajonc, R. B. (1980). Affective discrimination of stimuli that cannot be recognized. *Science*, *207*, 557–558. https://doi.org/10.1126/science.7352271

Kwan, L.-Y.-Y., Yap, S., & Chiu, C.-Y. (2015). Mere exposure affects perceived descriptive norms: Implications for personal preferences and trust. *Organizational Behavior and Human Decision Processes*, *129*, 48–58. https://doi.org/10.1016/j.obhdp.2014.12.002

Labroo, A. A., Dhar, R., & Schwarz, N. (2008). Of frog wines and smiling watches: Semantic priming of perceptual features and brand evaluation. *Journal of Consumer Research*, *34*, 819–831.

Labroo, A. A., & Kim, S. (2009). The "instrumentality" heuristic: Why metacognitive difficulty is desirable during goal pursuit. *Psychological Science*, *20*(1), 127–134. https://doi.org/10.1111/j.1467-9280.2008.02264.x

Laham, S. M., Koval, P., & Alter, A. L. (2012). The name-pronunciation effect: Why people like Mr. Smith more than Mr. Colquhoun. *Journal of Experimental Social Psychology*, *48*(3), 752–756.

Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh: The embodied mind and its challenge to western thought* (Vol. *640*). Basic Books.

Landau, M. J. (2017). *Conceptual metaphor in social psychology: The poetics of everyday life*, New York, NY: Psychology Press.

Langlois, J. H., & Roggman, L. A. (1990). Attractive faces are only average. *Psychological Science*, *1*(2), 115–121. https://doi.org/10.1111/j.1467-9280.1990.tb00079.x

Leder, H., Carbon, C. C., & Ripsas, A. L. (2006). Entitling art: Influence of title information on understanding and appreciation of paintings. *Acta Psychologica*, *121*, 176–198. https://doi.org/10.1016/j.actpsy.2005.08.005

Lee, A. Y., & Labroo, A. A. (2004). The effect of conceptual and perceptual fluency on brand evaluation. *Journal of Marketing Research*, *41*(2), 151–165. https://doi.org/10.1509/jmkr.41.2.151.28665

Leonhardt, J. M., Catlin, J. R., & Pirouz, D. M. (2015). Is your product facing the ad's center? Facing direction affects processing fluency and ad evaluation. *Journal of Advertising*, *44*(4), 315–325. https://doi.org/10.1080/00913367.2015.1048911

Lev-Ari, S., & Keysar, B. (2010). Why don't we believe non-native speakers? The influence of accent on credibility. *Journal of Experimental Social Psychology*, *46*(6), 1093–1096. https://doi.org/10.1016/j.jesp.2010.05.025

Levinson, J. (Ed.) (2003). *The Oxford handbook of aesthetics*. Oxford University Press.

Lewandowsky, S., Ecker, U. K. H., Seifert, C., Schwarz, N., & Cook, J. (2012). Misinformation and its correction. *Psychological Science in the Public Interest*, *13*(3), 106–131. https://doi.org/10.1177/1529100612451018

Lim, J., & Dinges, D. F. (2010). A meta-analysis of the impact of short-term sleep deprivation on cognitive variables. *Psychological Bulletin*, *136*(3), 375–389. https://doi.org/10.1037/a0018883

Lin, L., Cockerham, D., Chang, Z., & Natividad, G. (2016). Task speed and accuracy decrease when multitasking. *Technology, Knowledge and Learning*, *21*(3), 307–323. https://doi.org/10.1007/s10758-015-9266-4

Lin, Y., Arieli, S., & Oyserman, D. (2019). Cultural fluency means all is okay, cultural disfluency implies otherwise. *Journal of Experimental Social Psychology*, *84*, 103822. https://doi.org/10.1016/j.jesp.2019.103822

Lopes, D. M. (2011). The myth of (non-aesthetic) artistic value. *Philosophical Quarterly*, *61*, 518–536. https://doi.org/10.1111/j.1467-9213.2011.700.x

Lowrey, T. M. (1998). The effects of syntactic complexity on advertising persuasiveness. *Journal of Consumer Psychology*, *7*(2), 187–206. https://doi.org/10.1207/s15327663jcp0702_04

Luhmann, N. (1979). *Trust and power*. John Wiley & Sons.

