The Psychology of Attitudes, Motivation, and Persuasion

Dolores Albarracín, Aashna Sunderrajan, Sophie Lohmann, Sally Chan, & Duo Jiang

University of Illinois at Urbana Champaign

The Psychology of Attitudes, Motivation, and Persuasion

A quick look at the front page of the New York Times shows headlines, such as:

12 Oscar Nominations for The Revenant

Syrians Tell a Life Where Famine is a Weapon

Cruz Did Not Report Goldman Sacks Loan in Senate Race

What to Expect of G.O.P. Debate: Escalating Attacks

Terrorists Attacks Kill at Least Two in Jakarta, Police Say

Each and every headline connects with attitudes, as evaluations that drive our actions, and in some of these cases, our inactions. Attitudes are not only part of the news consumed worldwide, but are also a subject of general interest that has increased over time. For example, Amazon lists over 30,000 books containing the word *attitude* in the title, indicating the interest we have in understanding, and also changing, attitudes. Similarly, a search for the term *attitude*, on Google Scholar and PsycINFO, shows that the topic of attitudes has also continued to increase in popularity in the academic domain, resulting in a voluminous body of literature on the topic (see Figure 1).

The psychology of attitudes is generally a social psychology of attitudes. Clearly, cognitive psychology has contributed to our understanding of the microprocesses involved in attitude formation and change, and biological psychology can account for the sensorial mechanisms underlying preferences for certain objects, such as foods. There is, however, a reason why attitudes have been a focus in social psychology: Attitudes are often learned from others, make individuals similar to members of their groups, and are affected by social pressure and persuasion – the act of attempting to change the attitudes of another person. In this introductory chapter, we discuss these critical issues regarding the nature of attitudes, addressing

classic and contemporary questions. In doing so, we give you an insight into what the forthcoming chapters of the handbook will cover in more extensive detail, and thus, provide a brief sketch of the general organization of this handbook.

As shown in Figure 2, in this chapter we consider attitudes in relation to beliefs, intentions, behaviors and goals, and also discuss the influence of various processes of attitude formation and change, including persuasive communications. This Handbook includes chapters on beliefs (Wyer, this volume), attitude structure (Fabrigar, MacDonald, & Wegener, this volume), communication and persuasion (Johnson, Wolf, & Maio, this volume), the influence of attitude on behavior (Aizen, Fishbein, Lohmann, & Albarracín, this volume), motivational influences on attitudes (Earl & Hall, this volume), cognitive processes in attitudes (Wegener, Clark, & Petty, this volume), bodily influences on attitudes (Schwarz & Lee, this volume), neurofunctional influences on attitudes (Corlett & Marrouch, this volume), cultural influences on attitudes (Shavitt, this volume), and attitude measurement (Krosnick, Judd, & Wittenbrink, this volume). The second volume presents the many applications of attitude theory conducted within, and outside of, psychology, with chapters on cancer (Sweeny & Rankin, volume 2), HIV (Glasman & Scott-Sheldon, volume 2), dietary behavior (Matta, Dallacker, Vogel, & Hertwig, volume 2), physical activity (Hagger, volume 2), clinical contexts (Penner, Albrecht, Dovidio, Manning, & van Ryn, volume 2), intergroup relations (Dovidio, volume 2), gender (Diekman & Glick, volume 2), social class (Manza, volume 2), science communication (Kahan & Jamieson, volume 2), migrations (Esses, Hamilton, & Gaucher, volume 2), accounting (Nolder & Peecher, volume 2), and environmental behaviors (Milfont & Schultz, volume 2).

Attitudes

The definition of an attitude needs to be one that is sufficiently comprehensive to cover the extent of current literature, and generalizable to remain useful with evolving research trends (Eagly & Chaiken, 2007; Gawronski, 2007). What has been consistent in the multiple conceptualizations of the attitude construct is that evaluation is the key component (Ajzen, 2001; Albarracín, Zanna, Johnson, & Kumkale, 2005; Eagly & Chaiken, 1993; Gawronski, 2007; Maio & Haddock, 2009). Thus, in this chapter we define *attitude* as evaluation.

The **target** or subject matter of an attitude can be any entity, such as an object, a person, a group, or an abstract idea. Attitudes towards objects span many applications of social psychology, including such domains as marketing (e.g., attitudes towards products), advertising (e.g., attitudes towards ads), political behavior (e.g., attitudes towards political candidates, parties, or voting), and health (e.g., attitudes towards protective behaviors, new medications, or the health system). Attitudes towards a person or groups are often investigated under the umbrella of interpersonal liking and prejudice. Attitudes towards abstract ideas involve values, such as judging freedom or equality as desirable.

Attitudes also vary in terms of **specificity vs. generality**. An attitude towards Donald Trump is specific in target (e.g., his hairdo comes to mind), but many attitudes are general. For example, some individuals hold relatively positive attitudes towards all objects, whereas others dislike most objects, people, and ideas (Hepler & Albarracín, 2013). Further, attitudes concerning an object can have different degrees of specificity with respect to temporal and spatial contexts (see Ajzen & Fishbein, 2005; Fishbein & Ajzen, 1975). For example, receiving the flu vaccine in the next month represents less commitment than consistently receiving the flu vaccine every fall. Likewise, receiving the flu vaccine in Chicago may seem more desirable than receiving the flu vaccine while vacationing in the South Pacific.

Measurement also has implications for distinctions among attitudes (see Krosnick et al., this volume). The development of attitude measurement techniques, for instance, has enabled researchers to measure attitudes indirectly rather than relying exclusively on explicit ratings of liking or approval (Bassili & Brown, 2005; Gawronski, 2007). These indirect measures of attitudes, referred to as *implicit*, are intended to assess automatic evaluations that are generally difficult to gauge using explicit self-reports (see Gawronski, this volume). For example, the effectiveness of implicit measures is implied by evidence showing that they are often inconsistent with (Petty, Fazio, & Briñol, 2009), and predict different outcomes from (Maio & Haddock, 2009), self-reported or explicit attitudes.

The divergence between implicit and explicit attitudes has commonly been seen as evidence suggesting that they measure two distinct representations of attitudes, namely unconscious and conscious processes (Wilson, Lindsey, & Schooler, 2000). Alternatively, the lack of intercorrelation between implicit and explicit attitudes has been used to suggest that each measure captures upstream and downstream processes, specifically automatic responses and intentionally edited judgments related to the same attitude (Fazio, 1995; Nier, 2005). Some scholars have even questioned whether attitudes can be regarded as stable entities, or if they are instead constructed only when the attitude object is encountered (e.g., Schwarz, 2007). In an attempt to address this debate, Hofmann, Gawronski, Gschwendner, Le and Schmitt (2005) conducted a meta-analysis of 126 studies examining the relation between implicit and explicit representations. In this synthesis, the correlation between the Implicit Association Test (IAT) and explicit attitude measures was $r = .24$, but varied as a function of psychological and methodological factors (Hofmann et al., 2005). For instance, the correlation between implicit and

explicit measures varied as a function of the amount of cognitive effort used during explicit self-report tasks, suggesting different transformations of a single evaluative response.

Neuroimaging studies have observed similar differences between implicit and explicit attitudes (see Corlett & Marrouch, this volume). For example, the structures involved during automatic evaluations have been found to include the amygdala, the insula, and the orbitofrontal cortex (Cunningham, Johnson, Gatenby, Gore, & Banaji, 2003; Cunningham, Packer, Kesek, & van Bavel, 2009; Cunningham, Raye, & Johnson, 2004; Wright et al., 2008). In contrast, those involved during controlled evaluations have been found to include regions of the anterior cingulate cortex, including the dorsal anterior cingulate cortex (Cunningham et al., 2003; Cunningham et al., 2004; Critchley, 2005). Together, these studies suggest that there may also be a neural distinction between the processes engaged during automatic and deliberate processing, and is compatible with the notion that implicit measures capture earlier, spontaneous, affective processes, whereas explicit attitudes reflect more deliberate adjustments on the basis of current goals or social desirability concerns.

Behavior, Beliefs, Intentions, and Goals

A few additional concepts central to the psychology of attitudes and persuasion include behavior, intentions, goals and beliefs. **Behavior** is typically defined as the overt acts of an individual (Albarracín et al., 2005) and is generally assumed to partly stem from attitudes. Considerable research on the attitude-behavior relation indicates that attitudes are fairly good predictors of behaviors. For example, a meta-analytic review of the literature has found that the average correlation between attitudes and behavior is $r = .52$ (Glasman & Albarracín, 2006), and that this association varies with a number of established moderators (see Ajzen et al., this volume).

An **intention** is a willingness to perform a behavior. Intentions often emerge from broader goals – desirable endstates – that can be achieved via multiple, sustained behaviors, are not fully controllable results, and require external help or resources (Ajzen & Fishbein, 2005). For example, people develop intentions to increase physical activity with the goal of losing weight, but executing the intended behavior is no guarantee of success.

