



Research Review

Consumer conviction and commitment: An appraisal-based framework for attitude certainty

Derek D. Rucker ^{a,*}, Zakary L. Tormala ^b, Richard E. Petty ^c, Pablo Briñol ^d

^a Northwestern University, USA

^b Stanford University, USA

^c Ohio State University, USA

^d Universidad Autonoma de Madrid, Spain

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Abstract

This paper explores consumers' commitment to and conviction about their beliefs in the form of attitude certainty. Based on a review of past research, we present a new framework for understanding attitude certainty and how consumers' attitude certainty is shaped by their resisting or yielding to persuasive messages, or even by their reflections on the evidence supporting their attitudes. We propose that attitude certainty is formed and changed largely through an attribution-based reasoning process linked to a finite set of distinct appraisals. Our framework is used to both organize past research and offer guidance for future research endeavors. In addition, we distinguish our framework of appraisal-based attitude certainty from past models in attitudes and persuasion research that have referenced or taken note of the attitude certainty construct. Implications and future directions for the study of consumer behavior are discussed.

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* Corresponding author at: Department of Marketing, Northwestern University, 2001 Sheridan Road, USA. Fax: +1 847 491 2498.
E-mail address: d-rucker@kellogg.northwestern.edu (D.D. Rucker).

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Introduction

A fundamental goal of consumer psychology is to understand and predict consumer behavior. In service of this objective, consumer psychologists have long recognized the importance of understanding consumers' *attitudes*—that is, their global evaluative assessments of products or brands (see Petty & Briñol, 2008, for a review). Indeed, over the years researchers from many different perspectives have offered converging support for the importance of attitudes in affecting consumers' behavior (e.g., Sheppard, Jon, & Warshaw, 1988), their information processing (e.g., Maheswaran & Sternthal, 1990), and even their basic perception (e.g., Fazio, Ledbetter, & Towles-Schwen, 2000). As a consequence, the study of attitudes and persuasion has become woven into the fabric of consumer behavior research.

A rapidly expanding literature in consumer psychology suggests that to truly understand behavior one must also understand attitude certainty. Attitude certainty refers to *the subjective sense of conviction one has about one's attitude, or the extent to which one believes one's attitude is correct or valid* (e.g., Gross, Holtz, & Miller, 1995; Petty, Briñol, Tormala, & Wegener, 2007). Certainty is a metacognitive tag on an attitude that reflects a secondary assessment (i.e., "Is my evaluation correct?") of a primary cognition (i.e., the evaluation

itself; Petty & Briñol, 2006).¹ Even when a persuasive effort (e.g., an advertisement or an interpersonal appeal) does not produce attitude change (i.e., it does not modify the valence or extremity of an attitude), the appeal can have important but previously hidden effects on attitude certainty.

Contributions and objectives of the present review

The current review introduces a new framework outlining the appraisal-based processes through which attitude certainty can be formed or altered, and generates new directions for future research. Although attitude certainty has been reviewed elsewhere (see Gross et al., 1995; Petty, Tormala, & Rucker, 2004; Tormala & Rucker, 2007), the present paper departs from these past efforts in several key ways. First, whereas prior reviews discuss some variables that affect certainty, the present review provides a more comprehensive list and, more importantly, explores *why* particular variables affect attitude certainty. We introduce, for the first time, six specific appraisals consumers use to form attitude certainty

¹ When describing certainty, scholars have used synonymous terms including confidence, commitment, and correctness (Gross et al., 1995). Although other meanings of attitude certainty can be construed (e.g., attitude clarity; Petrocelli et al., 2007; see also Cohen & Reed, 2006), we focus on perceived validity or correctness in this review as this approach covers the treatment of certainty in the bulk of the contemporary literature.

and offer new insight into how distinct variables (e.g., social consensus, consistency of information) can have similar or different influences on certainty. By outlining the core psychological appraisals underlying certainty, the current review enables us to explore higher order questions such as whether previously identified antecedents to certainty might interact, as well as whether there is a hierarchy among the appraisals. After discussing these issues, we distinguish the current framework from past theories in psychology and marketing that have incorporated the attitude certainty construct at some level. To begin, though, we offer a brief primer on attitude certainty and its relation to attitude strength.

Attitude certainty and attitude strength

Attitude certainty is a dimension of attitude strength. Attitude strength refers to an attitude's durability and impact. Some attitudes are "stronger" than other attitudes in that they are more likely to resist change, persist over time, influence information processing and judgment, and guide behavior. A number of distinct factors contribute to the overall strength of an attitude including, but not limited to, an attitude's certainty, accessibility, extremity, importance, and associated knowledge (see Petty & Krosnick, 1995).

Although various factors contribute to the strength of an attitude, these factors can be conceptually and empirically separated from each other. For instance, attitudes that are equivalent in extremity can be held with differential certainty (Rucker & Petty, 2004; Tormala & Petty, 2002). Similarly, highly accessible attitudes can be held with varying degrees of certainty. One aspect of attitude certainty that separates it from accessibility, extremity, or knowledge is that attitude certainty is inherently metacognitive. That is, attitude certainty reflects a person's subjective assessment of his or her own attitude. Other strength dimensions, such as accessibility, extremity, elaboration, or knowledge have been studied both through subjective and objective measures. For example, knowledge might be assessed subjectively by asking participants how much they know or objectively by scoring their responses to trivia on that topic (see Wegener, Downing, Krosnick, & Petty 1995). Although prior research rarely distinguishes between subjective and objective measures (Bassili, 1996), there is no objective measure of certainty; thus, its formation is largely linked to subjective, metacognitive, or attributional inputs, which we will discuss.

What attitude certainty does share in common with other strength dimensions is that attitudes held with certainty tend to be resistant, persistent, and influential on people's thoughts and behavior. Generally speaking, attitudes held with high (versus low) certainty are more resistant to persuasive attacks (e.g., Bassili, 1996; c.f. Clarkson, Tormala, & Rucker, 2008). For instance, Tormala and Petty (2004a,b) found that individuals certain of their attitude towards a new exam policy were more likely to rebuke an effort to change those attitudes. Attitudes held with greater certainty are also more persistent over time. Bassili (1996) demonstrated that as certainty in attitudes toward a political candidate increased people were more likely to have a similar attitude 10 or more days later. Persistence is conceptually

distinct from resistance (Petty & Cacioppo, 1986) as attitudes that are never attacked might differentially persist as time passes, and attitudes that uniformly persist across a given timeframe might differentially crumble once challenged. Attitude certainty has also been shown to influence information processing; the typical finding is that increases in certainty are associated with *decreases* in processing activity (e.g., Maheswaran & Chaiken, 1991; c.f., Tormala, Rucker, & Seger, 2008; Wan & Rucker, 2013). Finally, attitudes held with high (versus low) certainty are more likely to influence behavior. In one classic study, Fazio and Zanna (1978a) found that undergraduates' attitudes towards participation in psychology experiments were better predictors of actual participation when held with high rather than low certainty.

The effect of attitude certainty on attitude persistence, resistance, and influence is likely to be the result of multiple processes. As one example, increased certainty may foster resistance because high certainty signals to a consumer that an attitude is correct; thus, the perceived amount of evidence required to change that attitude might be greater. Alternatively, certainty might provide consumers with the needed motivation to approach counter-attitudinal information in a more aggressive (biased) fashion (Wood, Rhodes, & Biek, 1995), perhaps because they believe they can withstand or overcome it (Albarracín & Mitchell, 2004). As a result, people might be more likely to find fault in counter-attitudinal information when they have high certainty (Lord, Ross, & Lepper, 1979; Pomerantz, Chaiken, & Tordesillas, 1995). Finally, certainty might signal a reduced need for additional information (Maheswaran & Chaiken, 1991), which then lowers attention to any new information and reduces the likelihood of being influenced by it.

Appraisal-based certainty

Despite extensive research on the consequences of attitude certainty, there have been scarce attempts in psychology or marketing to identify the fundamental factors that lead consumers to feel more or less certain of their attitudes. Attention has been devoted to highlighting various antecedents of certainty (see Tormala & Rucker, 2007), but not to integrating this knowledge into a set of core factors. In this review, we outline what we believe the literature suggests are the key metacognitive appraisals that underlie consumers' assessments of and adjustments to their own attitude certainty.

As a starting point, we explore how attitude certainty is adjusted following exposure to a persuasive appeal. We propose that when consumers resist or yield to a persuasive message, they can draw inferences from the persuasion process that informs them of how certain they are (or should be) of their attitudes (Petty et al., 2004). Specifically, when consumers resist or yield to persuasion, they can form attribution-like inferences or *appraisals* about the information underlying—or evidence supporting—their attitudes. When individuals are impressed with the evidence supporting their attitudes, we posit they form *positive appraisals* that lead to more attitude certainty. When individuals are unimpressed with the evidence supporting their attitudes, however, they will form *negative appraisals* that lead to less attitude certainty. When individuals are neither impressed

nor unimpressed by the evidence supporting their attitudes, or they simply do not engage in the appraisal process, they can be said to have a *neutral appraisal* (or no appraisal) and there is likely to be no change in their attitude certainty.

To illustrate, consider a situation in which two consumers resist a salesperson's pitch. Despite their common resistance outcome, these consumers might differ in their appraisals of the resistance process and what that means for their attitudes. For example, one consumer might perceive that although he resisted, it was difficult to do so (e.g., "I almost gave in... I just couldn't think of any good counterarguments."), resulting in a negative appraisal and reduced attitude certainty ("Maybe I'm not right after all."). In contrast, another consumer might perceive that he or she resisted and that it was quite easy to do so (e.g., "I absolutely refuted that attempt to persuade me... It was easy to think of compelling counterarguments on the spot."), which would result in a positive appraisal and increased attitude certainty ("I must really be right!"). In this scenario, the two consumers might hold similar looking attitudes—both negative toward the item the salesperson pitched, and equally so—yet those attitudes now crucially differ in their underlying certainty. If true, we would expect these consumers to engage in different future behavior and show differential openness to future persuasion on the same topic (Petty et al., 2007; Tormala & Rucker, 2007).

Consistent with this idea, a growing body of research suggests that when individuals engage in an effort to resist a persuasion attempt, their appraisals of their own success or failure can affect their attitude certainty. For example, Tormala and Petty (2002) induced participants to counterargue a message described to be either strong or weak in the arguments it contained. In actuality, everyone received the same message. Although all participants resisted the message (i.e., showed no attitude change in the direction of that message), participants were more certain of their attitudes when they believed they had resisted a strong message (which seems impressive) rather than weak message (which seems less impressive). In related work, Rucker and Petty (2004) demonstrated that when people were persuaded by an advertisement, they were more certain of their post-message attitudes when they had made a concerted effort to consider potential negative aspects of the message as opposed to only positive aspects. Here, changing one's attitude after a deliberate attempt to consider potential negative information was more impressive with respect to the strength of evidence supporting the new attitude. Of course, people can appraise their attitudes even when they have not recently resisted or yielded to a persuasive message. For example, Petrocelli, Tormala, and Rucker (2007) asked undergraduates to report their own attitude on a topic (i.e., a new university policy) and then told them that a majority or minority of students agreed with them. Participants subsequently felt more certain in their attitudes when they viewed themselves as holding a majority rather than a minority opinion.

Underlying dimensions of appraisal-based certainty

Considerable evidence from the last few decades suggests that people adjust their attitude certainty in response to situational

variables—for example, their perceptions of how they have responded to persuasive appeals or whether the evidence supports or contradicts their attitude on a given topic. Nevertheless, little work has integrated the field's collective insights about attitude certainty to offer a cohesive framework outlining the core appraisals people form that lead them to feel more or less certain of a given attitude or opinion. That is, we know many of the specific variables that affect attitude certainty, but not necessarily *why* those particular antecedents foster certainty or uncertainty. For instance, why does resisting a persuasive attack believed to be strong, or believed to come from an expert, lead one to feel more certain? Conversely, why does struggling to resist a persuasive attack—but still in fact resisting it—undermine one's certainty (Tormala, Clarkson, & Petty, 2006)? Do these effects emerge from similar or different underlying inferences?