Magnini, V. P., & Kim, S. (2016). The influences of restaurant menu font style, background color, and physical weight on consumers' perceptions. *International Journal of Hospitality Management*, *53*, 42–48. https://doi.org/10.1016/j.ijhm.2015.11.001

Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). Poverty impedes cognitive function. *Science*, *341*(6149), 976–980. https://doi.org/10.1126/science.1238041

Martin, L. L., Abend, T., Sedikides, C., & Green, J. D. (1997). How would it feel if...? Mood as input to a role fulfillment evaluation process. *Journal of Personality and Social Psychology*, *73*(2), 242–253.

Martindale, C. (1984). The pleasures of thought: A theory of cognitive hedonics. *The Journal of Mind and Behavior*, *5*(1), 49–80.

Masson, M. E. J., & Caldwell, J. I. (1998). Conceptually driven encoding episodes create perceptual misattributions. *Acta Psychologica*, *98*, 183–210. https://doi.org/10.1016/S0001-6918(97)00042-5

McDermott, L. M., & Ebmeier, K. P. (2009). A meta-analysis of depression severity and cognitive function. *Journal of Affective Disorders*, *119*(1–3), 1–8. https://doi.org/10.1016/j.jad.2009.04.022

McGlone, M. S., & Tofighbakhsh, J. (2000). Birds of a feather flock conjointly (?): Rhyme as reason in aphorisms. *Psychological Science*, *11*(5), 424–428. https://doi.org/10.1111/1467-9280.00282

Meier, B. P., Robinson, M. D., & Clore, G. L. (2004). Why good guys wear white: Automatic inferences about stimulus valence based on brightness. *Psychological Science*, *15*(2), 82–87. https://doi.org/10.1111/j.0963-7214.2004.01502002.x

Merleau-Ponty, M. (1964). *The primacy of perception: And other essays on phenomenological psychology, the philosophy of art, history, and politics*. Northwestern University Press.

Monahan, J. L., Murphy, S. T., & Zajonc, R. B. (2000). Subliminal mere exposure: Specific, general, and diffuse effects. *Psychological Science*, *11*, 462–466. https://doi.org/10.1111/1467-9280.00289

Morsanyi, K., & Handley, S. J. (2012). Logic feels so good—I like it! Evidence for intuitive detection of logicality in syllogistic reasoning. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *38*, 596–616.

Mourey, J. A., Lam, B. C., & Oyserman, D. (2015). Consequences of cultural fluency. *Social Cognition*, *33*(4), 308–344. https://doi.org/10.1521/soco.2015.33.4.308

Muth, C., Westphal-Fitch, G., & Carbon, C.-C. (2019). Seeking (dis)order: Ordering appeals but slight disorder and complex order trigger interest. *Psychology of Aesthetics, Creativity, and the Arts*. https://doi.org/10.1037/aca0000284

Newcomb, T. M. (1943). *Personality and social change; attitude formation in a student community*. Dryden Press.

Newman, E. J., Garry, M., Bernstein, D. M., Kantner, J., & Lindsay, D. S. (2012). Nonprobative photographs (or words) inflate truthiness. *Psychonomic Bulletin & Review*, *19*(5), 969–974. https://doi.org/10.3758/s13423-012-0292-0

Newman, E. J., Sanson, M., Miller, E. K., Quigley-McBride, A., Foster, J. L., Bernstein, D. M., & Garry, M. (2014). People with easier to pronounce names promote truthiness of claims. *PLoS One*, *9*, e88671. https://doi.org/10.1371/journal.pone.0088671

Newman, E. J., & Schwarz, N. (2018). Good sound, good research: How audio quality influences perceptions of the researcher and research. *Science Communication*, *40*(2), 246–257. https://doi.org/10.1177/1075547018759345

Newman, E. J., & Zhang, L. (2020). Truthiness: How non-probative photos shape belief. In R. Greifeneder, M. Jaffé, E. J. Newman &

N. Schwarz (Eds.), *The psychology of fake news: Accepting, sharing, and correcting misinformation* (pp. 90–114). Routledge/Psychology Press.