Like attitudes, **goals** can be specific or general. On the one hand, attitude-behavior researchers have generally studied fairly specific goals, such as the goal to quit smoking (see Ajzen & Fishbein, 1980). When set, these goals are facilitated by intentions to perform specific actions, like throwing away smoking related paraphernalia or avoiding friends who smoke. The intention to quit smoking or achieve a similar goal is an excellent predictor of actual behavior. For example, meta-analyses of specific health behaviors, such as condom use and exercise, have yielded average intention-behavior correlations ranging from .44 to .56 (Albarracín, Johnson, Fishbein, & Muellerleile, 2001; Godin & Kok, 1996; Hausenblas, Carron, & Mack, 1997; Sheeran & Orbell, 1998). On the other hand, traditional goal researchers have studied more general goals, such as the achievement motivation or the affiliation need (Elliot & Church, 1997; Maslow, 1970). These goals have a weak correspondence to specific behaviors, probably because they are carried out over long periods of time and across many domains. For example, achievement or affiliation motivations correspond to personality or stable patterns of behavior (for a recent review, see Moskowitz, Li, & Kirk, 2004), and can either be measured or manipulated with methods borrowed from cognitive psychology (e.g., presenting semantically linked words; see Hart & Albarracín, 2009; Weingarten et al., 2015). Perhaps the most general class of all investigated goals (see Albarracín et al., 2008; Albarracín, Hepler, & Tannenbaum, 2011) entails *general action goals*, which are generalized goals to engage in action (e.g.,

activated with instructions such as *go*), as well as *general inaction goals*, which are generalized goals not to engage in action (e.g., activated with instructions such as *rest*). These goals are diffuse desired ends that can mobilize the execution of more specific activities. Action goals imply a need to do irrespective of what one does; inaction goals imply a need to not do, irrespective of the domain. Hence, their activation may trigger the pursuit or interruption of *any* particular (overt or covert) behavior that is subjectively relevant to the goal.

A **belief** can be defined as a person's subjective probability of a relation between the object of the belief and some other object, value, concept, or attribute, and affects people's understanding of themselves and their environments (Fishbein & Ajzen, 1975). A conceptualization proposed by McGuire (1960, 1981) and extended by Wyer and Goldberg (1970; see also Wyer, 1974) addressed how prior beliefs can influence new beliefs and attitudes. McGuire (1960) stated that two cognitions, *A* (antecedent) and *C* (conclusion), can relate to each other by means of a syllogism of the form *A; if A, then C; C*. This structure implies that the probability of *C* (e.g., an event is good) is a function of the beliefs in the premise or antecedent, and beliefs that *if A is true and if A is true, C is true*. Further, Wyer (1970; Wyer & Goldberg, 1970) argued that *C* might be true for reasons other than those included in these premises. That is, beliefs in these alternate reasons should also influence the probability of the conclusion (*not A; if not A, then C*). Hence, $P(C)$ should be a function of the beliefs in these two mutually exclusive sets of premises, or:

$$P(C) = P(A)P(C/A) + P(\sim A)P(C/\sim A), \qquad\qquad [1]$$

where $P(A)$ and $P(\sim A)$ [$= 1\text{-}P(A)$] are beliefs that *A* is and is not true, respectively, and $P(C/A)$ and $P(C/\sim A)$ are conditional beliefs that *C* is true if *A* is and is not true, respectively.

A limitation of the conditional inference model described above is the use of a single premise. Although other criteria are considered, these criteria are lumped together in the value of $P(C/\sim A)$, or the belief that the conclusion is true for reasons other than A. In contrast, other formulations consider multiple factors. Slovic and Lichtenstein (1971), for example, postulated that people who predict an unknown event from a set of cues are likely to combine these cues in an additive fashion. Therefore, regression procedures can be used to predict beliefs on the basis of the implications of several different pieces of information. In this case, the regression weights assigned to each piece provide an indication of its relative importance.

Multiple-regression approaches can be useful in identifying individual differences in the weights given to different types of cues (Wiggins, Hoffman, & Taber, 1969). Nevertheless, the assumptions that underlie these approaches are often incorrect (Anderson, 1971, 1981; Fishbein & Ajzen, 1975; Wiggins & Hoffman, 1968). Birnbaum and Stegner (1979), for example, found that participants' estimates of a car's value was an *average* of its blue book value and the opinion of another person, with the weight of each piece of information depending on the credibility of its source.

In many instances, however, neither summative nor averaging belief models may be applicable. Tversky and Kahneman (1983) provide strong evidence that people's estimates of the conjunction of two features (e.g., the likelihood that a woman is a feminist bank-teller) are not predictable from their estimates of each feature considered in isolation (i.e., being a feminist or being a bank teller). In these instances, people appear to process the information configurally rather than construing the implications of each piece of information separately. The conditions in which different combinatorial processes underlie the beliefs that people report (as well as other judgments they make) require more detailed analyses than can be provided in this chapter (for a

general discussion of these matters, see Wyer, this volume; Wyer & Albarracin, 2005; Wyer & Carlston, 1979).

Further Characterizing Attitudes

Attitude Structure

The structure of an attitude can be explicated using models of affective feelings. A popular understanding of the structure of affect and emotions incorporates the dimensions of positive vs. negative valence and high vs. low arousal (Bradley, Codispoti, Cuthbert, & Lang, 2001; Russell, 2003; Smith & Ellsworth, 1985; for reviews, see Albarracín & Vargas, 2010; Clore & Schnall, this volume; Schimmack & Crites, 2005). People feel sad, angry, content, or excited, and each state varies not only in negative or positive valence but also in associated arousal (Russell, 2003). Arousal has proved to be difficult to describe, but generally entails autonomic activation measurable by changes in skin conductance, heart rate, or brain waves (see Bradley & Lang, 2007; Cacioppo, Berntson, & Crites, 1996). Feeling anxious, tense, alert, and excited have high autonomic activation or arousal in common (e.g., high heart and breathing rate), whereas feeling sad and content have low autonomic activation or arousal in common (e.g., lower heart and breathing rate; somnolence).

As evaluations are valenced responses (positive vs. negative), attitudes can also be mapped onto a model with valence and arousal as distinct dimensions (Albarracín & Vargas, 2010). This model appears in Figure 3. On the valence axis, individuals may dislike or like a political candidate, and may dislike or like a particular taste. Furthermore, attitudes can be mapped onto the arousal dimension because they vary in extremity, importance, confidence, or the degree to which they elicit strong emotional responses, such as excitement (see Cuthbert, Schupp, Bradley, Birbaumer, & Lang, 2000; Fabrigar, MacDonald, & Wegener, 2005; Lang,

Öhman, & Vaitl, 1988). For example, highly involving objects such as abortion, gay marriage,

and marijuana legalization often trigger strong attitudes that are infused with feelings, and

connect to other important attitudes, such as personal values and self-esteem (the evaluations of

oneself as a person; Eagly & Chaiken, 1993; Fabrigar et al., 2005). These attitudes are often

reported as extreme in responses to attitude scales (Judd & Brauer, 1995), are held with high

confidence (Abelson, 1988), are easy to recall (Judd & Brauer, 1995), and are passionately

defended against external attacks (Johnson, Maio, & Smith-McLallen, 2005; Petty, Tormala, &

Rucker, 2004). We review some of this evidence in upcoming sections of this chapter.

Adhering to a valence/arousal model does not require adherence to a circumplex (see also

Remington, Fabrigar, & Visser, 2000). For instance, objects with either extremely positive or

extremely negative valence are often important and generate high autonomic arousal (for a

review, see Bradley et al., 2001). In this case, high positive and negative valences go along with

high arousal, whereas neutral valences go along with low arousal. Mapping objects onto

independent valence and arousal dimensions would thus produce a *U*-type of pattern, rather than

equally populated quadrants (see Bradley et al., 2001; Remington et al., 2000).

Neuropsychological research indicates that specific structures in the brain respond to

stimuli in ways that suggest an intricate relation between valence and arousal. As one case in

point, the *amygdala*, an almond-shaped group of neurons located deep in the medial temporal

lobes of the brain, plays a critical role in evaluation (Hamann, Ely, Hoffman, & Kilts, 2002;

Irwin et al., 1996). The amygdala is active during affective judgments of emotional pictures,

words, and odors (Cunningham et al., 2004; Phan et al., 2004; Royet, Plailly, Delon-Martin,

Kareken, & Segebarth, 2003), when there are negative (vs. positive) stimuli (Cunningham et al.,

2003; Morris et al., 1996; Reekum et al., 2007), and when the stimuli have emotional meaning

(Bechara, Damasio, Damasio, & Lee, 1999). Also, the amygdala connects with the insula and the anterior cingulate cortex, and these three structures all respond to both valence and arousal (Cunningham et al., 2004; Cunningham & Zelazo, 2007; Rempel-Clower, 2007; Wright et al., 2008). The visual cortex also appears sensitive to both valence and arousal, as judged from an fMRI study revealing greater activation in response to pleasant and unpleasant images, compared to neutral images (Lang et al., 1998).

Attitude Bases

Attitudes are based on affective, cognitive, and behavioral information (Albarracín et al., 2005; Eagly & Chaiken, 1993). The affective component consists of feelings and emotions related to an attitude object, the cognitive component is composed of beliefs, thoughts, and attributes associated with an attitude object, and the behavioral component comprises of past behaviors or experiences with an attitude object (Eagly & Chaiken, 1993; Fabrigar et al., 2005, this volume).