We propose that attitude certainty stems from a finite set of psychological appraisals that can be identified, measured, and manipulated. Based on a review of attitude certainty research in psychology and marketing, we postulate that consumers appraise their attitudes along six core dimensions to determine their attitude certainty. Furthermore, the myriad of studies of certainty in past research can be organized along these dimensions. These appraisals concern the accuracy, completeness, relevance, legitimacy, and importance of the evidence supporting people's attitudes, as well as the feelings surrounding retrieving, using, and thinking about those attitudes, which we term affective validation. Although certainty can be shaped by false feedback (e.g., telling people they are certain; Marks & Miller, 1985), the bulk of the literature centers on cases where people make inferences about their own certainty based on the information they have and/or the manner in which they acquired it. We next present the key appraisals, and we review how the known antecedents of attitude certainty map onto each one.

Appraisals related to the accuracy of information underlying an attitude

One appraisal that consumers can generate relates to whether the information underlying their attitude is accurate. If one views the information comprising an attitude as true, then one can infer that the attitude itself is correct. Thus, the more accurate one perceives the information underlying an attitude to be, the more likely one is to form a positive appraisal of one's attitude and feel more certain about it. Examples of variables (i.e., antecedents to certainty) associated with accuracy include: social consensus, consistency of information, and direct experience.

Social consensus

Learning that a majority, compared to a minority, of one's peers, shares one's attitude fosters greater attitude certainty (Festinger, 1954; Petrocelli et al., 2007; Visser & Mirabile, 2004). For example, undergraduate participants were more certain when told that a majority, rather than minority, of their fellow students shared their attitudes on a campus issue (Petrocelli et al., 2007). This effect can be understood as the result of an accuracy appraisal. The logic, originally outlined by Festinger (1954), is that if other people reached the same conclusion as oneself, and

especially if they reached it in the same way (Tormala, DeSensi, Clarkson, & Rucker, 2009), the information comprising one's attitude is likely to be accurate. As a result, one can be more certain that the global attitude is correct.

Consistency of information

The internal consistency of one's beliefs can also affect perceived accuracy. In general, as the information underlying an attitude becomes more consistent—that is, evaluatively congruent—people become more certain of that attitude (Maheswaran & Chaiken, 1991; Smith, Fabrigar, MacDougall, & Wiesenthal, 2008; Tormala & DeSensi, 2009). In contrast, if one piece of information (e.g., a favorable product attribute) is challenged by an opposing piece of information (e.g., a negative customer review), each piece of information becomes more questionable in terms of its accuracy. Such inconsistency could reduce the certainty with which a consumer holds an overall attitude (see Koriati, 2012). For example, Smith et al. (2008) found that participants' attitudes towards a department store were held with greater certainty when the information about the store was structurally consistent (i.e., all positive or all negative) versus inconsistent (i.e., a mix of positive and negative information). Research on consideration of alternative hypotheses is compatible with this general notion. Koehler (1994) found that when people generate hypotheses in favor of multiple possible outcomes (e.g., what a person's occupation might be), they feel less confident compared to when they generate a hypothesis in favor of just one outcome. This finding suggests that generating alternative hypotheses sensitizes people to the possibility that their own assessment might not be accurate (see also, Kruglanski, 1989).

Perceived inconsistency can arise and provoke uncertainty even when information is evaluatively congruent. A consumer might believe a product is high in quality and low in price—both desirable features but potentially incompatible. Because they are incompatible, the combination of these features might reduce the certainty with which the consumer holds her overall (favorable) attitude. Thus, even holding valence constant, conceptual incongruity in the content of one's beliefs might cast doubt upon those beliefs and undermine attitude certainty. On the flip side, conflicting information might sometimes be viewed as accurate. For example, one might believe that eating chocolate cake is good because it tastes great but bad because it has high calories. Under these conditions, inconsistency may produce ambivalent attitudes (e.g., see Priester & Petty, 1996) held with high certainty (Clarkson et al., 2008).

Direct experience

People tend to be more certain of their attitudes when they are based on primitive beliefs (Rokeach, 1968) or beliefs that stem from first-hand experience with the attitude object (Fazio & Zanna, 1978a,b). For example, a consumer might see an advertisement for a car or test drive the car. In both cases, the consumer might have a similar piece of information (e.g., the car handles well), but acquiring that information from direct experience fosters greater attitude certainty. We submit that direct experience affects certainty due to accuracy appraisals

because first-hand experience is likely viewed as more valid than second-hand experience (see Fishbein & Ajzen, 1975). In a classic demonstration, Wu and Shaffer (1987) had participants form a preference between two peanut butters. In one condition, participants tasted the peanut butters and formed their preference (more direct experience). Participants in the second condition were told that the product could not be sampled and instead inspected the packaging of the peanut butters, which contained facts such as product ingredients (less direct experience). Participants were more confident of their preference when they had tasted the product rather than merely inspected the packaging. In this case, greater certainty could also have stemmed from taste being more important than packaging as a determinant of peanut butter attitudes (we discuss importance appraisals shortly), but it is likely that even if information about taste was conveyed indirectly, certainty would be higher in the direct taste experience condition due to greater trust in the validity of one's own experiences.

Appraisals related to completeness of information underlying an attitude

Separate from accuracy, consumers can assess information *completeness* (e.g., “Do I have enough information about this product?”). As consumers perceive themselves to have access to more information, regardless of how much information they actually have, their attitude certainty increases. More information signals that there are fewer unknowns that might disconfirm the attitude (c.f., Priester, Petty, & Park, 2007). We submit that at any given level of accuracy, perceiving that one has more complete information should result in greater certainty.

Amount of information

The most basic assessment of completeness relates to the sheer amount of information people think they have. The more information people believe they have, the more complete they perceive the information underlying their attitude to be and, thus, the more certain they are of that attitude (Smith et al., 2008; c.f. Muthukrishnan, Pham, & Mungale, 2001). Consistent with this notion, Sanbonmatsu, Kardes, and Herr (1992) found that when people are alerted to potentially missing information, they exhibit less certainty about their attitudes. For example, in one experiment participants were either prompted or not prompted to consider various features of a bicycle. All participants then received information about the bike that did not include information about one of the features mentioned in the prompt. Sanbonmatsu et al. found that people were less certain of their attitudes when they had been prompted with a feature that was not presented. Presumably, participants under these conditions had concerns about the completeness of the information available that lowered their attitude certainty. Similarly, Sanbonmatsu, Kardes, Posavac, and Houghton (1997) found that a set of information seemed less complete to participants when they had previously read a larger set of information about an unrelated attitude object (see also Tormala & Petty, 2007). Consistent with the idea that completeness appraisals are different from accuracy appraisals, Tsai, Klayman, and Hastie (2008) demonstrated that

confidence increases with the amount of information available, even when that information has no influence on accuracy.

Of course, the fact that missing information undermines certainty does not mean people are always sensitive to it. Indeed, work on omission neglect alluded to previously suggests that people often fail to recognize when they are missing information, which is one reason for consumer overconfidence (see Sanbonmatsu, Kardes, Houghton, Ho, & Posavac, 2003; Sanbonmatsu, Kardes, & Sansone, 1991; Sanbonmatsu et al., 1992). That is, people can be poorly calibrated when it comes to assessing their own information or knowledge, thinking they have more information than they really do. This misperception can falsely elevate confidence and further underscores the relationship between perceived amount of information (independent of actual information) and certainty.²

Consideration of both sides

As noted earlier, consumers hold their attitudes with more certainty when they perceive them to be based on a consideration of both the pros and cons of an attitude object (Rucker & Petty, 2004; Rucker, Petty, & Brinol, 2008). Perceiving oneself, or those presenting the information, to have considered *both* the pros and the cons of a message suggests that the information underlying one's attitude is more complete than if only side had been considered. As one example, Rucker et al. (2008) presented participants with a persuasive message promoting a mountain bike. In some conditions, the message suggested that the source had considered both positive and negative reactions to the product, whereas in other conditions no suggestion was present. Participants reported greater certainty when the message was described as having considered both sides. Moreover, consistent with the idea of a completeness appraisal, Rucker et al. found that differences in certainty were mediated by differences in perceptions associated with the completeness of the information they had received.

In a similar vein, Bizer, Larsen, and Petty (2011) found that getting people to think about their election attitudes in terms of which candidate they opposed (e.g., I am against the Republican) rather than who they favored (e.g., I support the Democrat) led to greater certainty in their choice and greater willingness to act on their attitude. Opposition framing also causes attitudes to become more resistant to change (Bizer & Petty, 2005). Bizer et al. suggested that an opposition frame is more likely to make salient the negatives of the disfavored candidate as well as the contrasting positives of the favored candidate whereas a supporting frame tends to focus attention only on the positives of the preferred candidate. If an opposition frame is more likely than a supportive

frame to make both sides salient, then attitude certainty is likely to increase with opposition framing due to the perception of more complete information about the choice.

Perceived thought

People are more certain of their attitudes when they think they have processed attitude-relevant information in a careful and thorough manner as opposed to a cursory and superficial manner (e.g., Smith et al., 2008). This is true irrespective of whether the appraisal stems from actual, or merely perceived, differences in the amount of thought (Barden & Petty, 2008). The rationale for this effect can be linked to a completeness appraisal. The more extensively or carefully one has processed information, the more likely one has absorbed all of the information presented, and the less likely pertinent details have been overlooked. In one study (Wan, Rucker, Tormala, & Clarkson, 2010, Experiment 2), consumers read a print advertisement for a new brand of toothpaste. Consumers who were mentally depleted (compared to non-depleted) perceived themselves to be more thorough in processing that message and, thus, held their post-message attitudes with greater certainty.

Appraisals related to relevance, legitimacy, and importance of information

Next, we examine three related but distinct appraisals: relevance, legitimacy, and importance of information. We group them here as there is less available research on each of these appraisals. Importantly, though, these appraisals are conceptually distinct and there is initial evidence for each of them in past research.

Relevance

Perhaps the most fundamental aspect of a piece of information, in terms of assessing its impact on attitude certainty, is whether that information is attitude-relevant. For example, a home shopper might perceive the layout of a particular house as extremely relevant to her overall attitude toward that house, whereas the fact that the owner of the house has a BMW parked outside is irrelevant, though both factors could exert some influence on her attitude. We propose that the more one thinks one's attitude is based on relevant information, the more certain one will be of one's attitude. Although not studied directly with respect to attitude certainty, research by Snyder and Kendzierski (1982) suggests that when attitudes are viewed as more relevant to a particular behavior, they are more likely to guide that behavior. Given the role that attitude certainty can play in attitude-behavior relations, it could be that relevance boosted attitude certainty in that research, thus increasing attitude-behavior consistency.

Individual difference variables might affect the type of information people view as relevant. For example, although they have yet to be tied to attitude certainty, individual differences in self-monitoring (Snyder, 1974) have been shown to affect the type of information people view as relevant; low self-monitors are more likely to view quality-related information as relevant, whereas high self-monitors are more likely to view image-related information as relevant (Petty & Wegener, 1998). Thus, in the

² In domains of fact, people might be overconfident in beliefs to the extent they have confidence in a belief that is objectively false (e.g., I am confident smoking has no effect on cancer). However, as attitudes are idiosyncratic evaluations reflecting an individual's like or dislike (e.g., I enjoy smoking), the meaning of overconfidence is much less clear in the attitude domain. Thus, our focus is on what makes people subjectively more or less certain of their attitudes, and the importance of that assessment in understanding how and when attitudes guide behavior, rather than on whether an individual's attitude certainty reflects overconfidence or not.

formation of attitude certainty, low-self monitors might be more certain following quality-related information and credible sources, whereas high-self monitors would be more certain following exposure to image-related information and attractive sources (e.g., Evans & Clark, 2012).