Noah, T., Schul, Y., & Mayo, R. (2018a). Thinking of oneself as an object of observation reduces reliance on metacognitive information. *Journal of Experimental Psychology: General*, *147*(7), 1023–1042. https://doi.org/10.1037/xge0000440

Noah, T., Schul, Y., & Mayo, R. (2018b). When both the original study and its failed replication are correct: Feeling observed eliminates the facial-feedback effect. *Journal of Personality and Social Psychology*, *114*(5), 657–664. https://doi.org/10.1037/pspa0000121

Novemsky, N., Dhar, R., Schwarz, N., & Simonson, I. (2007). Preference fluency in choice. *Journal of Marketing Research*, *44*, 347–356. https://doi.org/10.1509/jmkr.44.3.347

Nunes, J. C., Ordanini, A., & Valsesia, F. (2015). The power of repetition: Repetitive lyrics in a song increase processing fluency and drive market success. *Journal of Consumer Psychology*, *25*(2), 187–199. https://doi.org/10.1016/j.jcps.2014.12.004

Okuhara, T., Ishikawa, H., Okada, M., Kato, M., & Kiuchi, T. (2017). Designing persuasive health materials using processing fluency: A literature review. *BMC Research Notes*, *10*, 198. https://doi.org/10.1186/s13104-017-2524-x

Oyserman, D. (2019). Cultural fluency, mindlessness, and gullibility. In R. Baumeister & J. P. Forgas (Eds.), *The social psychology of gullibility: Conspiracy theories, fake news and irrational beliefs* (pp. 255–278). Routledge.

Parks, C. M., & Toth, J. P. (2006). Fluency, familiarity, aging, and the illusion of truth. *Aging, Neuropsychology, and Cognition*, *13*, 225–253. https://doi.org/10.1080/138255890968691

Pennington, N., & Hastie, R. (1993). The story model for juror decision making. In R. Hastie (Ed.), *Inside the juror* (pp. 192–223). Cambridge University Press.

Peretz, I., Gaudreau, D., & Bonnel, A. M. (1998). Exposure effects on music preference and recognition. *Memory & Cognition*, *26*(5), 884–902. https://doi.org/10.3758/BF03201171

Petty, R. E., & Cacioppo, J. T. (1986). The elaboration likelihood model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. *19*, pp. 123–205). Academic Press.

Pham, M. T., Cohen, J. B., Pracejus, J. W., & Hughes, G. D. (2001). Affect monitoring and the primacy of feelings in judgment. *Journal of Consumer Research*, *28*(2), 167–188. https://doi.org/10.1086/322896

Pocheptsova, A., Labroo, A. A., & Dhar, R. (2010). Making products feel special: When metacognitive difficulty enhances evaluation. *Journal of Marketing Research*, *47*(6), 1059–1069. https://doi.org/10.1509/jmkr.47.6.1059

Ramachandran, V. S., & Hirstein, W. (1999). The science of art: A neurological theory of aesthetic experience. *Journal of Consciousness Studies*, *6*(6–7), 15–51.

Reber, R., & Schwarz, N. (1999). Effects of perceptual fluency on judgments of truth. *Consciousness and Cognition*, *8*(3), 338–342. https://doi.org/10.1006/ccog.1999.0386

Reber, R., Schwarz, N., & Winkielman, P. (2004). Processing fluency and aesthetic pleasure: Is beauty in the perceiver's processing experience? *Personality and Social Psychology Review*, *8*(4), 364–382. https://doi.org/10.1207/s15327957pspr0804_3

Reber, R., Winkielman, P., & Schwarz, N. (1998). Effects of perceptual fluency on affective judgments. *Psychological Science*, *9*(1), 45–48. https://doi.org/10.1111/1467-9280.00008

Ross, L., & Ward, A. (1996). Naïve realism in everyday life: Implications for social conflict and misunderstanding. In E. S. Reed, E. Turiel & T. Brown (Eds.), *Values and knowledge* (pp. 103–135). Erlbaum.