Although earlier attitude research conceptualized cognitive, affective, and behavioral components as facets of attitudes, there is now consensus that these are the bases for attitudes without being attitudes themselves. Breckler (1984), for example, had participants report their cognitive, affective, and behavioral responses about snakes. Using the content of participants' responses, Breckler then computed a score for each of the components and found that they were empirically distinct. Equally important, however, cognitive, affective, and behavioral measures separately predict attitudes. Haddock, Zanna and Esses (1994) examined the attitudes of Canadian students towards Native Canadians. Using open-ended measures of cognition, affect, and behavior, the researchers found that participants' past experience with Native Canadians predicted their attitudes, independently of cognition and affect.

Attitude Functions

Attitudes can serve different motives and functions for individuals. The earliest, and most prominent, functional theories proposed were by Smith, Bruner and White (1956) and Katz (1960). Although these theories differ in the labels they use, they both see attitudes as constructs designed to serve an individual's social and emotional needs (Shavitt & Nelson, 2002; for a review, see Kruglanski & Stroebe, 2005). Katz (1960), for example, proposed that attitudes serve four functions. The **knowledge function** represents attitudes that organize information about the environment. The **utilitarian function** reflects attitudes that summarize the rewards and punishments associated with an attitude object. The **ego-defensive function** embodies attitudes that protect the self. Finally, the **value-expressive function** represents attitudes that express an individual's self-concept. Smith et al. (1956) additionally proposed a **social-adjustment function**, which reflects attitudes that help to identify with those we like and de-identify with those we dislike.

In recent years, research on the function of attitudes has focused on the more specific functions that attitudes serve (Maio & Haddock, 2009). In particular, functional theories have seen a resurgence in persuasion literature, where they have been important in emphasizing the necessity of understanding the motivational basis of the attitudes we strive to change (Shavitt & Nelson, 2002). Research in advertising has found that the use of functionally matched ads elicits more favorable attitudes and purchase intentions, compared to functionally mismatched ads (Shavitt, 1990), and that this effect persists when individuals are asked to write their own ads (Shavitt, Lowrey, & Han, 1992). Similarly, research in the domain of health behavior has found that attitude functions can serve as determinants of behavioral intentions with respect to regularly participating in physical activity (Wang, 2009) and registering as an organ donor (Wang, 2012).

The literature in the functional area is, however, still lacking (Maio & Olson, 2000; Shavitt & Nelson, 2002). One reason is that individuals are often poor at identifying the functional reasons behind their attitudes (Maio & Haddock, 2009; Nisbett & Wilson, 1977). A second is that attitude functions are not always distinct, making the categorization of attitudes into separate functional types difficult (Maio & Haddock, 2009). Despite these challenges, research in this area is sure to thrive in the next decade, as functional theories are necessary to shed light on the motivational basis behind attitudes and behavior.

Attitude Dimensions

Attitude strength is the degree to which an attitude persists over time, is resistant to change, and influences cognitions and behavior (Fazio, 1995; Krosnick & Smith, 1994). Therefore, the strength with which an attitude is held informs us of when and which type of attitudes are predictive of behavior. In the literature, attitude strength is seen as a combination of multiple dimensions (including extremity, intensity, certainty, importance, interest, knowledge, accessibility, and affective-cognitive consistencies), which interact to influence the consequentiality of attitudes. Initially, as these dimensions predicted most of the features of strong attitudes, they were seen as forming a single construct, namely attitude strength (Miller & Peterson, 2004). Exploratory factor analyses provided evidence for this assertion, by determining that the different dimensions of attitude strength could be grouped under a few factors (Bassili, 1996). However, due to problems with measurement error, some argued that these conclusions were exaggerated (Krosnick, Boninger, Chuang, Berent, & Carnot, 1993). Krosnick et al. (1993), in fact, found that only a few pairs of dimensions were strongly correlated with each other. This leads to the position that attitude strength is not a unitary construct, but rather, consists of

multiple dimensions (Krosnick et al., 1993; Miller & Peterson, 2004; Visser, Krosnick, & Simmons, 2003).

As space constraints prevent us from describing every dimension associated with attitude strength, we focus on a few properties and some associated findings: extremity, importance, certainty, and accessibility (for reviews, see Bassili, 2008; Farbrigar et al., this volume; Krosnick et al., 1993; Krosnick & Smith, 1994; Miller & Peterson, 2004). Attitudes vary in direction, ranging from positive to negative. **Attitude extremity** is thus the degree to which an individual's attitude deviates from neutrality in either a positive or negative direction (Bassili, 2008; Krosnick et al., 1993; Krosnick & Smith, 1994). A polarization in attitude can be caused by several processes, including activation of the attitude via thoughts (Tesser, Martin, & Mendolia, 1995) and attitude repetition (Judd & Brauer, 1995). Insults have also been shown to increase attitude extremity (Abelson & Miller, 1967), with recent work suggesting that arguments against the self-trigger an ego-defensive mechanism that can lead to attitude polarization (De Dreu & van Knippenberg, 2005).

Attitude importance is characterized by the degree to which an individual is personally invested in an attitude (Bassili, 2008; Krosnick et al., 1993; Krosnick & Smith, 1994) and manifests itself in self-reported caring about the attitude object. The more important an attitude is, the more it is resistant to change and stable over time (Krosnick & Smith, 1994). Attitudes that are important also lead to selective exposure and elaboration of attitude-relevant information (Holbrook, Berent, Krosnick, Visser, & Boninger, 2005).

Attitude certainty is the degree to which an individual is confident in the attitude they hold (Krosnick et al., 1993; Krosnick & Smith, 1994). Unlike many of the other dimensions, attitude certainty is a metacognitive attribute, as it attaches an explanation of certainty onto a

primary cognition (Petty, Briñol, Tormala, & Wegener, 2007). Certainty in one's attitude is determined by such factors as direct experience (Wu & Shaffer, 1987) and repetition (Holland, Verplanken, & van Knippenberg, 2003); certainty confers resistance to persuasive messages (Krosnick & Smith, 1994).

Research suggests that a unifying framework of attitude strength is **attitude accessibility** (Ajzen, 2012). Accessibility refers to the strength of the association between an attitude object and its evaluation and is observed as the ease with which an attitude is activated from memory at the appearance of the attitude object (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). Accessibility is partly determined by the frequency with which an attitude is activated, as well as the perceived diagnosticity of the information regarding an attitude, which includes the emotional reaction elicited by the attitude object, prior experience with and behavior towards the attitude object, and the foundation upon which the information is obtained (e.g., if it's based on sensory information or direct experience; Fazio, 1995).

In addition to studies looking at the dimensions of attitude strength in isolation, there have been studies that have tried to explore attitude strength within a social context, including the heterogeneity of an individual's social network (Levitan & Visser, 2009; Visser & Mirabile, 2004). For example, Visser and Mirabile (2004) found that the composition of an individual's social network can affect the strength of their attitudes, with those embedded in more heterogeneous networks being more susceptible to persuasive messages. This finding highlights the social nature of attitudes, and thus the importance of examining the influence of different dimensions on attitude strength in a social context (see Shavitt, this volume)

The Origins of Attitudes

Many attitudes are formed early in life. Others are formed as we encounter new products, new places, and new people throughout our lives, and yet others change as a result of experience, new information, or social influence. Much of the research conducted in social psychology relies on introducing information about novel topics, and, as such, explores attitude formation more than change. Yet, it is important to understand both how attitudes are formed, as well as when and how they can be changed. In the next sections, we review findings that concern attitude formation and change together, as some models of formation have implications for change.

Processes Underlying Attitude Formation and Attitude Change

Direct Experience

Having direct experience with an attitude object is perhaps the most basic, and obvious, way to form attitudes. Direct experience influences the likelihood that an attitude will be sufficiently arousing as to be activated when the object is encountered again. In one study, some participants were allowed to play with examples of five types of puzzles (direct experience) whereas other participants were presented with examples of the types of puzzles already solved by another person (indirect, rather than direct, experience by the participants themselves). All participants later reported how interesting they found each type of puzzle. Following that, they were all allowed to play with the puzzles for up to 15 minutes. The findings from this study indicated that attitudes (the interest ratings) were stronger predictors of actual behavior in the direct than indirect experience condition (Regan & Fazio, 1977).

Fazio and his colleagues (e.g., Fazio, Powel, & Herr, 1983) have proposed that direct experience produces high attitude-behavior correlations because attitudes formed from direct experience are easier to retrieve from permanent memory. In this sense, direct experience

appears to be analogous to repeatedly expressing or reporting attitudes. A meta-analysis of the

behavioral impact of recently formed attitudes (Glasman & Albarracín, 2006; see also Kraus,

1995) confirmed this possibility. That is, direct experience and repeated expression of the

attitude correlated with faster reporting of attitudes (for direct experience, r = .60; for repeated

expression, r = .24; Glasman & Albarracín, 2006). Further, the influence of direct experience and

attitude report on the attitude-behavior relation was mediated by response speed (from direct

experience to response speed, r = .43, from response speed to the attitude-behavior correlation, r

= .82).