Legitimacy

In addition to assessing relevance, people can appraise whether information is legitimate (i.e., acceptable) or illegitimate (i.e., unacceptable) to use in forming an attitude. In legal settings, judges often ask jurors to disregard evidence or statements made in a trial. This does not mean the information is incorrect, incomplete, or irrelevant, but rather that it is not viewed as allowable input into assessing the defendant's guilt. Likewise, consumers can determine whether a piece of information provides a legitimate basis for determining their attitudes toward products and services. For example, an online review might state a consumer is disappointed with a product because the shipping company delivered a damaged box, but another consumer reading the review might view the shipping process as an illegitimate piece of information when trying to assess one's attitude towards the product. We suggest that when individuals perceive that they have utilized information that is illegitimate rather than legitimate, even if that information is accurate, complete, and relevant, it undermines attitude certainty.

Tormala, DeSensi, and Petty (2007) offer evidence for the impact of legitimacy appraisals on attitude certainty. Participants were induced to resist a persuasive message associated with a source in the numerical minority. Using false feedback, the authors manipulated participants' perceptions of (1) whether they had resisted *because* of the minority source (e.g., rather than counterarguing), and (2) whether this was a legitimate or illegitimate means of resistance. Participants were the least certain of their attitudes when they believed they had illegitimately relied on the minority source information to resist persuasion. Notably, participants may have viewed the source's minority status as relevant (e.g., knowing that a small number of people endorse a message could be perceived as relevant to assessing its accuracy), but they believed that it was illegitimate to use as the sole basis for opposing a position.

Elsewhere, work on the persuasion knowledge model suggests that consumers can hold different views of what influence tactics are legitimate for marketers to use (Campbell & Kirmani, 2008). For example, some consumers might view the use of paid spokespeople as a legitimate marketing strategy whereas other consumers might view this same strategy as illegitimate. Based on the idea of legitimacy appraisals, we submit that if consumers are equally persuaded by a message, they should be more certain of their attitudes when persuaded by techniques that they view as legitimate rather than illegitimate.

Importance

Individuals also are likely to be more certain of their attitudes when they believe those attitudes are based on information that is important. For example, for some individuals deciding whether

or not to go on a blind date, knowing the religious values of the other individual might be of paramount importance compared to knowing their age or education. Although age and education might also be viewed as legitimate and relevant pieces of information, they are not as important as the individual's religious affiliation. Thus, if two people have similar amounts of information, equivalent in accuracy, legitimacy, and relevance, the individual who views the information as important, versus unimportant, is likely to be more certain. Indeed, all else equal, attitudes based on information viewed as important (e.g., important values) should be held with greater certainty (see Blankenship & Wegener, 2008).

Zakay (1985) presented participants with medical scenarios involving two patients who both signaled for help simultaneously. Participants were given information about each patient's general health condition (i.e., bad versus medium), mental state (e.g., anxious versus depressed), and age (25 versus 55). Pre-testing revealed that individuals viewed the general condition of the patient as the most important variable in considering whom to help first. In one scenario, participants had to choose to help either an anxious 25-year old with a bad general health condition or a depressed 55-year old with a moderate general health condition. Participants were more certain of their decision when that decision was based on the most important dimension (i.e., general health) rather than a secondary dimension (i.e., age or mental state).

Applicability across situations

Relevance, legitimacy, and importance appraisals differ in a crucial way from appraisals related to accuracy and completeness. Appraisals related to accuracy and completeness are likely to hold across situations; if one's information is correct or complete, it is correct and complete in general—that is, regardless of the context. In contrast, information could be legitimate, relevant, and important to one attitude or in one situation, but the same information (though still correct and complete) could be illegitimate, irrelevant, or unimportant to another attitude or in another situation. In this way, the relevance, legitimacy, and importance dimensions have more in common with the current diagnosticity of information (Feldman & Lynch, 1988; Lynch, Marmorstein, & Weigold, 1988) than with its general accuracy or completeness.

To illustrate, suppose a consumer with a favorable attitude towards a car learns that the car can achieve a maximum speed of 180 mph. If this information is accurate, this information is accurate regardless of whether the consumer is considering the car as a practical car for everyday use or as a sports car for weekend use. However, this information might be viewed as differentially relevant across these contexts. A maximum speed of 180 mph might be viewed as highly relevant in assessing one's attitude towards the car as a sports car for the weekend, but less relevant to assessing one's attitude towards the car as a practical car for everyday use. Importantly, although relevance, legitimacy, and importance are conceptually linked, we keep them distinct because, as articulated earlier, a variable can affect one without affecting the other.

Appraisals related to subjective experience: affective validation

Finally, rather than focus on informational properties of an attitude or attitude object, individuals can reflect on their own subjective feelings surrounding an attitude to assess their certainty about it. For instance, a consumer might feel certain of an attitude because it feels right (e.g., [Cesario, Grant, & Higgins, 2004](#)). [Petty and Briñol \(2006\)](#) labeled this type of assessment “affective validation” as the individual’s attitude is validated or invalidated through his or her personal subjective experience. Stated differently, whereas the other appraisals covered rely on cognitive assessments of information underlying an attitude (e.g., accuracy, completeness), affective validation revolves around feelings associated with the attitude. Thus, emotions of positive valence (e.g., happiness, contentment, joy) tend to affectively validate attitudes, whereas emotions of negative valence (e.g., anger, fear, disgust) tend to invalidate attitudes (cf., [Briñol, Petty, & Barden, 2007](#)). Indeed, any time a person comes to feel certain of an attitude solely by assessing how he or she feels about it, affective validation is at work.

Of importance, emotions need not validate attitudes solely by the valence of feelings they induce. Based on appraisal theories of emotion (e.g., [Smith & Ellsworth, 1985](#)), [Tiedens and Linton \(2001\)](#) argued that some emotions (e.g., happiness, anger) are associated with certainty, whereas others (e.g., sadness, surprise) are associated with uncertainty. For some emotions (e.g., happiness), the affective feelings appraisal and the cognitive certainty appraisal are aligned and lead to the same validation outcome. For other emotions (e.g., anger), the different appraisals depart and lead to opposite outcomes. For example, inducing anger might increase attitude certainty if a cognitive (certainty) appraisal is paramount but decrease attitude certainty if an affective (valence) appraisal is paramount ([Briñol, Petty, Stavradi, Wagner, & Díaz, 2013](#)).

To examine the possibility of cognitive appraisals of emotions, [Tiedens and Linton \(2001\)](#) had participants write about a time they felt angry (certain association) or sad (uncertain association), and then exposed them to a persuasive message from a low or high credibility source. As past research has suggested that source credibility can serve the role of a simple cue when motivation to think is low (see [Petty, Cacioppo, & Goldman, 1981](#)), [Tiedens and Linton](#) reasoned that individuals’ attitudes should be more affected by the message source cue when they were certain of their initial attitudes (i.e., feeling their attitudes were already “right” based on their anger), and therefore, not inclined to think further. Indeed, source credibility exerted a greater impact on attitudes when individuals were experiencing an emotion related to certainty (e.g., anger) compared to uncertainty (e.g., sadness) prior to the message. These findings support the notion that the certainty associated with an emotion provides one way to influence attitude certainty that is different from what an affective appraisal of the emotion would imply.

Multiple appraisals

In this review we have discussed six core appraisals, but our position is not that a particular variable is inextricably linked to a

single appraisal (e.g., accuracy). Rather, the total effect of a particular variable on attitude certainty can reflect multiple underlying appraisals that can be additive or even interactive in nature. Although there remains a need for greater research exploring multiple appraisal effects, there is initial evidence pointing to the existence of these more complex effects. Our discussion of how emotions can affect certainty reflects this complexity, whereby any given emotion could influence certainty either by affective or more cognitive appraisals. Here, we offer additional examples of multiple appraisals that could be applied to four variables: source credibility, power, perceived successful resistance, and fluency.

Source credibility

People feel more certain of an attitude when the attitude, or the information supporting the attitude, comes from a credible source (see [Kruglanski et al., 2005](#)). For example, [Clarkson et al. \(2008\)](#) found that participants were more certain of their attitudes toward a department store after receiving a message about that store from a source that was high as opposed to low in credibility. Because source credibility can be comprised of expertise or trustworthiness ([Eagly & Chaiken, 1993](#); [Hass, 1981](#)), or a combination of both, we submit that the effect of credibility on certainty may stem from multiple appraisals. For instance, a source’s expertise might lead an individual to view his or her information as more correct or true (an accuracy appraisal), as well as more complete (a completeness appraisal). In addition, though, a source’s trustworthiness might lead people to assume that his or her information is more relevant, important, and/or legitimate, fostering corresponding appraisals. Measuring the specific appraisals stimulated by source credibility would enhance our understanding of the effect of source credibility on attitude certainty, as well as highlight potential boundary conditions on this effect.

Power

A state of high power is associated with behavior that is consistent with feeling certain, such as expressing one’s opinions in public ([Guinote, Judd, & Brauer, 2002](#); for a review see [Rucker, Galinsky, & Dubois, 2012](#)). In contrast, low power states have been found to lead people to act in a manner consistent with being uncertain (see [Anderson & Berdahl, 2002](#)). [Briñol, Petty, Valle, Rucker, and Becerra \(2007\)](#) documented a link between feeling powerful and feeling confident. Furthermore, they found that when power was manipulated prior to receiving a persuasive message, individuals in a low-power state (relative to those in a high-power state) processed the subsequent message more carefully. This finding is consistent with the idea that power affected the certainty that people associated with their initial pre-message attitudes.

Although prior research on power did not examine the appraisals underlying the increase in certainty, one possibility is that power affected attitude certainty through multiple appraisals. Because power has been associated with knowledge ([French & Raven, 1959](#)), a sense of power might lead people to feel as if they are more knowledgeable about a topic (i.e., a completeness appraisal). Alternatively, or in addition, power may influence

individuals' certainty through affective validation. That is, although power need not affect mood per se (for a review see Rucker et al., 2012) feeling powerful might lead individuals to feel good about their attitudes because power is associated with a sense of control, which is typically a desirable feeling. Measuring the appraisals influenced by power would help us understand the nature of the effects of power on attitude certainty and expand our insight into both power and the certainty construct.

Perceived successful resistance

As noted earlier, perceiving that one has successfully resisted a strong (but not a weak) persuasive message has been shown to increase attitude certainty (Tormala & Petty, 2002, 2004a,b). This effect might stem from several appraisals associated with perceptions of successful resistance. For example, when people repel a strong attack against their attitude, they might infer that their attitude already is based on relatively accurate and complete information. When people resist a weak attack, however, they might not view their resistance as particularly impressive, because the information underlying an attitude need not be accurate or complete to withstand a weak attack. Thus, the link between perceived resistance and certainty might be multiply determined by completeness and accuracy appraisals. These appraisals constitute separate valves to certainty that could be opened or closed independently or in parallel.

Processing fluency

Several streams of research suggest that processing fluency is associated with feelings of certainty (e.g., Tormala, Petty, & Brinol, 2002; Tsai & McGill, 2011). For example, attitudes are generally held with greater certainty when they, or the information on which they are based, are highly accessible (Bizer, Tormala, Rucker, & Petty, 2006; Holland, Verplanken, & van Knippenberg, 2003; Petrocelli et al., 2007) or brought to mind with subjective ease (e.g., Haddock, Rothman, Reber, & Schwarz, 1999; see also Alter & Oppenheimer, 2009). Multiple appraisals could drive these effects. First, fluency may influence attitude certainty through an accuracy appraisal. Research by Kelley and Lindsay (1993) suggests that the ease of answering a question is associated with perceived accuracy: Individuals view the answer to a question as more likely to be accurate when it comes to mind easily. Thus, if an attitude or attitude-supportive information comes to mind easily, the attitude might be assumed to be more accurate or true. Completeness appraisals may also be involved. When individuals find it easy to recall attitude-consistent information, for instance, they might infer that they have *a lot* of information supporting that attitude.

Because fluency can produce positive affect (Winkielman & Cacioppo, 2001), fluency may also affect certainty through affective validation. For instance, fluency might lead individuals to feel good about their attitude, and this feeling might increase attitude certainty (Cesario et al., 2004). This assessment could occur in the absence of any differences in appraisals about the accuracy or completeness of the information possessed. For instance, Gill, Swann, and Silvera (1998) used priming procedures

to make some impressions of a person easier to form than others. When priming made judgments easier, those judgments were held with greater certainty. In another demonstration, Norwick and Epley (2003) presented participants with statements that were either difficult or easy to read and found that participants were more certain of a given statement's truth when the statement was easy to read. In both cases, the information itself was held constant; thus, the certainty effects might have worked primarily through an affective validation associated with ease. Teasing apart the appraisals underlying fluency effects on certainty would be an important direction for future research.