Ross, M., Buehler, R., & Karr, J. W. (1998). Assessing the accuracy of conflicting autobiographical memories. *Memory & Cognition*, *26*, 1233–1244. https://doi.org/10.3758/BF03201197

Rothman, A. J., & Schwarz, N. (1998). Constructing perceptions of vulnerability: Personal relevance and the use of experiential information in health judgments. *Personality and Social Psychology Bulletin*, *24*, 1053–1064. https://doi.org/10.1177/01461672982410003

Ruder, M., & Bless, H. (2003). Mood and the reliance on the ease of retrieval heuristic. *Journal of Personality and Social Psychology*, *85*(1), 20–32. https://doi.org/10.1037/0022-3514.85.1.20

Sanna, L., Schwarz, N., & Small, E. (2002). Accessibility experiences and the hindsight bias: I-knew-it-all-along versus it-could-never-have-happened. *Memory & Cognition*, *30*, 1288–1296. https://doi.org/10.3758/BF03213410

Schooler, L. J., & Hertwig, R. (2005). How forgetting aids heuristic inference. *Psychological Review*, *112*, 610–628. https://doi.org/10.1037/0033-295X.112.3.610

Schwarz, N. (1994). Judgment in a social context: Biases, shortcomings, and the logic of conversation. *Advances in Experimental Social Psychology*, *26*, 123–162.

Schwarz, N. (1998). Accessible content and accessibility experiences: The interplay of declarative and experiential information in judgment. *Personality and Social Psychology Review*, *2*, 87–99. https://doi.org/10.1207/s15327957pspr0202_2

Schwarz, N. (2002). Situated cognition and the wisdom of feelings: Cognitive tuning. In L. Feldman Barrett & P. Salovey (Eds.), *The wisdom in feelings* (pp. 144–166). Guilford Press.

Schwarz, N. (2004). Meta-cognitive experiences in consumer judgment and decision making. *Journal of Consumer Psychology*, *14*, 332–348. https://doi.org/10.1207/s15327663jcp1404_2

Schwarz, N. (2006). On judgments of truth & beauty. *Daedalus*, *135*(2), 136–138.

Schwarz, N. (2010). Meaning in context: Metacognitive experiences. In L. F. Barrett, B. Mesquita & E. Smith (Eds.), *The mind in context* (pp. 105–125). Guilford Press.

Schwarz, N. (2012). Feelings-as-information theory. In P. A. M. Van Lange, A. Kruglanski & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 289–308). Sage. https://doi.org/10.4135/9781446249215.n15

Schwarz, N. (2015). Metacognition. In M. Mikulincer, P. R. Shaver, E. Borgida & J. A. Bargh (Eds.), *APA handbook of personality and social psychology: Attitudes and social cognition* (pp. 203–229). APA.

Schwarz, N., Bless, H., Strack, F., Klumpp, G., RittenauerSchatka, H., & Simons, A. (1991). Ease of retrieval as information: Another look at the availability heuristic. *Journal of Personality and Social Psychology*, *61*, 195–202. https://doi.org/10.1037/0022-3514.61.2.195

Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of well-being: Informative and directive functions of affective states. *Journal of Personality and Social Psychology*, *45*, 513–523. https://doi.org/10.1037/0022-3514.45.3.513

Schwarz, N., & Clore, G. L. (2003). Mood as information: 20 years later. *Psychological Inquiry*, *14*(3–4), 296–303. https://doi.org/10.1207/S15327965PLI1403&4_20

Schwarz, N., & Clore, G. L. (2007). Feelings and phenomenal experiences. In A. Kruglanski & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (2nd ed., pp. 385–407). Guilford Press.