However, direct experience does not seem to improve attitude-behavior correspondence

when the bases for attitudes and the bases for behavior are different. For example, an attitude

based on experienced feelings, such as how much pleasure is associated with a video game (an

affective experience), does not predict the use (or lack thereof) of a video game for career

advancement or learning purposes (an instrumental behavior; Millar & Tesser, 1986). Indeed, the

mean attitude-behavior correlation is r = .59 when the experience with the attitude is similar to

the experience associated with the predicted behavior (i.e., both instrumental or both affective)

but r = .39 when the two are dissimilar; Glasman & Albarracín, 2006). Second, as Hoch and Ha

(1986, see also Ha & Hoch, 1989; Wooten & Reed, 1998) and Albarracín and McNatt (2005)

demonstrated, acquiring direct experience with the object is as important in guiding behavior as

receiving information that is unambiguous and consistent (i.e., evaluative diagnosticity, Reed,

Wooten, & Bolton, 2002). When all else is equal, direct experience stimulates the use of a

resulting summary attitude as a basis for future behavior. Direct experience, however, sometimes

provides mixed evidence about the desirability of an object (e.g., people are presented with

neutrally valenced information, Reed et al., 2002, or products with standard qualities, Hoch &

Ha, 1986). In these conditions, direct experience actually decreases attitude-behavior

correspondence (Albarracín & McNatt, 2005; Glasman & Albarracín, 2006).

The role of virtual experience with an attitude object has recently also received research

attention. For example, one no longer has to actually get a haircut to experience the new look.

Instead, one can purchase computer programs that digitally alter one's image in accordance with

the planned hair style. In a study of *virtual* direct experience (Griffith & Chen, 2004), some

products, such as movies and music, were easy to experience in a digital fashion. Participants

were simply presented with ads about these products and did or did not view the product. Other

products, such as clothes and apparel, are more difficult to experience virtually. Still, the

researchers created movie clips of the actual experience of, for example, viewing objects with a

fictitious pair of sunglasses. Thus, for these products as well, some conditions allowed for

viewing (virtual experience present) whereas others did not (virtual experience absent). The

results from this study indicated that when the experience was easy to digitalize, virtually

experiencing and not experiencing the product had different effects. Participants had more

positive evaluations and stronger intentions to buy the product following the virtual viewing than

in the absence of virtual viewing. However, these effects disappeared when the products were

difficult to digitalize, in which case attitudes and purchasing intentions were the same with and

without the virtual experience (for more on the role of attitudes in advertising, see Rucker & He,

this volume)

Mere Exposure

Mere exposure is a phenomenon in which an attitude towards a stimulus becomes more

favorable with increasing frequency of exposure to the stimulus (Zajonc, 1968). In the classic

example of the mere exposure paradigm, English-native participants were shown unknown

Chinese characters from zero to twenty five times. Participants liked the characters better when they were exposed to them more frequently (Zajonc, 1968). In another typical study, participants subliminally presented with 10 different polygons, were later asked to indicate which one of two polygons they had been shown earlier, and which one they preferred. Recognition of the polygons was just below chance (48%), but preference for old polygons was substantially higher than chance (60%; Kunst-Wilson & Zajonc, 1980).

A sizable amount of research has been carried out to examine the mere exposure effect over the years (e.g., Bornstein, 1989; Montoya, Horton, Vevea, Citkowicz, & Lauber, 2017). A meta-analysis summarizing 208 empirical studies from 134 articles published between 1968 and 1987 (Boreinstein, 1989) obtained a moderate effect size of 0.26 (Bornstein, 1989). The effect is true for a variety of stimuli, including sounds ($r = .24$; however, Montoya et al., 2017, did not find a positive effect for auditory stimuli), ideographs ($r = .22$), nonsense words/syllables ($r = 24$), photographs ($r = .37$), meaningful words/names ($r = .49$), polygons ($r = .41$), real people/objects ($r = .20$) – except for abstract paintings, drawings, and matrices ($r = −.03$; in contrast, Montoya et al., 2017, found a comparatively large effect for this category). Moreover, the effect tends to be stronger when a heterogeneous vs. homogenous pool of stimuli are presented ($r = .30$ vs. $r = -.02$, respectively), when exposure times are shorter (e.g., less than one second, $r = .41$), , when there is some delay between stimulus exposure and evaluation ($r = .22$), and when the participants are adults instead of children aged 12 or under ($r = .30$ vs. $r = -.05$, respectively).

A more recent meta-analysis (Montoya et al., 2017) synthesized growth curves from 118 studies which yielded 268 curves. Across different models and sub-analyses, their general finding was that there was a positive slope, indicating that higher exposure frequencies were

associated with increased liking, recognition, and familiarity. In the overall model, this effect corresponded to an increase of 0.23 points on a scale of 0-100 for each additional exposure (0.17 points when liking was the only dependent variable). The same model also showed evidence of an inverted U-shaped curvilinear effect, possibly indicative of habituation effects that occur after many exposures. Whereas Bornstein (1989) found that the mere exposure effect was highest when participants were exposed to stimuli no more than 9 times ($r = .21$), the maximum of the inverted U-shape in Montoya and colleagues (2017) was always larger than 10 and, across subanalyses, more often fell between 20 and 75.

Various accounts have been proposed to explain the mechanism underlying the mere exposure effect (e.g. demand effects; Berlyne, 1970; Grush, 1976; Stang, 1974). Among these explanations, the perceptual fluency/misattribution account – the process by which the ease of perceiving and processing previously encountered stimuli (Jacoby, Kelley, Brown, & Jasechko, 1989) is misattributed as liking (Bornstein & D'Agostino, 1994; Smith, 1998) – emerged as a more parsimonious, and widely accepted candidate. If increased liking toward previously shown stimuli is due to misattributed perceptual fluency, individuals should discount or even over-discount the influence of irrelevant fluency when they learn the true source of the fluency. For example, participants have been shown to make negative adjustments in evaluating previously seen stimuli when they are led to believe that they have seen it before (Bornstein & D'Agostino, 1994). Additionally, the mere exposure effect is less likely to happen when fluency is disconnected from, whereby one can hardly misattribute it to the evaluative judgment.

Recent work, however, has cast some doubt on the perceptual fluency/misattribution account. Evidence has been accumulated that people prefer stimuli that they recognize (Anand & Sternthal, 1991; Brooks & Watkins, 1989; Fang, Singh, & Ahluwalia, 2007; Newell & Shanks,

2007; Szpunar, Schellenberg, & Pliner, 2004; Whittlesea & Price, 2001; cf. Weisbuch, Mackie, & Garcia-Marques, 2003), suggesting that the mere exposure process requires at least some intentional cognitive processing. However, the meta-analysis by Montoya and colleagues (2017) found that the mere exposure effect occurred even when the exposure duration was shorter than 16 ms, a time frame in which conscious recognition or other intentional processes could not be expected to occur. Furthermore, evidence also suggests that the effect happens for novel stimuli, and has positive effects on mood (Monahan, Murphy, & Zajonc, 2000) – neither of which can be explained by the perceptual fluency/misattribution hypothesis, but can be explained by fluency more generally.

The role of fluency in evaluative judgments has also been proposed to be potentially independent of intentional information processing (i.e., the hedonic fluency model; Winkielman & Cacioppo, 2001; Winkielman, Schwarz, Fazendiero, & Reber, 2003). According to the hedonic fluency model, perceptual and/or conceptual fluency may or may not be consciously recognized. The fluency associated with fast and effortless mental processing leads to positive affect detectable with even physiological measures (Harmon-Jones & Allen, 2001; Winkielman & Cacioppo, 2001). This positive affect may be transferred to evaluative judgments of previously seen stimuli, as well as novel stimuli, self-reported affect (Monahan et al., 2000) and physiologically-measured mood (Harmon-Jones & Allen, 2001; Winkielman & Cacioppo, 2001). A meta-analysis of 90 studies examining the effect of perceptual fluency on affective judgments obtained a medium effect size (Cohen's d = .50; Warth, 2008). The effect was moderated by whether participants were aware of the experimental manipulation, such that participants who were aware tended to discount fluency and use other inputs to form attitudes, and neutral and positive stimuli produced larger fluency effects than negative stimuli.

More recently, an embodied account has also been proposed to explain mere exposure (Schwarz & Lee, this volume; Topolinski & Strack, 2009, 2010), arguing that the fluency responsible for increased liking of repeated stimuli comes from specific motor responses associated with such stimuli. The idea is that specific sensory organs (e.g., eyes, mouths, and hands) register and remember the fluency when people process stimuli, and this embodied fluency is later activated to make judgments about the stimuli. Therefore, preventing people from registering the embodied fluency when they are presented with the stimuli, and from retrieving such fluency when they make judgments about the stimuli, may decrease the mere exposure effect. For example, asking participants to perform a secondary oral motor task when they are repeatedly presented names of actors decreases the mere exposure effect for those names (Topolinski & Strack, 2010), and chewing gum while evaluating stimuli eliminates mere exposure effects for words but not for visual characters (Topolinski & Strack, 2009).