Hierarchy of appraisals

When multiple appraisals are present, one question to consider is how they relate to one another. Although speculative at present, we surmise a hierarchy of appraisals might exist where the relative weight of one appraisal can be stronger or weaker than the weight of another. For example, perhaps individuals are primarily drawn to assessing whether their information is relevant and accurate. If the information is inaccurate or irrelevant, the information might have little impact on certainty regardless of how complete, legitimate, and/or important it is deemed to be. After all, if information is inaccurate, who cares if it is complete or not! Perhaps more interesting, there may be no fixed appraisal hierarchy. Rather, the importance, and thus relative weighting, of different appraisals might vary as a result of both individual and situational factors.

As an example of potential individual differences in appraisal hierarchies, imagine two consumers who receive new product information. One consumer emphasizes completeness over accuracy (i.e., "I want to know everything about this product regardless of whether it is true or false."), whereas the other emphasizes accuracy over completeness (i.e., "I only want to know information about this product if I can be sure it is true"). If the new information is lengthy but of dubious validity (e.g., a low credible source with a lot to say), that information might increase certainty among consumers focused on completeness, but not among consumers focused on accuracy. Indeed, fear of invalidity (Thompson, Naccarato, Parker, & Moskowitz, 2001) might be one individual difference that leads to a greater weighting of accuracy appraisals due to a concern with being wrong.

In addition, other individual difference variables might predict the weight of particular appraisals, or the specific sources of validation people seek within a particular appraisal category. For example, collectivists (e.g., Triandis, 1995) might be more concerned with some sources of accuracy (e.g., social consensus), whereas individualists might be concerned with others (e.g., source expertise or completeness). Moreover, differences in need for cognitive closure may play a role. Perhaps individuals low in need for closure are more likely to wait for complete information before they feel certain, whereas individuals high in need for closure use other means such as securing quick affective validation (Kruglanski, Webster, & Klem, 1993). Research might also examine whether other individual differences in need for affect (Maio & Esses, 2001) or need for cognition (Cacioppo &

Petty, 1982) predict people's weighting of affective validation versus more cognitive appraisals in determining their attitude certainty.

Contextual factors are also likely to moderate the weighting of different appraisals. For example, Fazio (1979) distinguished between construction and validation motives. In this work (see also Goethals & Darley, 1977), construction motives focus on forming an attitude, whereas validation motives focus on supporting existing attitudes (see also Cohen & Reed, 2006). When people are forming an attitude they might weigh accuracy of information first and foremost since the goal of having attitudes is to create appropriate behavioral guides (Petty & Cacioppo, 1986). However, when people seek to validate an existing attitude, they might become more open to any source of validation, since the goal shifts to supporting an existing attitude. Perhaps in the latter case more than the former case, the hierarchy would be subject to bias; people might place more weight on appraisals that support their attitudes than those that do not.

As a final example, the importance or weight of a given appraisal in a particular situation might depend on the extent to which an individual's attention gravitates toward it. For example, consider a message filled with content that represents both sides of an issue (i.e., positive completeness appraisal) but comes from an untrustworthy source (i.e., a negative accuracy appraisal). If an individual is under time pressure, he or she might look for a simple decision rule such as "this comes from an untrustworthy source," and thus assess the attitude using an accuracy appraisal. In contrast, if an individual is not under time pressure, he or she might instead attend carefully to the message and focus more on the content (Priester & Petty, 2003), which might lead to greater reliance on a completeness appraisal.

As these examples suggest, although multiple appraisals might be used in any given situation, the amount of weight they carry in influencing certainty might be highly dependent on individual and situational factors. Having identified a finite set of certainty appraisals, future research can now examine how they are organized and identify factors that affect their relative importance or placement in a hierarchy. We see this as a crucial step for future research.

Moderators of appraisal-based certainty effects

Although the bulk of our attention has focused on identifying the core psychological appraisals underlying certainty assessments, it is also important to consider moderators of their effects. Ultimately, a number of variables are likely to moderate appraisal effects. This is an important and fruitful direction for future research as little prior research has empirically or conceptually examined moderators of attitude certainty effects. However, there is evidence for two moderators: naïve theories and elaboration.

Naïve theories

Considerable research now suggests that people's naïve theories – that is, their own beliefs about the relationships between variables – are critical elements for understanding the effect of one variable on another (e.g., Briñol, Petty, & Tormala,

2006; see Petty et al., 2007). Work on bias correction, for instance, suggests that how people adjust for a potentially biasing influence on judgment largely depends on their own naïve theories regarding the presumed impact of the bias (e.g., Wegener & Petty, 1995). Similarly, work on the persuasion knowledge model (Friestad & Wright, 1994, 1995) suggests that different consumers have different theories about how persuasion affects them and that this, in turn, produces different behaviors.

Tormala, Clarkson, and Henderson (2011) provided recent support for the idea that naïve theories can influence attitude certainty. In one study, participants considered their attitude on a novel topic and then reported it when ready. After participants reported their attitudes, they were given false feedback that they had taken more or less time to evaluate the topic than most other participants. When participants believed that thoughtful consideration tended to produce better judgment, they became more certain of their attitudes when they perceived that they spent more rather than less time evaluating. When participants believed that going with their gut reactions tended to produce better judgment, they became more certain of their attitudes when they perceived that they spent *less* rather than more time evaluating. In each case, participants presumably linked evaluative quickness to certainty through an accuracy appraisal, but the direction of that link varied depending on participants' naïve theories.

Rydell, Hugenberg, and McConnell (2006) also explored the influence of naïve theories on attitude certainty. The authors hypothesized that people who viewed resistance favorably would show greater certainty after successfully resisting strong arguments, as in past research (Tormala & Petty, 2002). For people with naïve theories that resistance was bad, successfully resisting persuasion would suggest that they acted in a manner that contradicted their beliefs (i.e., "I think resistance is bad, but I just resisted!"), which would lead to less attitude certainty. To test this idea, Rydell et al. manipulated participants' beliefs that people who resist persuasion are intelligent and have good insight into their opinions (i.e., resistance is good) or unintelligent and have poor insight into their opinions (i.e., resistance is bad). Participants then were induced to resist arguments for a new university policy. When resistance was framed as good, participants were more certain of their attitudes when they had resisted a strong message. However, this effect was eliminated when resistance was framed as bad. We surmise that in the Rydell et al. studies, naïve theories that resisting persuasion was good or bad may have activated legitimacy appraisals and then moderated whether resistance seemed legitimate or illegitimate as a source of certainty. As an additional possibility, the effects might have been driven by accuracy appraisals to the extent that naïve theories highlighted situational consistencies (e.g., "resistance is good and I just resisted") or inconsistencies (e.g., "resistance is bad, but I just resisted").

In related research, Tsai and McGill (2011) explored the effect of fluency on choice confidence. When consumers made product choices at lower or more concrete construal levels, feelings of fluency increased choice confidence as consumers focused on product feasibility and fluency promoted that perception. At higher or more abstract construal levels fluency led consumers to

have less choice confidence, because they were more attuned to desirability and they associated more effort with more desirable outcomes. Thus, Tsai and McGill found that fluency could have a positive or negative effect on confidence depending on the salient lay theory, which appeared to vary according to construal level. From an appraisals perspective, one possibility is that fluency affected certainty through different appraisals at different levels of construal. For example, higher construal levels are known to foster more abstract thinking, whereas lower levels are known to foster more concrete thinking on the immediate aspects of one's environment (Maglio & Trope, 2011). One possibility is that a broader abstract mindset induced people to think about the completeness of information beyond the present context. And, perhaps when focused on completeness appraisals, more fluent processing fostered a sense of less effort or thoughtfulness and thus less certainty. In contrast, at lower construal levels, consumers may have focused on their immediate feelings in the situation, leading to a focus on affective validation. Here, processing fluency may have served as an indication that using the product will "be good" or "feel right." Alternatively, fluency might have affected certainty through the very same completeness appraisal but with different inferences as a function of construal level. At higher construal levels, fluency might have reduced certainty because consumers thought they had not been careful in their information search. At lower construal levels, fluency might have increased certainty because consumers thought they already knew enough and therefore had complete knowledge (e.g., Maglio & Trope, 2011). Although at present it is unknown whether different appraisals operated in this research, or the same appraisal was differentially affected as a function of construal level, this provides an example of how the present framework can be used to revisit past findings and stimulate additional research.

To the extent that individuals possess different naïve theories about how a variable affects certainty, or other variables moderate the appraisal drawn or how the same appraisal is used (e.g., construal level), the same variable (e.g., fluency) could produce very different effects on attitude certainty. However, it appears there is often a default or dominant meaning for many variables in relation to certainty, producing an overall main effect as observed in many studies where naïve theories have not been measured or moderators have not been introduced.

Elaboration

Although consumers care about and reflect on their certainty, it would be an overstatement to suggest that they always initiate an appraisal process when they receive a persuasive message or other attitude-relevant information. Following the general logic that metacognitive reasoning requires cognitive effort (Petty et al., 2007), we propose that the appraisal process will be most likely to occur when people have high motivation and ability to think. Consistent with this notion, research has shown that the effect of resisting a strong persuasive message on attitude certainty is more likely to emerge when individuals are high in need for cognition or low in cognitive load (see Tormala & Petty, 2004a,b), both of which have been associated with elevated

processing activity (e.g., Cacioppo & Petty, 1982). Similarly, Rucker et al. (2008) found that participants were more certain of their attitudes after receiving a persuasive message portrayed as having considered both sides of an issue, but only when they were high in need for cognition. These findings provide an early indication that appraisals are likely to operate and guide certainty judgments under conditions of high thought.

A framework for appraisal-based certainty

Having outlined our key ideas to this point, we now summarize the insights provided in this review as a new framework of appraisal-based certainty, depicted in Fig. 1. First, individuals must have the motivation and ability to process information and assess the validity of their attitudes. If either the motivation or ability to engage in an appraisal process is absent, then attitude certainty is not likely to be influenced through appraisals. Second, if the motivation and ability to process and assess validity are present, individuals can appraise the information underlying their attitudes on one of the six dimensions we have outlined. The salience of various pieces of information, and of the appraisals themselves, along with contextual factors, determines their hierarchy or relative weight in the certainty assessment. Third, if the overall summary of the appraisals leads people to be impressed with the evidence underlying (or affect associated with) their attitude, a positive appraisal results and attitude certainty is increased. If the summary of the appraisals leads people to be unimpressed with the evidence underlying (or affect associated with) their attitude, a negative appraisal results and attitude certainty is undermined. Finally, if an individual is neither impressed nor unimpressed with the evidence or affect associated with an attitude, or simply does not engage in the appraisal process, then attitude certainty should remain the same.

Predictive value of the appraisal-based certainty framework

Thus far, we have focused our efforts on providing an explanatory framework for past findings in the attitude certainty literature. However, this framework has additional value because it allows researchers to generate predictions regarding if, how, and when new variables might affect attitude certainty. For example, by considering which appraisals are associated with a newly identified variable, one can formulate specific predictions as to whether or not that variable will affect attitude certainty and what the direction of the effect will be.