Schwarz, N., & Lee, S. W. S. (2019). Embodied cognition and the construction of attitudes. In D. Albarracin & B. T. Johnson (Eds.), *Handbook of attitudes* (Vol. *1*, 2nd ed., pp. 450–479). Routledge.

Schwarz, N., Newman, E., & Leach, W. (2016). Making the truth stick & the myths fade: Lessons from cognitive psychology. *Behavioral Science & Policy*, *2*(1), 85–95.

Schwarz, N., Sanna, L. J., Skurnik, I., & Yoon, C. (2007). Metacognitive experiences and the intricacies of setting people straight: Implications for debiasing and public information campaigns. *Advances in Experimental Social Psychology*, *39*, 127–161.

Sherman, A., Grabowecky, M., & Suzuki, S. (2015). In the working memory of the beholder: Art appreciation is enhanced when

visual complexity is compatible with working memory. *Journal of Experimental Psychology: Human Perception and Performance*, *41*(4), 898–903. https://doi.org/10.1037/a0039314

Siemer, M., & Reisenzein, R. (1998). Effects of mood on evaluative judgements: Influence of reduced processing capacity and mood salience. *Cognition & Emotion*, *12*(6), 783–805. https://doi.org/10.1080/026999398379439

Silva, R. R., Chrobot, N., Newman, E., Schwarz, N., & Topolinski, S. (2017). Make it short and easy: Username complexity determines trustworthiness above and beyond objective reputation. *Frontiers in Psychology*, *8*, 2200. https://doi.org/10.3389/fpsyg.2017.02200

Silva, R. R., Garcia-Marques, T., & Mello, J. (2016). The differential effects of fluency due to repetition and fluency due to color contrast on judgments of truth. *Psychological Research Psychologische Forschung*, *80*, 821–837. https://doi.org/10.1007/s00426-015-0692-7

Sinclair, R. C., Soldat, A. S., & Mark, M. M. (1998). Affective cues and processing strategy: Color-coded examination forms influence performance. *Teaching of Psychology*, *25*(2), 130–132. https://doi.org/10.1207/s15328023top2502_14

Sitkin, S. B., & Roth, N. L. (1993). Explaining the limited effectiveness of legalistic "remedies" for trust/distrust. *Organization Science*, *4*(3), 367–392. https://doi.org/10.1287/orsc.4.3.367

Siyanova-Chanturia, A., Conklin, K., & Van Heuven, W. J. (2011). Seeing a phrase "time and again" matters: The role of phrasal frequency in the processing of multiword sequences. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *37*(3), 776–784. https://doi.org/10.1037/a0022531

Skurnik, I., Yoon, C., Park, D. C., & Schwarz, N. (2005). How warnings about false claims become recommendations. *Journal of Consumer Research*, *31*(4), 713–724. https://doi.org/10.1086/426605

Skurnik, I., Yoon, C., & Schwarz, N. (2011). Thinking about health and obesity: How consumers' mental experiences influence health judgments. In R. Batra, P. A. Keller & V. J. Strecher (Eds.), *Leveraging consumer psychology for effective health communications: The obesity challenge* (pp. 135–150). M.E. Sharpe.

Smith, A. (1776/1977). *An inquiry into the nature and causes of the wealth of nations*. University of Chicago Press.

Smith, J. D., & Melara, R. J. (1990). Aesthetic preference and syntactic prototypicality in music: 'Tis the gift to be simple. *Cognition*, *34*(3), 279–298.

Smith, E. R., & Semin, G. R. (2004). Socially situated cognition: Cognition in its social context. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, Vol. *36* (pp. 53–117). Academic Press. https://doi.org/10.1016/S0065-2601(04)36002-8

Solso, R. L. (1994). Context, cognition and art. R. L. Solso In *Cognition and the visual arts* (pp. 101–127). MIT/Bradford Books.