Evaluative Conditioning

Evaluative conditioning (EC), a process similar to Pavlovian (classical) conditioning (Martin & Levey, 1978, 1994; Levey & Martin, 1975), occurs when a conditioned stimulus (*CS*, such as tempting food) is consistently presented before an unconditioned stimulus (*US*, such as a new logo), causing the *US* to take on the valence of the *CS*. However, EC differs from the classical condition in several aspects. Above all, while classical conditioning requires sufficient awareness, EC may happen with or without awareness (De Houwer, Thomas, & Baeyens, 2001). Classical conditioning occurs when people are aware of, and recognize, the *CS* and *US*. If an individual does not recognize that an electric shock always follows the ringing bell, they would not develop a cringe response to the ringing bell. In contrast, EC may happen with awareness (Purkis & Lipp, 2001) or without awareness (Davey, 1994; Fulcher & Hammerl, 2005). A meta-

analysis with 50 studies obtained a medium effect size of $d = 0.65$ for contingency aware respondents and a low effect size of $d = 0.27$ for contingency unaware respondents (Nierman, 2008). Similarly, another meta-analysis with 214 studies (Hofmann, De Houwer, Perugini, Baeyens, & Crombez, 2010) obtained a medium effect size of $d = .52$ overall. EC effects were also found to be stronger for high, compared to low, contingency awareness ($d = .52$ vs. $d = .51$, respectively), for supraliminal, rather than subliminal, *US* presentation ($d = .52$ vs. $d = .21$, respectively), and for post-acquisition, than for post-extinction, effects ($d = .85$ vs. $d = .53$, respectively).

Furthermore, EC is also proposed to be goal dependent, and thus may depend on the goals activated during the process (Dijksterhuis & Aarts, 2010). For instance, compared with those who were instructed to pay attention to differences, participants who were presented *CS-US* pairings and were instructed to pay attention to similarities had larger EC effects (Corneille, Yzerbyt, Pleyers, & Mussweiler, 2009). In addition, EC also differs from classical conditioning in how classical conditioning disappears when the *CS* is no longer paired with the *US* (Hamm & Vaitl, 1996), whereas EC appears to resist extinction, even after 5 and 10 presentations of the *CS* without the *US* (Baeyens, Crombez, Van den Bergh, & Eelen, 1998; Baeyens, Díaz, & Ruiz, 2005; cf. Lipp & Purkis, 2006).

Zajonc (2001) proposed using this model to explain the mere exposure effect, wherein the repeated stimuli can be seen as the conditioned stimuli, and the lack of aversive experience as the unconditioned stimulus. According to this account, novel stimuli activate both approach and avoidance responses. When no aversive experience is paired with the CS, "avoidance and escape drop out, leaving only approach responses" (p. 226). However, this account cannot explain why people still increase liking for novel stimuli that may evoke anxiety (Monahan et al., 2000),

suggesting the need for further examination of the conditioning explanation of mere exposure effects.

Social Judgment Theory

According to the social judgment theory (Sherif & Hovland, 1961; but see Eiser, 1973; Eiser & White, 1974; for a review, see Eagly & Chaiken, 1993, Johnson et al., 2005, this volume), attitude change is the result of a perceptual process. When the position of the communication is close to the recipients' attitude, people become closer to the position advocated in the communication by *assimilating* their own attitude to the advocacy. In contrast, when the communication is subjectively distant from their attitudes, there is a *contrast* effect or perception that one's attitude is more discrepant from the communication than it actually is. In these situations, people change in opposition to the communication.

Several other predictions of the social judgment theory concern the conditions leading to contrast versus assimilation. A chief assumption is that attitude change is a function of the range of positions a person accepts and rejects. When the message position falls within this latitude of acceptance, people assimilate this position to their attitudes. When the position falls within the latitude of rejection, people contrast their attitudes with that position. Furthermore, topics that are highly involving shrink the latitudes of acceptance and expand the latitudes of rejection. As a result, people are more resistant to change (Johnson & Eagly, 1989, 1990; Johnson, Lin, Symons, Campbell, & Ekstein, 1995; Lampron, Krosnick, Shaeffer, Petty, & See, 2003). Although interesting, this prediction has received inconsistent support over the years (Eagly & Chaiken, 1993; Johnson et al., 2005).

Selective Exposure

Despite the fact that strong evidence and arguments are ubiquitously used in an attempt to change recipients' attitudes, this often fails (The Smoking Gun, 2006). One cause of the difficulty changing attitudes is the process of selective exposure, which enables people to defend their attitudes by avoiding information likely to challenge them, and seeking information likely to support them. This tendency is a form of congeniality bias, which describes people's motivation to defend their attitudes from challenges (e.g., Festinger, 1957; Harmon-Jones et al., this volume; Olson & Stone, 2005). A meta-analysis that assessed whether exposure to information is guided by defense or accuracy motives (Hart et al., 2009; see also Noguchi, Durantini, Albarracín, & Glasman, 2007) showed that, although analyses indicated a moderate preference for congenial over uncongenial information ($d = 0.36$), this congeniality bias was moderated by variables that affect the strength of the defense and accuracy motivations. In support of the importance of defense motivation, the congeniality bias is weaker when people have a weaker defense motivation. Low defense motivation is assumed to occur when participants' attitudes, beliefs, or behaviors are supported prior to information selection, when participants' attitudes, beliefs, or behaviors are not relevant to important values or not held with conviction, when the available information is low in quality, when participants' closed-mindedness is low, and when confidence in the attitude, belief, or behavior is high.

Goals and Attitude Change

A variety of motives and goals (for a review, see Kunda, 1990) can potentially influence the formation and change of attitudes. These goals include the motivation to be accurate (Kruglanski, 1980), to be consistent (Festinger, 1957; Heider, 1946; McGuire, 1960), to believe in a just world (Lerner, Miller, & Holmes, 1976), to avoid uncertainty and ambiguity (Harvey, Hunt, & Schroder, 1961; Roney & Sorrentino, 1995), and to avoid engaging in excessive

cognitive effort (Chaiken, 1987; Taylor & Fiske, 1978). Once a goal is activated, it may direct people's attention to goal-consistent information. For instance, people who are motivated to defend and rationalize the status quo prefer positive information about the status quo, whereas people who are motivated to improve the status quo prefer negative information about the status quo (Johnson & Fujita, 2012).

Beyond specific goals, general behavioral goals, once activated, may have a surprising and powerful impact on attitude change. *General action goals* – defined as the goals with end states at the extremes of the continuum of activity level (either high or low motor and cognitive output) – have been found to affect judgment and behavior across a variety of domains (Albarracín et al., 2008; Albarracín, Wang, & Leeper, 2009; Gendolla & Silvestrini, 2010; Laran, 2010; for reviews, see Albarracín et al., 2008, 2011). For example, participants primed via subliminal or supraliminal exposure to such action-related words as *move*, *go*, and *walk*, compared with those primed by such inaction-related words as *stand*, *still*, and *calm*, showed higher level of cognitive and physical activities including doodling (vs. napping), exercised for a longer time, ate more raisins, and solved more anagrams. In a similar vein, implicit activation of the action concept has been linked to stronger effort-related cardiovascular responses than activation of the inaction concept (Silvestrini & Gendolla, 2013). Moreover, the activation of action goals may increase cognitive effort when individuals are confronted with persuasive messages, which may bias the process of the information selection. In particular, as people generally have a prior attitude towards an object or topic, the activation of an action goal may facilitate retrieving the prior attitude that may, in turn, inhibit attitude change. This possibility was tested by Albarracín and her colleagues. Compared with participants primed with general inaction goals, those primed with general action goals were found to quickly and consciously

retrieve prior attitudes, which hindered their attitude change. This effect, however, is attenuated or reversed when the goals have already been satisfied by an intervening task (Albarracín & Handley, 2011). Future research examining this possibility may be interesting. Furthermore, the implication of the general action and inaction goals on attitude change in various applied contexts such as marketing and communication may also be important.

Models of Belief Correction as Models of Attitude Change

Attitude and belief change is a more complex and difficult undertaking than implied in models of persuasion (Cook et al., 2013; Greitemeyer, 2014; Honda, Shimizu, & Rutter, 2005). For example, the program AdWatch was first initiated in 1992 by several national news networks to filter out political commercials with misleading or deceptive advertising during the presidential campaign. If attitude change were easy, providing information about deceptive advertising should suffice to restore attitudes to baseline levels. A field experiment showed, however, that Adwatch failed to change attitudes towards presidential candidates even for audiences that understood and even liked receiving reports of the deception (Cappella & Jamieson, 1994).

A simple survey of some common misconceptions also highlights how resistant to change beliefs and attitudes are. Despite substantial evidence of human-induced global warming, a recent poll showed that only 55% of Americans believe that climate change stems from human activity, down from 61% in 2001 (Cook et al., 2013; Gleick et al., 2010; Oreskes, 2004; Saad, 2015). Another good example is the persistent belief in the association between vaccines and autism (Smith, Ellenberg, Bell, & Rubin, 2008). In 1998, Wakefield and his colleagues published a paper in *The Lancet* asserting that the MMR (measles, mumps, and rubella) vaccine caused autism in children. Although there were abundant questions about the results (e.g., Fombonne &

Cook, 2003; Honda et al., 2005), methodological problems (e.g., Chen & DeStefano, 1998), and an actual retraction of the paper in 2010, misbeliefs about the vaccine and refusals to vaccinate continue to drive high incidence of those diseases (Center for Disease Control and Prevention, 2015). The lack of impact of the retraction, however, is consistent with the finding that more than two hundred retracted articles were cited 2,034 times after the retraction, usually with no mention of the retraction (Budd, Sievert, & Schultz, 1998). The suggestion of such a high number of citations has been confirmed by experimental research showing that post retraction readers of a retracted article are more likely to believe the findings than readers of control research articles (Greitemeyer, 2014).