Consider source attractiveness and message length. Although both variables have been examined with respect to their effects on attitudes (e.g., Chaiken, 1979; Petty & Cacioppo, 1984; Wood, Kallgren, & Preisler, 1985), they have not been studied in attitude certainty research. Is there likely to be any effect of these variables on certainty? To start, it seems unlikely that information from a physically attractive source would be assessed as any more accurate, complete, relevant, important, or legitimate than information from an unattractive source. Attractive sources also seem unlikely to provide a strong

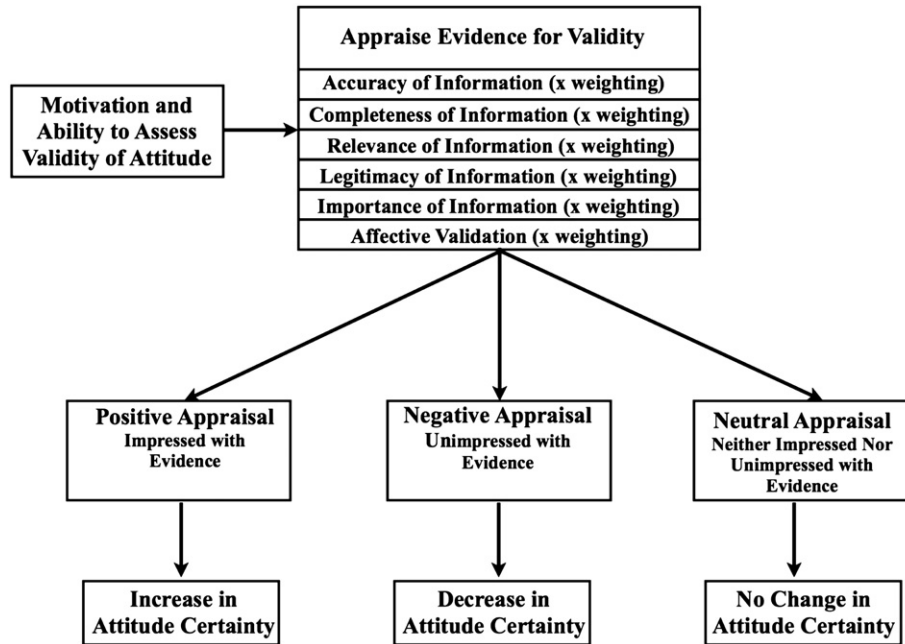


Fig. 1. A framework for appraisal-based certainty.

affective validation (unless attractiveness fosters positive mood, which might induce feelings of certainty). Thus, on balance, we would not anticipate a strong association between source attractiveness and attitude certainty.

In contrast, for message length an effect seems more plausible. In this case, a message that appears longer could induce a completeness appraisal because people assume they have received more information from a longer message. If true, longer messages should produce greater certainty than shorter messages. In fact, even messages that merely seem longer (Tormala & Petty, 2007) should be capable of affecting certainty through a completeness appraisal. On the face of it, there is less reason to expect message length to affect relevance or legitimacy appraisals because both long and short messages could be high or low on either of these dimensions. Still, based on our assumptions of how source attractiveness and message length plausibly relate to the core appraisals, our framework suggests that message length is more likely to affect attitude certainty than physical attractiveness (though both have been shown to affect attitudes themselves), that longer messages would yield more certainty than shorter messages, and that this effect would be driven by a completeness appraisal.

The predictive utility of the appraisals identified in our framework is particularly salient in the context of multiple opposing appraisals. Imagine that a given researcher conducts a study to determine the effect of message complexity on attitude certainty, reasoning that because complex messages are more difficult to process (see Alter & Oppenheimer, 2009), they should reduce attitude certainty. This researcher observes a null effect and then concludes that processing difficulty must not undermine certainty. Viewed in light of multiple appraisals and joint effects, however, there may be reason to suspect that there is such an effect but that an opposing appraisal process related to completeness suppressed it. For example, perhaps when

consumers receive complex messages, they activate two opposing appraisals: a negative appraisal tied to affective validation (i.e., “this was hard to process so I don’t feel great about my assessment of it”) and a positive appraisal tied to completeness (i.e., “this was hard to process so I read it several times to make sure I got all the information”). Considering multiple appraisals helps shed light on the co-determinants of certainty and can expand our understanding of how situational factors can make consumers feel certain or uncertain. In short, our framework provides a structure for considering the nuanced links between a particular variable and attitude certainty. In the case of message complexity, the solution to uncovering a certainty effect might be to guide participants to make one appraisal rather than the other.

The appraisal framework also accommodates moderation hypotheses. Consider the previous hypothesis that a longer message promotes certainty through a completeness appraisal. Having identified the focal appraisal, it is possible to generate hypotheses regarding whether a variable will moderate the effect. Specifically, variables related (unrelated) to the specific appraisal should be more (less) likely to moderate it. In the case of the long message, if the effect is driven solely by completeness appraisals, that effect might turn on and off in response to other variables influencing perceptions of completeness. For example, if a consumer is (or perceives herself to be) an expert on a topic, she should believe she already has considerable information, which could attenuate the impact of any new variable (like message length) fostering perceptions of completeness. When the consumer is a novice (or perceives herself as such), however, message length should exert greater effect on attitude certainty because existing completeness perceptions might be more modest. Thus, by understanding the relevant appraisals, researchers are better positioned to generate theory-driven predictions about moderation.

Appraisal-based certainty: comparison with past models involving attitude certainty

Next, we offer a brief review of influential theories of attitudes and persuasion that have in some way dealt with attitude certainty. In this review, we highlight the uniqueness of the appraisal perspective, which fills a gap in the literature by delving into the specific processes through which consumers form and adjust their own certainty assessments.

Comparison models

Attitude certainty has been featured prominently in both classic and contemporary models of comparison. In social comparison theory, for instance, Festinger (1954) posited that people are motivated to hold attitudes about which they can feel certain. Festinger proposed that individuals seek to gain certainty using objective means when possible (e.g., “Does this bicycle have the features I require?”), but in the absence of objective information they use other people’s attitudes (i.e., social consensus) as a reference (e.g., “Do other people like this bicycle?”). Social comparison theory speaks to the importance of certainty as a psychological need, and suggests that objective information in the environment as well as the opinions of others can serve as crucial inputs. This theory highlights the accuracy dimension of certainty in that Festinger assumed that people seek correctness in their opinions by comparing them with the opinions of others. The current framework goes beyond social comparison theory by identifying determinants of certainty other than perceived accuracy.

Albarracín, Wallace, and Glasman (2004) proposed an activation and comparison model of attitude change that considers the role of attitude certainty. This model proposes that understanding attitude change requires the examination of three processes: (a) activation of a prior attitude from memory, (b) activation of information related to the prior attitude from memory or from an external source, and (c) comparison of the attitude with the activated information. According to the model, when the information is consistent with the prior attitude, that attitude becomes polarized in both extremity and certainty. However, attitude-inconsistent information does not necessarily change the certainty of the initial attitude. In this case, people who compare a prior attitude with new inconsistent information might reach a compromise between the two positions without altering their certainty. This model provides insight into one input into attitude certainty (i.e., consistency), which we accommodate in our framework, but it does not delve into the appraisals this input stimulates or examine other potential processes.

Persuasion models

Certainty also has been featured prominently in dual-process theories of persuasion such as the Heuristic-Systematic Model (HSM, Chaiken, Liberman, & Eagly 1989) and the Elaboration-Likelihood Model (ELM, Petty & Cacioppo, 1986).

Both models propose that people process persuasive messages more extensively when they feel uncertain or when they feel a need to be more certain about an attitude. According to the ELM, people’s motivation to think about information stems from a desire to hold correct attitudes (Petty & Cacioppo, 1986). Thus, people process more when the need for a correct attitude is greater, such as when the attitude object or issue is of high personal relevance (Petty & Cacioppo, 1990). In the HSM, the motivation to think about information stems from having a degree of certainty that is less than desired (Chaiken et al., 1989). In addition, the ELM holds that as thinking about an attitude object increases, certainty in the attitude also increases and this enhanced certainty is one reason for why elaboration increases attitude strength (Petty, Haugtvedt, & Smith, 1995). Thus, these dual process models suggest that thorough processing can be both a consequence of and solution for uncertainty, and that enhanced processing can increase attitude certainty. However, because these models are not focused on the aspects of information that lead people to be more or less certain, they do not provide insight into appraisal processes or even the antecedents of certainty more broadly.

Associative attitude models

According to the meta-cognitive model of attitudes (MCM; Petty, 2006; Petty & Briñol, 2006), people’s stored evaluations are accompanied by validity assessments. In this model, attitude objects can be associated with both positive and negative evaluations (e.g., Cacioppo & Berntson, 1994) and each of these evaluations can be associated with separate validity assessments that can be reflected in certainty judgments. This model holds that old attitudes are not erased when change occurs (see also Wilson, Wheatley, Meyers, Gilbert, & Axsom, 2000); instead, old attitudes receive a “tag” indicating that they are invalid. Because invalidity assessments are tag-based, in some circumstances (e.g., when under cognitive load; or when completing an automatic attitude measure) people will retrieve the old attitude but not the invalidity (low certainty) assessment, in which case people might use or report their old attitude as if it reflects their current view.

In a similar vein, the Associative-Propositional Evaluation (APE; Gawronski & Bodenhausen, 2006) model distinguishes between associative evaluations (implicit attitudes or automatic affective reactions) and propositional evaluations (explicit attitudes or evaluative judgments based on syllogistic inferences). The APE model suggests that people can consider the truth value of both their affective associations and their more explicit evaluations through propositional processes involving syllogistic reasoning. In essence, the truth value can be construed as an on-line certainty assessment. However, in contrast to the MCM, the APE model makes no assumption that attitude certainty or validity information is stored in memory. Most germane for the current purposes, neither the MCM nor the APE offers explicit details about the specific inputs into the validation process. Thus, unlike our appraisals perspective, it is unclear what people draw upon to assess their certainty.

Attitude appraisal models

A final set of models link attitudes to behavior by proposing that individuals reflect on their attitudes to ascertain whether those attitudes are appropriate behavioral guides. Lynch and colleagues (Feldman & Lynch, 1988; Lynch, 2006) proposed an accessibility–diagnosticity model, suggesting that an attitude’s influence on behavior depends on whether that attitude is accessible and viewed as diagnostic. Lynch (2006) noted that diagnosticity has been operationalized in terms of relevance, importance, and certainty. However, the process by which an attitude comes to be viewed as diagnostic, or held with certainty, is unclear. Also germane, attitudes are seen as diagnostic (or not) for a particular behavior or situation rather than as something about which people might be generally certain. That is, in the accessibility–diagnosticity model, diagnosticity is viewed as contextual or state-dependent, whereas we assume that attitude certainty can be more stable and hold across time and situations, though some of the appraisal inputs to certainty (e.g., relevance) can vary from one situation to the next.

Cohen and Reed (2006) proposed a multiple pathway anchoring and adjustment (MPAA) model that explores issues related to diagnosticity (see Lynch, 2006). The MPAA suggests that people ask themselves two questions in deciding whether to use an attitude as a guide for behavior. First, individuals ask themselves whether they have a clear and well-formed attitude on a topic. Second, individuals ask themselves whether their attitude gives them a good basis to proceed or engage in a behavior. Cohen and Reed (2006) define the first question as an assessment of “representational sufficiency” and the second as an assessment of “functional sufficiency” (see Petrocelli et al., 2007, for a related distinction between attitude clarity and attitude correctness). Cohen and Reed suggest that people are likely to use an accessible attitude when it meets their requirements for both representational and functional sufficiency. Importantly, though, in the MPAA too there is little attempt to chart the antecedents of certainty or the processes driving people’s adjustments to their own level of certainty.

In summary, many models of attitude formation and change have recognized or incorporated some element of attitude certainty. The mere presence of certainty in relation to these models is a testament to the importance of attitude certainty in the attitudes and persuasion literature, and in consumer psychology more generally. However, in contrast to our appraisal-based certainty framework, none of these models provided a thorough examination of the inputs into attitude certainty, outlined the underlying processes through which attitude certainty assessments are made, or offered predictions for how new variables affect attitude certainty.

Future directions

The introduction of an appraisal-based perspective on certainty paves the way for a number of interesting future research directions. Although we have discussed possible future directions throughout the course of this review, here we highlight several

additional directions that we believe an appraisal-based perspective on attitude certainty sparks.