Song, H., & Schwarz, N. (2008a). If it's hard to read, it's hard to do: Processing fluency affects effort prediction and motivation. *Psychological Science*, *19*(10), 986–988. https://doi.org/10.1111/j.1467-9280.2008.02189.x

Song, H., & Schwarz, N. (2008b). Fluency and the detection of misleading questions: Low processing fluency attenuates the Moses illusion. *Social Cognition*, *26*(6), 791–799. https://doi.org/10.1521/soco.2008.26.6.791

Song, H., & Schwarz, N. (2009). If it's difficult to pronounce, it must be risky: Fluency, familiarity, and risk perception. *Psychological Science*, *20*(2), 135–138. https://doi.org/10.1111/j.1467-9280.2009.02267.x

Sperber, D., & Wilson, D. (1986). *Relevance: Communication and cognition* (Vol. *142*). Harvard University Press.

Stecker, R. (2012). Artistic value defended. *The Journal of Aesthetics and Art Criticism*, *70*, 355–362. https://doi.org/10.1111/j.1540-6245.2012.01527.x

Stepper, S., & Strack, F. (1993). Proprioceptive determinants of emotional and nonemotional feelings. *Journal of Personality and Social Psychology*, *64*, 211–220. https://doi.org/10.1037/0022-3514.64.2.211

Storme, M., Myszkowski, N., Davila, A., & Bournois, F. (2015). How subjective processing fluency predicts attitudes toward visual advertisements and purchase intention. *Journal of Consumer Marketing*, *32*(6), 432–440. https://doi.org/10.1108/JCM-10-2014-1187

Strack, F., & Deutsch, R. (2004). Reflective and impulsive determinants of social behavior. *Personality and Social Psychology Review*, *8*(3), 220–247. https://doi.org/10.1207/s15327957pspr0803_1

Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology*, *54*(5), 768–777. https://doi.org/10.1037/0022-3514.54.5.768

Strack, F., & Neumann, R. (2000). Furrowing the brow may undermine perceived fame: The role of facial feedback in judgments of celebrity. *Personality and Social Psychology Bulletin*, *26*, 762–768. https://doi.org/10.1177/0146167200269002

Taber, C. S., & Lodge, M. (2006). Motivated skepticism in the evaluation of political beliefs. *American Journal of Political Science*, *50*, 755–769. https://doi.org/10.1111/j.1540-5907.2006.00214.x

Tatarkiewicz, W. (1971). What is art? The problem of definition today. *The British Journal of Aesthetics*, *11*(2), 134–153. https://doi.org/10.1093/bjaesthetics/11.2.134

Tenbrink, T. (2011). Reference frames of space and time in language. *Journal of Pragmatics*, *43*(3), 704–722. https://doi.org/10.1016/j.pragma.2010.06.020

Thibaut, J. W., & Kelley, H. (1959). *The social psychology of groups*. Wiley.

Thompson, D. V., & Ince, E. C. (2013). When disfluency signals competence: The effect of processing difficulty on perceptions of service agents. *Journal of Marketing Research*, *50*(2), 228–240. https://doi.org/10.1509/jmr.11.0340

Titchener, E. B. (1910). *A text-book of psychology*. Macmillan.

Topolinski, S. (2012). Nonpropositional consistency. In B. Gawronski & F. Strack (Eds.), *Cognitive consistency: A fundamental principle in social cognition* (pp. 112–131). Guilford Press.

Topolinski, S., Likowski, K. U., Weyers, P., & Strack, F. (2009). The face of fluency: Semantic coherence automatically elicits a specific pattern of facial muscle reactions. *Cognition and Emotion*, *23*, 260–271. https://doi.org/10.1080/02699930801994112

Topolinski, S., & Strack, F. (2008). Where there's a will—there's no intuition. The unintentional basis of semantic coherence judgments. *Journal of Memory and Language*, *58*, 1032–1048. https://doi.org/10.1016/j.jml.2008.01.002