What explains this persistence of beliefs? Why do corrections and retractions so often fail to change attitudes and beliefs? To begin, adults rarely consider an issue or object in the absence of any prior relevant information, so a priori attitudes and goals play a large role in guiding processing (see Earl & Hall, this volume). As argued by Kunda (1990), people arrive at the conclusions they desire by constructing seemingly reasonable justifications for such conclusions. A study conducted by Kunda and Sanitioso (1989) showed that thinking that a given trait (e.g., extroversion) was associated with academic success led participants to perceive themselves as having a higher level of that trait (e.g., being more extroverted than the norm). Furthermore, the belief that caffeine consumption has negative health consequences led people to report less coffee drinking as a way of feeling less threatened (Sherman & Kunda, 1989), and people who perceived introversion as desirable could generate memories that suggested they were introverted faster than those who thought extraversion was desirable (Sanitioso, Kunda, & Fong, 1990).

A motivated cognition mechanism suggests that attitudes and beliefs that are consistent with other valued attitudes and beliefs should increase persistence, and includes motivated

reasoning processes of both rationalization and denial (Feygina, Jost, & Goldsmith, 2010; Kunda, 1990). First, defensive cognitive processes can be activated to protect the attitudes and beliefs, particularly when self-protective motivation is high and accuracy motivation is low (see Hart et al., 2009). A higher, perhaps even unreasonable, evidential threshold of information is often required to refute cherished attitudes and beliefs (Ditto & Lopez, 1992). Motivated cognition, however, is not the only process that explains attitude and belief persistence. Ecker and colleagues (2014) first presented a crime scenario in which the suspect was initially described as an Australian Aboriginal. The information about the ethnicity of the suspect was later corrected, and the degree of belief change was not correlated with preexisting racial attitudes towards Aboriginals. In addition to this null effect, there is large amount of evidence of attitude and belief persistence in domains that are personally irrelevant. For example, whether a fictional fire is described as caused by arson or by accident is of no relevance to most experimental participants. Yet recipients of this information form beliefs that persist even in the presence of subsequent correction (Johnson & Seifert, 1994). The cognitive processes of anchoring and adjustment (Tversky & Kahneman, 1974) are important to understand the difficulty changing attitudes and beliefs. Initial attitudes and beliefs can be conceptualized as setting an initial anchoring position and correction requires adjustment away from that initial position. Therefore, both under-correction and over-correction are possible because accurate adjustment requires knowledge about the extent of the influence of misinformation (Wilson & Brekke, 1994).

Epley and Gilovich (2006) have suggested that under-correction, or insufficient adjustment, is more prevalent than over-correction because people tend to adjust incrementally from a lower self-generated value and terminate their adjustment once a plausible value is

reached. Unless individuals are willing to search for a more accurate value, under-correction is likely the outcome that in turn explains the continued influences of misinformation. Previous studies of judgment adjustment have mainly focused on under-correction (for a review, see Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Rozin & Royzman, 2001). A recent study by Cobb and colleagues (2013) found that both under- and over- corrections are possible depending on the type of information that is presented. For example, when it comes to correcting positive misinformation about political figures, message recipients overestimate how much correction is needed and end up with excessively negative attitudes towards the politician.

There are various other cognitive factors leading to this persistence, including generation of explanations about the information. The tendency to generate reasons why the misinformation might hold true tends to increase persistence, whereas the generation of alternatives reduces persistence (e.g., Anderson, 1982; Seifert, 2002). Generating counterarguments depends not just on actual consideration of opposite beliefs, but also metacognitive experiences that accompany the reasoning process (Schwarz, Sanna, Skurnik, & Yoon, 2007). The ease or difficulty with which information can be processed is one of these metacognitive experiences. Aarts and Dijksterhuis (1999) found that people infer that they use their bicycles more often after recalling few, rather than many occasions, suggesting that people are likely to believe in what relevant information can be easily brought to mind. As a result, generating arguments against prior beliefs and attitudes can be more effective when it is easy and fluent, than when it is difficult (Lewandowsky, Ecker, Seifert, Schwarz, & Cook, 2012; Nestler, 2010). Another metacognitive experience is the ease or difficulty with which new information can be processed. Pieces of information that are incongruent or inconsistent with prior beliefs are processed less fluently than those that are consistent with one's beliefs (Winkielman, Huber, Kavanagh, & Schwarz, 2012).

Fluency indicates congruency, and information that can be processed fluently feels more familiar and is thus likely to be viewed as true and elicit less scrutiny (Lev-Ari & Keysar, 2010; Schwarz et al., 2007; Song & Schwarz, 2008).

People tend to engage in confirmatory or positive hypothesis testing, preferentially considering reasons for an assertion that might be true rather than false (Klayman & Ha, 1987). Individuals are thus likely to elaborate plausible premises even if they are false, and this confirmatory fallacy decreases our ability to edit our prior attitudes and beliefs (Johnson & Seifert, 1994; Seifert, 2002). People, however, are more likely to falsify attitudes and beliefs when supportive arguments are difficult to generate (Anderson, 1982; Johnson & Seifert, 1994; Lewandowsky et al., 2012; Nestler, 2010).

Prior theories of thinking and reasoning also shed light on the cognitive processes leading to the revision of, or the frequent failure to revise, beliefs. A mental model of reasoning (Johnson-Laird, 1994; Johnson-Laird & Byrne, 1991), for example, states that people construct a web of mental models from which they can derive causal conclusions. As new information unfolds, people set up new models or extend existing models, but are unwilling to discard key information when no plausible alternative exists to fill the gap (Johnson & Seifert, 1994; Wilkes & Leatherbarrow, 1988). Therefore, providing a causal alternative to fully explain mental models facilitates belief revision, but corrections often fail to explain events. For example, information about the reasons for global warming should facilitate belief change whereas mere denials of misconceptions are inadequate at producing change.

Another theory that accounts for belief perseverance was formulated within a dual-process framework. System I includes fast, instinctive, and emotional reasoning, whereas system II involves slower, more deliberative, and more rational reasoning (for reviews, see Croskerry,

Singhal, & Mamede, 2013; Kahneman, 2003). Consistent with this model, Kowalski and Taylor

(2009) demonstrated that a controlled and careful dissection of incorrect ideas facilitates the

acquisition of correct information. In a naturalistic experiment, the direct refutation to false

information was more successful in changing attitudes and beliefs, than was the non-refutational

provision of the same information. Likewise, messages with information that is relevant to the

audiences' goals also tend to receive more thorough processing (Johnson & Eagly, 1989). Such,

in-depth processing of information and corrections may assist people in working through

inconsistencies and, ultimately, accept the corrections (Osborne, 2010).

Further understanding of belief and attitude persistence comes from *fuzzy-trace theory*, a

dual-trace conceptualization of reasoning (Reyna & Brainerd, 1995). According to this model,

people tend to process *gist* information – fuzzy representations often activated automatically –

instead of the verbatim information – the detailed features – presented in a message. Thus, gist

and detailed information associated with a belief compete for memory retrieval, with the gist

information being faster (Ayers & Reder, 1998). Therefore, beliefs persevere because details,

such as the falsification, are not strategically retrieved but the gist (e.g., the story) is interesting

and memorable.

Last but not least, the *normative theory of Bayesian inference* has also been used to

elucidate belief persistence (Griffiths, Tenenbaum, & Kemp, 2012). Bayesian models capture

causal relations among (potentially) a full set of variables and provide a way of finding hidden

constraints that explain belief revision (Jern, Chang, & Kemp, 2009; O'Connor, 2006). Jern et al.

(2009) presented a model of belief polarization based on a fully Bayesian approach to belief

revision. In this case, initial beliefs act as priors that bias consideration of all evidence and can

lead to polarization, rather than mere maintenance. With the consideration of all (both apparent

and non-apparent) variables, such an approach can provide a comprehensive view of a behavior that one might consider irrational, as actually a rational behavior with non-apparent (hidden) variables taken into account. Therefore, the failure to change attitudes and beliefs may arguably represent a normatively rational inference of prior biases with new information.

Not surprisingly, cognitive competence and preparedness capacity also increase the probability of changing attitudes and beliefs (Calvillo, 2014; Chambers & Zaragoza, 2001; Zhu et al., 2010). In a study of memory capacity and belief construction conducted by Zhu and colleagues (2010), performance on general memory tasks was negatively associated with adherence to false beliefs. Further, people are likely to revise their beliefs after corrections if they are explicitly warned up front that information they are about to be given may be misleading (Chambers & Zaragoza, 2001; Ecker, Lewandowsky, & Tang, 2010; Jou & Foreman, 2007). Warnings seem to be more effective when they are given before specific beliefs and attitudes are encoded, rather than after, because such warnings prepare recipients to monitor the encoded input and label potential cues as suspect (Chambers & Zaragoza, 2001; Ecker et al., 2010; Schul, 1993).

In addition to the aforementioned factors, recent studies have demonstrated that conspiratorial thinking predicts the persistence of erroneous beliefs. Conspiratorial thinking, or ideation, refers to the cognitive tendency to explain a significant political or social event as a secret plot by powerful individuals or organizations (Sunstein & Vermeule, 2009). Conspiratorial thinking predicts the rejection of scientific findings, including the well-established climate science (Lewandowsky, Oberauer, & Gignac, 2013). Apparently, people with conspiratorial thinking lack a priori assumptions about what constitutes a scam and cannot question or avoid introducing their own conspiracy theories (Lewandowsky et al., 2015).