Differential consequences based on the underlying appraisal

One intriguing direction for future research is to examine whether the specific appraisal that underlies one’s certainty is of any consequence. That is, if two consumers have the same degree of certainty, does it matter if one consumer’s certainty stems from an accuracy appraisal and another consumer’s certainty stems from a completeness appraisal? One possibility is that once certainty is formed, the underlying appraisal is no longer crucial; that what matters is the stored summary judgment of certainty. This would not mean that the appraisals documented here are unimportant, as they still allow one to make predictions about how a variable affects certainty, but it would suggest that the underlying appraisal might be less crucial for an attitude’s influence and stability once the certainty judgment has been reached.

An alternative possibility is that the underlying appraisals matter, even after certainty has been formed. For example, perhaps certainty based on one appraisal (e.g., accuracy) leads to attitudes that are more or less influential, persistent, and/or susceptible to change than does certainty based on another appraisal (e.g., legitimacy). Or perhaps the influence of an appraisal varies by context. As one possibility, it could be that the durability of an attitude depends on the type of attack one receives. A matching perspective (see Petty, Wheeler, & Bizer, 2000, for a review) might predict that if an individual’s attitude certainty is based largely on an accuracy appraisal, attacking the accuracy of the attitude or supportive information could be more effective than attacking the completeness of one’s information. In contrast, perhaps it is easier to undermine an attitude by attacking an appraisal that has not contributed to the certainty of one’s attitude. If one believes that one has accurate information, for example, but has not considered the completeness of this information, one might be less resistant to an appeal focused on the lack of complete information rather than one that emphasizes having inaccurate information. Exploring these possibilities would provide additional value to the framework by further establishing the importance of understanding the distinct appraisal processes that shape certainty.

Understanding appraisals operating in past research

Future work could revisit existing findings from the perspective of certainty appraisals. Whereas past research on attitude certainty has focused on linking a variable to attitude certainty through a single process, our framework suggests that multiple appraisals can operate in parallel. Thus, it may be worth conducting further investigations of established findings. For instance, Tormala, Clarkson, and Petty (2006) found that participants were more certain of their attitudes when they had more time to counterargue an attack compared when they had little time to counterargue. Tormala et al. suggested that this effect could stem from the ease or difficulty with which participants generated counterarguments (i.e., more time led to easier

counterarguing). However, less time to counterargue might have also induced people to perceive their attitudes to be based on fewer arguments (a completeness appraisal) or might have made it less clear that they had valid reasons to support their own attitudes (an accuracy appraisal). Past findings could be reexamined with a more focused lens to uncover these effects.

Implications for implicit attitudes

Whereas we have largely focused our review on explicitly reported attitude certainty, the Meta-Cognitive Model (MCM, Petty, Briñol, & DeMarree, 2007), described earlier, examines certainty in automatic associations stored in memory. Similar to research described in this review on how metacognitive certainty or confidence increases the use of an attitude, the MCM postulates that the more confidence people have in the validity of an automatic evaluation, the more likely they are to report it on a deliberative measure. An interesting direction for future research would be to examine how the confidence associated with implicit or automatic associations is affected by the specific appraisals summarized here surrounding people's explicit level of attitude certainty. Initial research suggests that implicit and explicit attitude certainty may be affected through different processes. For example, preliminary evidence suggests that implicit–explicit discrepancies affect the degree of implicit certainty people have in their attitudes but do not affect attitude certainty as measured with traditional deliberative measures (Petty & Briñol, 2009). This is an interesting area for future research.

Understanding when a variable yields a positive versus negative appraisal

A final direction for future work would be to understand when the same variable affects a particular appraisal in different directions. For example, we previously discussed how mood can affectively validate one's attitude both through its valence (Briñol, Petty, & Barden, 2007; Briñol, Petty, Valle, et al., 2007) and its cognitive association with certainty (Tiedens & Linton, 2001). A remaining question is what determines whether one's appraisal focus is on the valence of the mood versus the cognitive associations of certainty or uncertainty. As noted, the initial work on validation thorough happiness (vs. sadness) does not allow these possibilities to be disentangled because both emotions work in the same direction on the pleasantness–unpleasantness and confidence–doubt dimensions. However, other emotions, such as anger and surprise, do not have these dimensions confounded. Anger is an unpleasant emotion that is associated with confidence whereas surprise is a relatively pleasant emotion associated with doubt (Ellsworth & Smith, 1988; Tiedens & Linton, 2001). In a series of recent studies, Briñol et al. (2013) suggested that people can be induced to focus on either the affective or cognitive appraisals. Specifically, the authors found that when participants were induced to focus on the cognitive appraisal of confidence/doubt, then feeling angry led them to rely more on their views than surprise because anger enhanced confidence in the accuracy of one's views (cognitive validation). In contrast, when participants were focused on the

affective appraisal of pleasantness/unpleasantness, then feeling angry led to less use of participants initial views than surprise because anger enhanced perceptions of feeling bad about or disliking one's views (affective validation).

Conclusion

In their pivotal review of attitude certainty nearly two decades ago, Gross et al. (1995) concluded by stating that, “70 years have proved insufficient to provide a satisfying account of the dynamics of opinion certainty. Perhaps, however, less additional time will be needed to weave a cohesive whole out of the fragments we have discussed.” In conducting this review, we have organized and expanded current understandings of attitude certainty by identifying a finite set of appraisals from which attitude certainty can be derived. In so doing, we offer a new theoretical account of how people assess their certainty following the formation, change, or maintenance of their attitudes and underlying beliefs. Furthermore, our framework presents new opportunities for consumer psychologists to become more engaged in the study of attitude certainty, its antecedents, and its numerous consequences for consumer thought and action. Our review has raised unanswered questions about attitude certainty in its many derivations, and we hope that our framework will provide some guidance and direction in exploring these important issues.

References

- Albarracín, D., & Mitchell, A. L. (2004). The role of defensive confidence in preference for proattitudinal information: How believing that one is strong can sometimes be a defensive weakness. *Personality and Social Psychology Bulletin*, 30(12), 1565–1584. <http://dx.doi.org/10.1177/0146167204271180>.
- Albarracín, D., Wallace, H. M., & Glasman, L. R. (2004). *Survival and change in judgments: A model of activation and comparison*. *Advances in Experimental Social Psychology*, Vol. 36. (pp. 251–315): Academic Press, 251–315. [http://dx.doi.org/10.1016/S0065-2601\(04\)36005-3](http://dx.doi.org/10.1016/S0065-2601(04)36005-3).
- Alter, A. L., & Oppenheimer, D. M. (2009). Uniting the tribes of fluency to form a metacognitive nation. *Personality and Social Psychology Review*, 13(3), 219–235. <http://dx.doi.org/10.1177/1088868309341564>.
- Anderson, C., & Berdahl, J. L. (2002). The experience of power: Examining the effects of power on approach and inhibition tendencies. *Journal of Personality and Social Psychology*, 83(6), 1362–1377. <http://dx.doi.org/10.1037/0022-3514.83.6.1362>.
- Barden, J., & Petty, R. E. (2008). The mere perception of elaboration creates attitude certainty: Exploring the thoughtfulness heuristic. *Journal of Personality and Social Psychology*, 95(3), 489–509. <http://dx.doi.org/10.1037/a0012559>.
- Bassili, J. N. (1996). Meta-judgmental versus operative indexes of psychological attributes: The case of measures of attitude strength. *Journal of Personality and Social Psychology*, 71(4), 637–653. <http://dx.doi.org/10.1037/0022-3514.71.4.637>.
- Bizer, G. Y., Larsen, J. T., & Petty, R. E. (2011). Exploring the valence-framing effect: Negative framing enhances attitude strength. *Political Psychology*, 32(1), 59–80. <http://dx.doi.org/10.1111/j.1467-9221.2010.00795.x>.
- Bizer, G. Y., & Petty, R. E. (2005). How we conceptualize our attitudes matters: The effects of valence framing on the resistance of political attitudes. *Political Psychology*, 26(4), 553–568. <http://dx.doi.org/10.1111/j.1467-9221.2005.00431.x>.
- Bizer, G., Tormala, Z. L., Rucker, D. D., & Petty, R. E. (2006). Memory-based versus on-line processing: Implications for attitude strength. *Journal of Experimental Social Psychology*, 42(5), 646–653. <http://dx.doi.org/10.1016/j.jesp.2005.09.002>.