Topolinski, S., & Strack, F. (2009). The architecture of intuition: Fluency and affect determine intuitive judgments of semantic and visual coherence and judgments of grammaticality in artificial grammar learning. *Journal of Experimental Psychology: General*, *138*, 39–63. https://doi.org/10.1037/a0014678

Topolinski, S., & Strack, F. (2010). False fame prevented: Avoiding fluency effects without judgmental correction. *Journal of Personality and Social Psychology*, *98*(5), 721–733. https://doi.org/10.1037/a0019260

Tormala, Z. L., Petty, R. E., & Briñol, P. (2002). Ease of retrieval effects in persuasion: A self-validation analysis. *Personality and Social Psychology Bulletin*, *28*, 1700–1712. https://doi.org/10.1177/014616702237651

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, *5*, 207–232. https://doi.org/10.1016/0010-0285(73)90033-9

Unkelbach, C. (2007). Reversing the truth effect: Learning the interpretation of processing fluency in judgments of truth. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *33*(1), 219.

Unkelbach, C., & Greifeneder, R. (2013). A general model of fluency effects in judgment and decision making. In C. Unkelbach & R. Greifeneder (Eds.), *The experience of thinking: How the fluency of mental processes influences cognition and behavior* (pp. 11–32). Psychology Press.

Vallacher, R. R., & Wegner, D. M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review*, *94*(1), 3–15. https://doi.org/10.1037/0033-295X.94.1.3

Valsesia, F., & Schwarz, N. (2020). *Easy to pronounce? Everybody has it! Brand name fluency and consumer differentiation motives*. Working Paper.

Vogel, T., Silva, R. R., Thomas, A., & Wänke, M. (2020). Truth is in the mind, but beauty is in the eye: Fluency effects are moderated by a match between fluency source and judgment dimension. *Journal of Experimental Psychology: General*, *149*(8), 1587–1596. https://doi.org/10.1037/xge0000731

Wänke, M., & Bless, H. (2000). The effects of subjective ease of retrieval on attitudinal judgments: The moderating role of processing motivation. In H. Bless & J. P. Forgas (Eds.), *The message within: The role of subjective experience in social cognition and behavior* (pp. 143–161). Psychology Press.

Wänke, M., & Hansen, J. (2015). Relative processing fluency. *Current Directions in Psychological Science*, *24*, 195–199. https://doi.org/10.1177/0963721414561766

Ward, M. K., Goodman, J. K., & Irwin, J. R. (2014). The same old song: The power of familiarity in music choice. *Marketing Letters*, *25*(1), 1–11. https://doi.org/10.1007/s11002-013-9238-1

Weaver, K., Garcia, S. M., Schwarz, N., & Miller, D. T. (2007). Inferring the popularity of an opinion from its familiarity: A repetitive voice can sound like a chorus. *Journal of Personality and Social Psychology*, *92*(5), 821–833. https://doi.org/10.1037/0022-3514.92.5.821

Weick, M., & Guinote, A. (2008). When subjective experiences matter: Power increases reliance on the ease of retrieval. *Journal of Personality and Social Psychology*, *94*(6), 956–970. https://doi.org/10.1037/0022-3514.94.6.956

Weingarten, E., & Hutchinson, J. (2018). Does ease mediate the ease-of-retrieval effect? *A meta-analysis. Psychological Bulletin*, *144*(3), 227–283. https://doi.org/10.1037/bul0000122

Weisbuch, M., & Mackie, D. (2009). False fame, perceptual clarity, or persuasion? Flexible fluency attribution in spokesperson familiarity effects. *Journal of Consumer Psychology*, *19*(1), 62–72. https://doi.org/10.1016/j.jcps.2008.12.009

Whittlesea, B. W. A. (1993). Illusions of familiarity. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *19*(6), 1235–1253. https://doi.org/10.1037/0278-7393.19.6.1235

Whittlesea, B. W., Jacoby, L. L., & Girard, K. (1990). Illusions of immediate memory: Evidence of an attributional basis for feelings of familiarity and perceptual quality. *Journal of Memory and Language*, *29*(6), 716–732. https://doi.org/10.1016/0749-596X(90)90045-2