Finally, recent studies of attitude and belief have demonstrated that the emotional tone of the information affects change (Porter, Bellhouse, McDougall, ten Brinke, & Wilson, 2010; Van Damme & Smets, 2014). Compared to positive images, negative images are associated with a greater susceptibility to false memories for a major misleading detail at subsequent follow-up sessions. Therefore, negative emotions apparently make the information more difficult to change even after attempts at correction.

Processes Elicited by Influence Factors and Persuasive Communications

Influence Factors

In psychology, the first systematic line of persuasion research was conducted by the Yale group, which was founded by Hovland and drew on his research with the United States military during World War II. With the thesis that messages are persuasive when they are rewarding to the audience, the Yale group (e.g., Hovland, Janis, & Kelley, 1953) studied the impact of message, source, and recipient factors in the classic question: *Who is saying what to whom* (Lasswell, 1948, p. 117). These critical variables are briefly reviewed in the upcoming sections (see Johnson et al., this volume; Johnson et al., 2005).

The Message. The quality of the arguments contained in the message are probably the most often examined message variable. Argument quality has an explicitly specified role in different models of persuasion, such as the elaboration likelihood model, where it is primarily conceptualized as having an influence when message recipients have the ability and motivation to think about the message arguments (i.e., the central route to persuasion in Petty & Cacioppo, 1986). Other message factors, such as argument length, often affect persuasion even when message recipients lack the ability and motivation to think about the communication in a careful manner (Langer, Blank, & Chanowitz, 1978).

There are some specific strategies to frame a message that deserve mention here. The foot-in-the-door, door-in-the-face, and lowball techniques are all well-known examples of established persuasion strategies. When first making a small request that the person is likely to agree to, and then making a larger request, the person is more likely to agree than if the larger request had been made right away, which is an example of the *foot-in-the-door technique* (Freedman & Fraser, 1966). The *lowball technique* involves a similar procedure where someone first agrees to carry out a smaller request, which is then revealed to be more costly than originally assumed, and typically results in more compliance than if the full behavioral cost had been presented to start with (Cialdini, Cacioppo, Bassett, & Miller, 1978). The *door-in-the-face technique*, in contrast, starts with a large request that is likely to be denied, but then makes compliance with a later, smaller request more likely (Cialdini et al., 1975). Another strategy that has received recent attention, especially in the domain of consumer research, is the *disrupt-then-reframe strategy* (Davis & Knowles, 1999; Fennis & Stel, 2011). It involves introducing an element of confusion, such as stating the price of an object in pennies rather than dollars, which is hypothesized to increase persuasion by a following reframing message or other persuasive cues (Fennis, Das, & Pruyn, 2006). Potential explanations are that attention is otherwise diverted (Davis & Knowles, 1999) or that the reframing message satisfies a need for closure (Kardes, Fennis, Hirt, Tormala, & Bullington, 2007).

An issue that is often debated is the effectiveness of subliminal persuasion, which entails presenting a persuasive message below the perceptual threshold (i.e., the limen; usually established by asking people to self-report whether they perceived anything; Cheesman & Merikle, 1986). Within this debate, it is important to distinguish between two concepts: Subliminal priming and subliminal persuasion. Subliminal priming refers to a simple stimulus

that can activate concept, whereas subliminal persuasion refers to a specific and more complex message. There is established evidence showing that subliminal priming effects on behavior do exist (see Weingarten et al., 2015, for a meta-analysis, $d = 0.41$, $k = 88$). For instance, being subliminally exposed to images of dollar signs increases the probability of making higher bets in a slot machine game, presumably because the concept of winning is activated (Gibson & Zielaskowski, 2013). In contrast, complex persuasive messages such as *you are thirsty and want to buy a drink* are very difficult to convey subliminally (much more so when persuaders aim to increase only beverage sales of one brand without increasing sales of a competing brand).

Research on subliminal persuasion has a history of null findings, failed replications, and methodological problems (e.g., Beatty & Hawkins, 1989; De Fleur & Petranoff, 1959; Moore, 1988; Pratkanis & Aronson, 1992; Smith & Rogers, 1994). In general, when subliminal persuasion effects do emerge, they seem to be moderated by other factors. There are some findings of main effects (Cooper & Cooper, 2002; see also Trappey, 1996), including the infamous – and fraudulent – reports of increased Coca-Cola and popcorn consumption after subliminal messages in a movie (see McConnell, Cutler, & McNeil, 1958). The most commonly accepted conclusion seems to be that subliminal persuasion has an effect only when an underlying supportive base motivation already exists. For instance, being primed with thirst-related words only has an effect on people who are thirsty to start with (Strahan, Spencer, & Zanna, 2002). Another moderator seems to be interpretation of the subliminal stimulus, which can be quite variable. The word *dad*, for example, only increases achievement behavior in individuals who feel close to their dad and believe their dad to value achievement (Fitzsimons & Bargh, 2003). A more indirect form of subliminal persuasion has also been documented in relation to source effects: Participants who had been subliminally exposed to the communicator's

face were later more persuaded by the arguments that this communicator brought forth (Weisbuch et al., 2003). Overall, though, evidence for direct and reliable subliminal transmission of complex messages is weak.

Finally, a message type that has been gaining popularity is the narrative. Narrative persuasion typically uses fictional stories in which target issues are discussed, or in which characters act in accordance with target behaviors. Experience taking (identifying with and simulating a characters' inner experience; Kaufman & Libby, 2012) and, more generally, transportation into the story (see van Laer, de Ruyter, Visconti, & Wetzels, 2014), seem to be important mechanisms of narrative persuasion. When readers are transported into the story and identify with characters, their attitudes align more with those of the character or the narrative in general (e.g., de Graaf, Hoeken, Sanders, & Beentjes, 2012; Kaufman & Libby, 2012; Mazzocco, Green, Sasota, & Jones, 2010; Murphy, Frank, Chatterjee, & Baezconde-Garbanati, 2013), in part because the narrative facilitates attention to the message and elaboration of its contents (Igartua & Barrios, 2012; Slater & Rouner, 2002).

The Recipient. Who is receiving the message? A host of interindividual differences have been studied regarding this question (for a review, see Briñol & Petty, this volume). Briñol and Petty (this volume) outline categories that influence persuasion: Individual differences related to knowledge (e.g., need for cognition and need to evaluate, see below), consistency (e.g., authoritarianism; Altemeyer, 1981), self-worth (e.g., self-esteem; Rosenberg, 1979), and social approval (e.g., individualism versus collectivism; Triandis, McCusker, & Hui, 1990). Among these, two personal characteristics have been especially tightly linked to attitudes and theories of persuasion. The first one is need for cognition, which Cacioppo and Petty (1982) defined as a "tendency to engage in and enjoy thinking" (p. 116), drawing on early research from the 1940s

and 1950s (e.g., Cohen, Stotland, & Wolfe, 1955). People high in need for cognition look for, and elaborate on, more information (Curşeu, 2011; Verplanken, Hazenberg, & Palenéwen, 1992), and show higher attitude extremity under specific circumstances (Leone & Ensley, 1986; Smith, Haugtvedt, & Petty, 1994). Need for cognition is assumed to exert a chronic motivational influence, making individuals high in need for cognition more likely to use central information processing (Petty & Cacioppo, 1986).

The other individual difference is need to elaborate, or the "extent to which [individuals] chronically engage in evaluative responding" (Jarvis & Petty, 1996, p. 172). It describes the propensity to form attitudes, and leads to more commitment to attitudes (Maxwell-Smith & Esses, 2012). In the discussion of whether attitudes are formed on-line or are based on retrieval from memory, need to evaluate may be a moderator such that people high in need to evaluate are more likely to form an on-line judgment (Tormala & Petty, 2001). In contrast, people who are less invested in evaluating things are more likely to retrieve prior judgments from memory. Need to evaluate, too, has sometimes been used as an indicator of a person's motivation to engage in effortful processing of attitude-relevant information (e.g., Lenzner, 2012).

Another individual difference variable that has been studied extensively in persuasion, especially in consumer research, is regulatory focus (Higgins, 1997). People can be more oriented towards promotion, or they can be more oriented towards prevention. This orientation can affect not only goal pursuit (e.g., Crowe & Higgins, 1997), but also processes that are more closely related to attitudes. For instance, information selection (e.g., Werth & Foerster, 2007) and favorable responses to persuasive messages (e.g., Cesario, Corker, & Jelinek, 2013; Keller, 2006) are impacted by an individual's regulatory focus. In most cases, the fit between a promotion versus prevention focus of the person and the message has been investigated, and a

closer fit has been found to increase persuasion (e.g., Cesario et al., 2013; Latimer et al., 2008; Yi & Baumgartner, 2009). Cesario, Grant, and Higgins (2004) found that participants with a successful history of promotion-related actions were more likely to be persuaded by a promotion-framed message (e.g., this program will support more children to succeed) than by a prevention-framed message (e.g., this program will prevent more children failing), and the reverse was true for participants with a successful history of prevention-related actions. This regulatory matching effect was driven by the misattribution of the fluency feeling (i.e., feeling right) produced by the match, and disappeared when people attributed their feeling to another cause. Contrastingly, Malaviya and Brendl (2014) found a reversal regulatory matching effect when participants perceived a hedonic mismatch (e.g., perceiver's attention was focused on painful outcomes but the message was focused on pleasurable outcomes, or vice versa). In this case, participants were presumably alerted to the hedonic mismatch and felt skeptic about the message.