- Blankenship, K. L., & Wegener, D. T. (2008). Opening the mind to close it: Considering a message in light of important values increases message processing and later resistance to change. *Journal of Personality and Social Psychology, 94*(2), 196–213. <http://dx.doi.org/10.1037/0022-3514.94.2.196>.
- Briñol, P., Petty, R. E., & Barden, J. (2007). Happiness versus sadness as a determinant of thought confidence in persuasion: A self-validation analysis. *Journal of Personality and Social Psychology, 93*(5), 711–727. <http://dx.doi.org/10.1037/0022-3514.93.5.711>.
- Briñol, P., Petty, R. E., Stavraki, M., Wagner, B. C., & Díaz, D. (2013). *Anger and surprise can validate or invalidate thoughts: An appraisal perspective: Unpublished Manuscript*.
- Briñol, P., Petty, R. E., & Tormala, Z. L. (2006). The malleable meaning of subjective ease. *Psychological Science, 17*(3), 200–206. <http://dx.doi.org/10.1111/j.1467-9280.2006.01686.x>.
- Briñol, P., Petty, R. E., Valle, C., Rucker, D. D., & Becerra, A. (2007). The effects of message recipients' power before and after persuasion: A self-validation analysis. *Journal of Personality and Social Psychology, 93*(6), 1040–1053. <http://dx.doi.org/10.1037/0022-3514.93.6.1040>.
- Cacioppo, J. T., & Berntson, G. G. (1994). Relationship between attitudes and evaluative space: A critical review, with emphasis on the separability of positive and negative substrates. *Psychological Bulletin, 115*(3), 401–423. <http://dx.doi.org/10.1037/0033-2909.115.3.401>.
- Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology, 42*(1), 116–131. <http://dx.doi.org/10.1037/0022-3514.42.1.116>.
- Campbell, M., & Kirmani, A. (2008). I know what you're doing and why you're doing it: The use of the persuasion knowledge model in consumer research. In C. Haugtvedt, P. Herr, & F. Kardes (Eds.), *Handbook of Consumer Psychology* (pp. 549–574). New York: Psychology Press.
- Cesario, J., Grant, H., & Higgins, E. T. (2004). Regulatory fit and persuasion: Transfer from “feeling right”. *Journal of Personality and Social Psychology, 86*(3), 388–404. <http://dx.doi.org/10.1037/0022-3514.86.3.388>.
- Chaiken, S. (1979). Communicator physical attractiveness and persuasion. *Journal of Personality and Social Psychology, 37*(8), 1387–1397. <http://dx.doi.org/10.1037/0022-3514.37.8.1387>.
- Chaiken, S., Liberman, A., & Eagly, A. H. (1989). Heuristic and systematic processing within and beyond the persuasion context. In J. S. Uleman, & J. A. Bargh (Eds.), *Unintended thought* (pp. 212–252). New York: Guilford.
- Clarkson, J. J., Tormala, Z. L., & Rucker, D. D. (2008). A new look at the consequences of attitude certainty: The amplification hypothesis. *Journal of Personality and Social Psychology, 95*(4), 810–825. <http://dx.doi.org/10.1037/a0013192>.
- Cohen, J. B., & Reed, A. (2006). A multiple pathway anchoring and adjustment (MPAA) model of attitude generation and recruitment. [Review]. *Journal of Consumer Research, 33*(1), 1–15. <http://dx.doi.org/10.1086/504121>.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Orlando, FL, US: Harcourt Brace Jovanovich College Publishers.
- Ellsworth, P. C., & Smith, C. A. (1988). Shades of joy: Patterns of appraisal differentiating positive emotions. *Cognition and Emotion, 2*, 301–331.
- Evans, A. T., & Clark, J. K. (2012). Source characteristics and persuasion: The role of self-monitoring in self-validation. *Journal of Experimental Social Psychology, 48*(1), 383–386. <http://dx.doi.org/10.1016/j.jesp.2011.07.002>.
- Fazio, R. H. (1979). Motives for social comparison: The construction-validation distinction. *Journal of Personality and Social Psychology, 37*(10), 1683–1698. <http://dx.doi.org/10.1037/0022-3514.37.10.1683>.
- Fazio, R. H., Ledbetter, J. E., & Towles-Schwen, T. (2000). On the costs of accessible attitudes: Detecting that the attitude object has changed. *Journal of Personality and Social Psychology, 78*(2), 197–210. <http://dx.doi.org/10.1037/0022-3514.78.2.197>.
- Fazio, R. H., & Zanna, M. P. (1978a). Attitudinal qualities relating to the strength of the attitude-behavior relationship. *Journal of Experimental Social Psychology, 14*(4), 398–408. [http://dx.doi.org/10.1016/0022-1031\(78\)90035-5](http://dx.doi.org/10.1016/0022-1031(78)90035-5).
- Fazio, R. H., & Zanna, M. P. (1978b). On the predictive validity of attitudes: The roles of direct experience and confidence. *Journal of Personality, 46*(2), 228. <http://dx.doi.org/10.1111/1467-6494.ep7376510>.
- Feldman, J. M., & Lynch, J. G., Jr. (1988). Self-generated validity and other effects of measurement on belief, attitude, intention, and behavior. *Journal of Applied Psychology, 73*(3), 421–435. <http://dx.doi.org/10.1037//0021-9010.73.3.421>.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7*(2), 117–140. <http://dx.doi.org/10.1177/001872675400700202>.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- French, J., & Raven, B. (1959). The bases of power. In D. Cartwright (Ed.), *Studies in social power* (pp. 150–167). Ann Arbor, MI: Institute for Social Research.
- Friestad, M., & Wright, P. (1994). The Persuasion Knowledge Model: How people cope with persuasion attempts. *Journal of Consumer Research, 21*(1), 1–31. <http://dx.doi.org/10.1086/209380>.
- Friestad, M., & Wright, P. (1995). Persuasion Knowledge: Lay peoples and researchers beliefs about the psychology of advertising. *Journal of Consumer Research, 22*(1), 62–74. <http://dx.doi.org/10.1086/209435>.
- Gawronski, B., & Bodenhausen, G. V. (2006). Associative and propositional processes in evaluation: An integrative review of implicit and explicit attitude change. *Psychological Bulletin, 132*(5), 692–731. <http://dx.doi.org/10.1037/0033-2909.132.5.692>.
- Gill, M. J., Swann, W. B., Jr., & Silvera, D. H. (1998). On the genesis of confidence. *Journal of Personality and Social Psychology, 75*(5), 1101–1114. <http://dx.doi.org/10.1037/0022-3514.75.5.1101>.
- Goethals, G. R., & Darley, J. M. (1977). Social comparison theory: An attributional approach. In J. M. Suls, & R. L. Miller (Eds.), *Social comparison processes: Theoretical and empirical perspectives* (pp. 259–278). Washington, DC: Hemisphere.
- Gross, S., Holtz, R., & Miller, N. (1995). Attitude certainty. In R. E. Petty, & J. A. Krosnick (Eds.), *Attitude Strength: Antecedents and Consequences* (pp. 215–245). Mahwah, NJ: Lawrence Erlbaum Associates.
- Guinote, A., Judd, C. M., & Brauer, M. (2002). Effects of power on perceived and objective group variability: Evidence that more powerful groups are more variable. *Journal of Personality and Social Psychology, 82*(5), 708–721. <http://dx.doi.org/10.1037/0022-3514.82.5.708>.
- Haddock, G., Rothman, A. J., Reber, R., & Schwarz, N. (1999). Forming judgments of attitude certainty, intensity, and importance: The role of subjective experiences. *Personality and Social Psychology Bulletin, 25*(7), 771–782.
- Hass, R. G. (1981). Effects of source characteristics on cognitive responses and persuasion. In R. E. Petty, T. M. Ostrom, & T. C. Brock (Eds.), *Cognitive responses in persuasion*. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Holland, R. W., Verplanken, B., & van Knippenberg, A. (2003). From repetition to conviction: Attitude accessibility as a determinant of attitude certainty. *Journal of Experimental Social Psychology, 39*(6), 594–601. [http://dx.doi.org/10.1016/s0022-1031\(03\)00038-6](http://dx.doi.org/10.1016/s0022-1031(03)00038-6).
- Kelley, C. M., & Lindsay, D. S. (1993). Remembering mistaken for knowing: Ease of retrieval as a basis for confidence in answers to general knowledge questions. *Journal of Memory and Language, 32*(1), 1–24. <http://dx.doi.org/10.1006/jmla.1993.1001>.
- Koehler, D. (1994). Hypothesis generation and confidence in judgment. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 20*(2), 461–469. <http://dx.doi.org/10.1037//0278-7393.20.2.461>.
- Koriat, A. (2012). The self-consistency model of subjective confidence. *Psychological Review, 119*(1), 80–113. <http://dx.doi.org/10.1037/a0025648>.
- Kruglanski, A. W. (1989). *Lay epistemics and human knowledge: Cognitive and motivational bases*. New York: Plenum Press.
- Kruglanski, A. W., Raviv, A., Bar-Tal, D., Raviv, A., Sharvit, K., Ellis, S., et al. (2005). *Says who?: Epistemic authority effects in social judgment. Advances in Experimental Social Psychology, Vol. 37.* (pp. 345–392): Academic Press, 345–392. [http://dx.doi.org/10.1016/S0065-2601\(05\)37006-7](http://dx.doi.org/10.1016/S0065-2601(05)37006-7).
- Kruglanski, A. W., Webster, D. M., & Klem, A. (1993). Motivated resistance and openness to persuasion in the presence or absence of prior information. *Journal of Personality and Social Psychology, 65*(5), 861–876. <http://dx.doi.org/10.1037//0022-3514.65.5.861>.
- Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology, 37*(11), 2098–2109. <http://dx.doi.org/10.1037//0022-3514.37.11.2098>.

- Lynch, J. G. (2006). Accessibility–diagnosticity and the multiple pathway anchoring and adjustment model. *Journal of Consumer Research*, 33(1), 25–27. <http://dx.doi.org/10.1086/504129>.
- Lynch, J. G., Jr., Marmorstein, H., & Weigold, M. F. (1988). Choices from Sets including Remembered Brands: Use of Recalled Attributes and Prior Overall Evaluations. *Journal of Consumer Research*, 15(2), 169–184.
- Maglio, S. J., & Trope, Y. (2011). Scale and construal: How larger measurement units shrink length estimates and expand mental horizons. *Psychonomic Bulletin Review*, 18(1), 165–170. <http://dx.doi.org/10.3758/s13423-010-0025-1>.
- Maheswaran, D., & Chaiken, S. (1991). Promoting systematic processing in low-motivation settings — Effect of incongruent information on processing and judgment. *Journal of Personality and Social Psychology*, 61(1), 13–25. <http://dx.doi.org/10.1037//0022-3514.61.1.13>.
- Maheswaran, D., & Sternthal, B. (1990). The effects of knowledge, motivation, and type of message on ad processing and product judgments. *Journal of Consumer Research*, 17(1), 66–73. <http://dx.doi.org/10.1086/208537>.
- Maio, G. R., & Esses, V. M. (2001). The need for affect: Individual differences in the motivation to approach or avoid emotions. *Journal of Personality*, 69(4), 583–615. <http://dx.doi.org/10.1111/1467-6494.694156>.
- Marks, G., & Miller, N. (1985). The effect of certainty on consensus judgments. *Personality and Social Psychology Bulletin*, 11(2), 165–177. <http://dx.doi.org/10.1177/0146167285112005>.
- Muthukrishnan, A. V., Pham, M. T., & Mungale, A. (2001). Does greater amount of information always bolster attitudinal resistance? *Marketing Letters*, 12(2), 131–144.
- Norwick, R., & Epley, N. (2003). Experiential determinants of confidence. *Poster presented at the Society for Personality and Social Psychology, Los Angeles, CA*.
- Petrocelli, J. V., Tormala, Z. L., & Rucker, D. D. (2007). Unpacking attitude certainty: Attitude clarity and attitude correctness. *Journal of Personality and Social Psychology*, 92(1), 30–41. <http://dx.doi.org/10.1037/0022-3514.92.1.30>.
- Petty, R. E. (2006). A metacognitive model of attitudes. *Journal of Consumer Research*, 33(1), 22–24. <http://dx.doi.org/10.1086/504128>.
- Petty, R. E., & Briñol, P. (2006). A metacognitive approach to “implicit” and “explicit” evaluations: Comment on Gawronski and Bodenhausen (2006). *Psychological Bulletin*, 132(5), 740–744. <http://dx.doi.org/10.1037/0033-2909.132.5.740>.
- Petty, R. E., & Briñol, P. (2008). Persuasion: From single to multiple to metacognitive processes. *Perspectives on Psychological Science*, 3(2), 137–147. <http://dx.doi.org/10.1111/j.1745-6916.2008.00071.x>.
- Petty, R. E., Briñol, P., Tormala, Z. L., & Wegener, D. T. (2007). The role of meta-cognition in social judgment. In A. W. Kruganski, & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (pp. 254–284) (2nd ed.). New York: Guilford Publishers.
- Petty, R. E., & Cacioppo, J. T. (1984). The effects of involvement on responses to argument quantity and quality: Central and peripheral routes to persuasion. *Journal of Personality and Social Psychology*, 46(1), 69–81. <http://dx.doi.org/10.1037/0022-3514.46.1.69>.
- 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) New York: Academic Press.
- Petty, R. E., & Cacioppo, J. T. (1990). Involvement and persuasion: Tradition versus integration. *Psychological Bulletin*, 107(3), 367–374. <http://dx.doi.org/10.1037/0033-2909.107.3.367>.
- Petty, R. E., & Briñol, P. (2009). Implicit ambivalence: A meta-cognitive approach. In R. E. Petty, R. H. Fazio, & P. Briñol (Eds.), *Attitudes: Insights from the new implicit measures* (pp. 119–164). New York, NY: Psychology Press.
- Petty, R. E., Cacioppo, J. T., & Goldman, R. (1981). Personal involvement as a determinant of argument-based persuasion. *Journal of Personality and Social Psychology*, 41(5), 847–855. <http://dx.doi.org/10.1037/0022-3514.41.5.847>.
- Petty, R. E., Haugtvedt, C. P., & Smith, S. M. (1995). Elaboration as a determinant of attitude strength: Creating attitudes that are persistent, resistant, and predictive of behavior. In R. E. Petty, & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 93–130). Hillsdale, NJ England: Lawrence Erlbaum Associates, Inc.
- Petty, R. E., & Krosnick, J. A. (Eds.). (1995). *Attitude strength: Antecedents and consequences*. Mahwah, NJ: Erlbaum Associates.
- Petty, R. E., Tormala, Z. L., & Rucker, D. D. (2004). Resistance to persuasion: An attitude strength perspective. In J. T. Jost, M. R. Banaji, & D. A. Prentice (Eds.), *Perspectivism in social psychology: The yin and yang of scientific progress* (pp. 37–51). Washington, D. C.: American Psychological Association.
- Petty, R. E., & Wegener, D. T. (1998). Matching versus mismatching attitude functions: Implications for scrutiny of persuasive messages. *Personality and Social Psychology Bulletin*, 24(3), 227–240. <http://dx.doi.org/10.1177/0146167298243001>.
- Petty, R. E., Wheeler, S. C., & Bizer, G. (2000). Matching effects in persuasion: An elaboration likelihood analysis. In G. Maio, & J. Olson (Eds.), *Why we evaluate: Functions of attitudes* (pp. 133–162). Mahwah, NJ: Erlbaum.
- Petty, R. E., Briñol, P., & DeMarree, K. G. (2007). The meta-cognitive model (MCM) of attitudes: Implications for attitude measurement, change, and strength. *Social Cognition*, 25, 657–686.
- Pomerantz, E. M., Chaiken, S., & Tordesillas, R. S. (1995). Attitude strength and resistance processes. *Journal of Personality and Social Psychology*, 69(3), 408–419. <http://dx.doi.org/10.1037/0022-3514.69.3.408>.
- Priester, J. R., & Petty, R. E. (1996). The gradual threshold model of ambivalence: Relating the positive and negative bases of attitudes to subjective ambivalence. *Journal of Personality and Social Psychology*, 71(3), 431–449. <http://dx.doi.org/10.1037/0022-3514.71.3.431>.
- Priester, J. R., & Petty, R. E. (2003). The influence of spokesperson trustworthiness on message elaboration, attitude strength, and advertising effectiveness. *Journal of Consumer Psychology*, 13(4), 408–421. http://dx.doi.org/10.1207/S15327663JCP1304_08.
- Priester, Joseph R., Petty, Richard E., & Park, K. (2007). Whence univalent ambivalence? From the anticipation of conflicting reactions. *Journal of Consumer Research*, 34(1), 11–21. <http://dx.doi.org/10.1086/513042>.
- Rokeach, M. (1968). *Beliefs, attitudes, and values: A theory of organization and change*. San Francisco: Jossey-Bass.
- Rucker, D. D., Galinsky, A. D., & Dubois, D. (2012). Power and consumer behavior: How power shapes who and what consumers value. *Journal of Consumer Psychology*, 22(3), 352–368. <http://dx.doi.org/10.1016/j.jcps.2011.06.001>.
- Rucker, D. D., & Petty, R. E. (2004). When resistance is futile: Consequences of failed counterarguing for attitude certainty. *Journal of Personality and Social Psychology*, 86(2), 219–235. <http://dx.doi.org/10.1037/0022-3514.86.2.219>.
- Rucker, D. D., Petty, R. E., & Briñol, P. (2008). What’s in a frame anyway?: A meta-cognitive analysis of the impact of one versus two sided message framing on attitude certainty. *Journal of Consumer Psychology*, 18(2), 137–149. <http://dx.doi.org/10.1016/j.jcps.2008.01.008>.
- Rydell, R. J., Hugenberg, K., & McConnell, A. R. (2006). Resistance can be good or bad: How theories of resistance and dissonance affect attitude certainty. *Personality and Social Psychology Bulletin*, 32(6), 740–750. <http://dx.doi.org/10.1177/0146167205286110>.
- Sanbonmatsu, D. M., Kardes, F. R., & Herr, P. M. (1992). The role of prior knowledge and missing information in multiattribute evaluation. *Organizational Behavior and Human Decision Processes*, 51(1), 76–91. [http://dx.doi.org/10.1016/0749-5978\(92\)90005-r](http://dx.doi.org/10.1016/0749-5978(92)90005-r).
- Sanbonmatsu, D. M., Kardes, F. R., Houghton, D. C., Ho, E. A., & Posavac, S. S. (2003). Overestimating the importance of the given information in multiattribute judgment. *Journal of Consumer Psychology*, 13, 289–300. <http://dx.doi.org/10.1207/S15327663JCP130310>.
- Sanbonmatsu, D. M., Kardes, F. R., Posavac, S. S., & Houghton, D. C. (1997). Contextual Influences on Judgments Based on Limited Information. *Organizational Behavior and Human Decision Processes*, 69(3), 251–264. <http://dx.doi.org/10.1006/obhd.1997.2686>.
- Sanbonmatsu, D. M., Kardes, F. R., & Sansone, C. (1991). Remembering less and inferring more: The effects of time of judgment on inferences about unknown attributes. *Journal of Personality and Social Psychology*, 61(4), 546–554. <http://dx.doi.org/10.1037/0022-3514.61.4.546>.
- Sheppard, B. H., Jon, H., & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research*, 15(3), 325–343. <http://dx.doi.org/10.1086/209170>.

- Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, 48(4), 813–838. <http://dx.doi.org/10.1037/0022-3514.48.4.813>.
- Smith, S. M., Fabrigar, L. R., MacDougall, B. L., & Wiesenhal, N. L. (2008). The role of amount, cognitive elaboration, and structural consistency of attitude-relevant knowledge in the formation of attitude certainty. *European Journal of Social Psychology*, 38(2), 280–295. <http://dx.doi.org/10.1002/ejsp.447>.
- Snyder, M. (1974). The self-monitoring of expressive behavior. *Journal of Personality and Social Psychology*, 30(4), 526–537. <http://dx.doi.org/10.1037/h0037039>.
- Snyder, M., & Kendzierski, D. (1982). Acting on one's attitudes: Procedures for linking attitude and behavior. *Journal of Experimental Social Psychology*, 18(2), 165–183. [http://dx.doi.org/10.1016/0022-1031\(82\)90048-8](http://dx.doi.org/10.1016/0022-1031(82)90048-8).
- Thompson, M. M., Naccarato, M. E., Parker, K. C. H., & Moskowitz, G. (2001). The Personal Need for Structure (PNS) and Personal Fear of Invalidity (PFI) scales: Historical perspectives, present applications and future directions. In G. Moskowitz (Ed.), *Cognitive social psychology: The Princeton symposium on the legacy and future of social cognition* (pp. 19–39). Mahwah, NJ: Erlbaum.
- Tiedens, L. Z., & Linton, S. (2001). Judgment under emotional certainty and uncertainty: The effects of specific emotions on information processing. *Journal of Personality and Social Psychology*, 81(6), 973–988. <http://dx.doi.org/10.1037/0022-3514.81.6.973>.
- Tormala, Z. L., Clarkson, J. J., & Henderson, M. D. (2011). Does fast or slow evaluation foster greater certainty? *Personality and Social Psychology Bulletin*, 37(3), 422–434. <http://dx.doi.org/10.1177/0146167210397378>.
- Tormala, Z. L., Clarkson, J. J., & Petty, R. E. (2006). Resisting persuasion by the skin of one's teeth: The hidden success of resisted persuasive messages. *Journal of Personality and Social Psychology*, 91(3), 423–435. <http://dx.doi.org/10.1037/0022-3514.91.3.423>.
- Tormala, Z. L., & DeSensi, V. L. (2009). The effects of minority/majority source status on attitude certainty: A matching perspective. *Personality and Social Psychology Bulletin*, 35(1), 114–125. <http://dx.doi.org/10.1177/0146167208325677>.
- Tormala, Z. L., DeSensi, V. L., Clarkson, J. J., & Rucker, D. D. (2009). Beyond attitude consensus: The social context of persuasion and resistance. *Journal of Experimental Social Psychology*, 45(1), 149–154. <http://dx.doi.org/10.1016/j.jesp.2008.07.020>.
- Tormala, Z. L., DeSensi, V. L., & Petty, R. E. (2007). Resisting persuasion by illegitimate means: A metacognitive perspective on minority influence. *Personality and Social Psychology Bulletin*, 33(3), 354–367. <http://dx.doi.org/10.1177/0146167206295004>.
- Tormala, Z. L., & Petty, R. E. (2002). What doesn't kill me makes me stronger: The effects of resisting persuasion on attitude certainty. *Journal of Personality and Social Psychology*, 83(6), 1298–1313. <http://dx.doi.org/10.1037/0022-3514.83.6.1298>.
- Tormala, Z. L., & Petty, R. E. (2004a). Resistance to persuasion and attitude certainty: The moderating role of elaboration. *Personality and Social Psychology Bulletin*, 30(11), 1446–1457. <http://dx.doi.org/10.1177/0146167204264251>.
- Tormala, Z. L., & Petty, R. E. (2004b). Source credibility and attitude certainty: A metacognitive analysis of resistance to persuasion. *Journal of Consumer Psychology*, 14(4), 427–442. <http://dx.doi.org/10.1207/s15327663jcp140411>.
- Tormala, Z. L., & Petty, R. E. (2007). Contextual contrast and perceived knowledge: Exploring the implications for persuasion. *Journal of Experimental Social Psychology*, 43(1), 17–30. <http://dx.doi.org/10.1016/j.jesp.2005.11.007>.
- Tormala, Z. L., Petty, R. E., & Brinol, P. (2002). Ease of retrieval effects in persuasion: A self-validation analysis. *Personality and Social Psychology Bulletin*, 28(12), 1700–1712. <http://dx.doi.org/10.1177/014616702237651>.
- Tormala, Z. L., & Rucker, D. D. (2007). Attitude certainty: A review of past findings and emerging perspectives. *Social and Personality Psychology Compass*, 1(1), 469–492. <http://dx.doi.org/10.1111/j.1751-9004.2007.00025.x>.
- Tormala, Z. L., Rucker, D. D., & Seger, C. R. (2008). When increased confidence yields increased thought: A confidence-matching hypothesis. *Journal of Experimental Social Psychology*, 44(1), 141–147. <http://dx.doi.org/10.1016/j.jesp.2006.11.002>.
- Triandis, H. C. (1995). *Individualism and Collectivism*. Boulder, CO: Westview Press.
- Tsai, C., Klayman, J., & Hastie, R. (2008). Effects of amount of information on judgment accuracy and confidence. *Organizational Behavior and Human Decision Processes*, 107(2), 97–105. <http://dx.doi.org/10.1016/j.obhdp.2008.01.005>.
- Tsai, C. I., & McGill, A. L. (2011). No pain, no gain? How fluency and construal level affect consumer confidence. *Journal of Consumer Research*, 37(5), 807–821. <http://dx.doi.org/10.1086/655855>.
- Visser, P. S., & Mirabile, R. R. (2004). Attitudes in the social context: The impact of social network composition on individual-level attitude strength. *Journal of Personality and Social Psychology*, 87(6), 779–795. <http://dx.doi.org/10.1037/0022-3514.87.6.779>.
- Wan, E. W., & Rucker, D. D. (2013). Confidence and construal framing: When confidence increases versus decreases information processing. *Journal of Consumer Research*, 39(1), 977–992. <http://dx.doi.org/10.1086/666467>.
- Wan, E. W., Rucker, D. D., Tormala, Z. L., & Clarkson, J. J. (2010). The effect of regulatory depletion on attitude certainty. *Journal of Marketing Research*, 47(3), 531–541. <http://dx.doi.org/10.1509/jmkr.47.3.531>.
- Wegener, D. T., & Petty, R. E. (1995). Flexible correction processes in social judgment: The role of naive theories in corrections for perceived bias. *Journal of Personality and Social Psychology*, 68(1), 36–51. <http://dx.doi.org/10.1037/0022-3514.68.1.36>.
- Wegener, D. T., Downing, J., Krosnick, J. A., & Petty, R. E. (1995). Strength-related properties of attitudes: Measures, manipulations, and future directions. In R. E. Petty, & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 455–487). Mahwah, NJ: Erlbaum.
- Wilson, T. D., Wheatley, T., Meyers, J. M., Gilbert, D. T., & Axsom, D. (2000). Focalism: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology*, 78(5), 821–836. <http://dx.doi.org/10.1037/0022-3514.78.5.821>.
- Winkielman, P., & Cacioppo, J. T. (2001). Mind at ease puts a smile on the face: Psychophysiological evidence that processing facilitation elicits positive affect. *Journal of Personality and Social Psychology*, 81(6), 989–1000. <http://dx.doi.org/10.1037/0022-3514.81.6.989>.
- Wood, W., Kallgren, C. A., & Preisler, R. M. (1985). Access to attitude-relevant information in memory as a determinant of persuasion: The role of message attributes. *Journal of Experimental Social Psychology*, 21(1), 73–85. [http://dx.doi.org/10.1016/0022-1031\(85\)90007-1](http://dx.doi.org/10.1016/0022-1031(85)90007-1).
- Wood, W., Rhodes, N., & Biek, M. (1995). Working knowledge and attitude strength: An information-processing analysis. *Attitude strength: Antecedents and consequences*. Hillsdale, NJ England: Lawrence Erlbaum Associates, Inc.
- Wu, C., & Shaffer, D. R. (1987). Susceptibility to persuasive appeals as a function of source credibility and prior experience with the attitude object. *Journal of Personality and Social Psychology*, 52(4), 677–688. <http://dx.doi.org/10.1037/0022-3514.52.4.677>.
- Zakay, D. (1985). Post-decisional confidence and conflict experienced in a choice process. *Acta Psychologica*, 58(1), 75–80. [http://dx.doi.org/10.1016/0001-6918\(85\)90035-6](http://dx.doi.org/10.1016/0001-6918(85)90035-6).