Winkielman, P., & Cacioppo, J. T. (2001). Mind at ease puts a smile on the face: Psychophysiological evidence that processing facilitation leads to positive affect. *Journal of Personality and Social Psychology*, *81*, 989–1000. https://doi.org/10.1037/0022-3514.81.6.989

Winkielman, P., Halberstadt, J., Fazendeiro, T., & Catty, S. (2006). Prototypes are attractive because they are easy on the mind. *Psychological Science*, *17*, 799–806. https://doi.org/10.1111/j.1467-9280.2006.01785.x

Winkielman, P., Huber, D. E., Kavanagh, L., & Schwarz, N. (2012). Fluency of consistency: When thoughts fit nicely and flow smoothly. In B. Gawronski & F. Strack (Eds.), *Cognitive consistency: A fundamental principle in social cognition* (pp. 89–111). Guilford Press.

Winkielman, P., Olszanowski, M., & Gola, M. (2015). Faces in-between: Evaluations reflect the interplay of facial features and task-dependent fluency. *Emotion*, *15*(2), 232. https://doi.org/10.1037/emo0000036

Winkielman, P., & Schwarz, N. (2001). How pleasant was your childhood? Beliefs about memory shape inferences from experienced difficulty of recall. *Psychological Science*, *12*, 176–179. https://doi.org/10.1111/1467-9280.00330

Winkielman, P., Schwarz, N., Fazendeiro, T., & Reber, R. (2003). The hedonic marking of processing fluency: Implications for evaluative judgment. In J. Musch & K. C. Klauer (Eds.), *The psychology of evaluation: Affective processes in cognition and emotion* (pp. 189–217). Erlbaum.

Witherspoon, D., & Allan, L. G. (1985). The effects of a prior presentation on temporal judgments in a perceptual identification task. *Memory and Cognition*, *13*, 103–111.

Wyer, R. S. (1974). *Cognitive organization and change: An information processing approach*. Erlbaum.

Yahalom, N., & Schul, Y. (2013). How thinking about the other affects our reliance on cognitive feelings of ease and effort: Immediate discounting and delayed utilization. *Social Cognition*, *31*(1), 31–56. https://doi.org/10.1521/soco.2013.31.1.31

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology*, *9*(2, Pt.2), 1–27. https://doi.org/10.1037/h0025848

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist*, *35*(2), 151–175. https://doi.org/10.1037/0003-066X.35.2.151

Zajonc, R. B. (1998). Emotion. In D. Gilbert, S. Fiske & G. Lindzey (Eds.), *Handbook of social psychology* (Vol. *1*, 4th ed., pp. 591–632). McGraw-Hill.

Zebrowitz, L. A., White, B., & Wieneke, K. (2008). Mere exposure and racial prejudice: Exposure to other-race faces increases liking for strangers of that race. *Social Cognition*, *26*(3), 259–275. https://doi.org/10.1521/soco.2008.26.3.259

Zhang, L., Newman, E. J., & Schwarz, N. (2019, February). *Conceptual metaphors and aesthetic pleasure: Showing pictures in their right place*. Society for Personality and Social Psychology.

Zhang, L., Newman, E. J., & Schwarz, N. (2021). When photos backfire: Truthiness and falsiness effects in comparative judgments. *Journal of Experimental Social Psychology*, *92*, 104054. https://doi.org/10.1016/j.jesp.2020.104054

Zhang, Y. C., & Schwarz, N. (2020). Truth from familiar turns of phrase: Word and number collocations in the corpus of language influence acceptance of novel claims. *Journal of Experimental Social Psychology*, *90*, 103999. https://doi.org/10.1016/j.jesp.2020.103999

Zürn, M., & Topolinski, S. (2017). When trust comes easy: Articulatory fluency increases transfers in the trust game. *Journal of Economic Psychology*, *61*, 74–86. https://doi.org/10.1016/j.joep.2017.02.016