Recently there has also been interest in a person's own perceptions of their own attitudes. Whether an attitude is based on affective or cognitive information has previously been found to predict which types of persuasion are most successful (Edwards, 1990; Fabrigar & Petty, 1999). In addition to the objective bases of an attitude, a person's subjective assessment of whether it is affectively or cognitively based (meta-basis), influences information selection and persuasion (See, Petty & Fabrigar, 2008, 2013). Another type of self-perception that potentially affects persuasion relates to the perceived stability of one's attitudes. These implicit theories of attitudes may predict attitude certainty following attitude change, or lack thereof, after receiving a persuasive message (Petrocelli, Clarkson, Tormala, & Hendrix, 2010).

Ironically, being sure of your opinion can make you more likely to change it – as a consequence of defensive confidence (Albarracín & Mitchell, 2004). If you are very confident in your opinion and your ability to defend it, you have no reason to avoid counter-attitudinal information and may even seek it out on purpose. However, strong counter-attitudinal messages continue to exert their effect and result in persuasion. Defensive confidence is conceptualized as an individual difference that is not topic-specific and predisposes certain individuals to this unintended side effect of certainty. Interventions targeting traditionally hard-to-reach audiences can employ knowledge about defensive confidence to change strongly endorsed attitudes (Albarracín, Mitchell, Durantini, Earl & Levitt, 2007).

The Source. A third category of variables in persuasion describes who is sending the persuasive message. A classically studied variable, and one that explains more variance than any other widely studied source variable (Wilson & Sherrell, 1993), is the ostensible expertise of the source. Other well-known source effects include effects of likeability, physical attractiveness, perceived credibility, and trustworthiness (see Pornpitakpan, 2004; Wilson & Sherrell, 1993). French and Raven (1959) conceptualized different types of power that a communicator may possess that may influence persuasion, which includes expert power (expertise) and referent power (likeability), but also reward power and coercive power, which allow the person to assign rewards and punishments, and finally legitimate power, or possession of the right to influence others. Interestingly, not only does the power of the source seem to matter, but also lower power of the message recipient can also predict higher reliance on source characteristics in persuasion (Albarracín & Vargas, 2010; Durantini, Albarracín, Mitchell, Earl, & Gillette, 2006).

Source variables in general are assumed to mostly serve as heuristic cues in theories of persuasion, such as the heuristic-systematic model or the elaboration likelihood model (e.g.,

Petty & Cacioppo, 1984). Nevertheless, it would be wrong to assume that source variables only ever have such straightforward, direct effects. Sources have a larger effect when forming an evaluation of a new attitude object, but a weaker one when an established attitude exists already (even though this advantage may decay over time; Kumkale, Albarracín, & Seignourel, 2010), the effect of source variables depends on the time of presentation (e.g., Campbell, Mohr, & Verlegh, 2013; Tormala, Briñol, & Petty, 2007), and there is evidence of bidirectional effects that change perception of the source depending on message content (e.g., Gawronski & Walther, 2008). In addition, sleeper effects in persuasion can have more complex long-term consequences. When both a message and discounting source information such as *this person cannot be trusted* are presented, there can be little or no net persuasion at first, but delayed persuasion over time, showing a long-term impact of the message despite the discounting information (Hovland, Lumsdaine, & Sheffield, 1949; Hovland & Weiss, 1951; Kumkale & Albarracín, 2004).

Finally, it is useful to differentiate between laboratory source effects and real-life source effects. In laboratory studies, source effects are necessarily limited. Typically, manipulations are simplistic and circumvent direct interaction completely (e.g., Clark, Wegener, Habashi, & Evans, 2012; Homer & Kahle, 1990; Klein & DeBono, 1993; McGinnies & Ward, 1980; Tormala & Petty, 2004), for example, by saying that an article was written by a leading scholar in the field versus a high school junior (Clark et al., 2012). Even in controlled field studies, the communicators are required to stick to a close script. Despite the benefits of such procedures for establishing internal validity, real-life communicators, and real experts in particular, do more than what is on the script. Research on real-life behavioral health interventions show that experts and demographically-similar sources consistently elicit much more behavior change than do lay community members and demographically-dissimilar sources (with exceptions for select

demographics, e.g., teenagers changed their behavior more in response to sources that were similar to them than to experts; Durantini et al., 2006).

Persuasion models

Attitudes are formed and often change following the reception of information contained in persuasive communications (see Johnson, Maio, & Smith-McLallen, 2005; Johnson et al., this volume). Trying to convince a friend to see this movie instead of that one, seeing an ad on the bus urging you to buy a new product, being asked for donations in the street – persuasive messages play a huge role in our daily lives and in our interactions with others. It is therefore not surprising that persuasion has been of academic interest for millennia. For instance, *Rhetoric* was one of the most influential early Western works. In this work, Aristotle differentiated *logos* (appeals to reason, such as facts and arguments), *ethos* (credibility of and respect toward the speaker as a persuasive influence), and *pathos* (emotional appeals).

Contemporary theorizing about persuasion has often been concerned with understanding the processing that takes place in response to a communication. One of these theories is the *heuristic-systematic model* proposed by Chaiken (1980; Chen & Chaiken, 1999). The model assumes two qualitatively distinct modes of processing. The first uses readily accessible information and simple decision rules, such as using the rule *what experts say is usually true* to evaluate an advertisement in which a doctor endorses a pharmaceutical brand, and thus, does not require much effort and is economic. The second one is systematic, requires cognitive effort, and relies on a more in-depth analysis of the message content. When reliability concerns take precedence over economic concerns there is more systematic processing (Chaiken, 1980), for instance, because of the belief that the discussion at hand will have a direct impact on one's life. The two processing modes are not assumed to be mutually exclusive (Chaiken, Liberman, &

Eagly, 1989), and are both thought to be executed with the goal of evaluating a message's

validity (Chaiken, 1980).

The *elaboration likelihood model* (Cacioppo & Petty, 1984; Petty & Cacioppo, 1981,

1986) is another highly influential model, which shares similarities with the heuristic-systematic

model. It assumes that messages are elaborated on a continuum, and that qualitatively different

processes take place on the two ends of this continuum. The amount of elaboration is determined

by topic factors, such as relevance to one's own life, person factors, such as need for cognition,

and situation factors, such as distraction. The peripheral route of processing applies when

elaboration is low, and leads to a reliance on heuristics and cues in the environment, as well as

conditioning type processes. When one is watching an advertisement while talking to a friend,

cognitive resources may be focused on the conversation instead of the ad, and the message of the

ad may be evaluated simply by judging whether the source seems like an expert. When people

are both motivated and able to elaborate a message, however, the central route of processing is

thought to become relevant. People will evaluate the message in more detail, and argument

quality will become a better predictor of persuasion. Attitudes resulting from this process are

assumed to be more resistant to change. For example, waking up with a headache and a runny

nose makes an advertisement about a new cold medication more personally relevant, and thus,

likely to be closely scrutinized. Under certain circumstances, cue information can serve as

argument information (Petty, Wheeler, & Bizer, 1999).

In contrast to these two models, the aptly named *unimodel* argues that there is just one

process underlying both heuristic or peripheral, and systematic or central, types of processing,

and that there are no qualitative differences between them (Kruglanski & Thompson, 1999;

Kruglanski, Thompson, & Spiegel, 1999). It relates to how knowledge is gained more generally

and is based on the lay epistemic theory (Kruglanski, 1989). If information is linked to the conclusion via if-then rules, it counts as relevant evidence and can be used in evaluating a message by constructing syllogisms. This process is assumed to be the same for both cue information and argument information: Even though they may be qualitatively different in content, they are processed in the same manner. For instance, the rule *if an expert says something, it's probably true* may be accessible in a person's mind and the ad itself supplies the information that *an expert says this cold medicine is great*. Those two pieces of information are combined in a syllogism with the conclusion *it's true that this cold medicine is great*. Similarly, if the message contains the argument *our cold medicine does not make you drowsy at all* and the viewer believes that *if something does not make me drowsy, it is a sign of high quality*, this can be combined in a syllogism with the conclusion *this cold medicine is high-quality*. Previous studies that have found that people rely more on the message than on cue information under conditions of high elaboration (and vice versa), can be explained by differences in processing ease based on factors like time, complexity, and length of presentation. In principle, cue information can be complex (e.g., if source expertise is not clear and has to be inferred via multiple if-then statements) and message information can be simple. The unimodel is by no means uncontested, but has been published alongside several critical reviews (e.g., Ajzen, 1999; Chaiken, Duckworth, & Darke, 1999).

The *cognition-in-persuasion model* (Albarracín, 2002) focuses less on the dual-process versus uni-process debate, in favor of a multi-stage model based on the work by McGuire (1968). These stages include interpreting information, identifying potentially relevant information, retrieving additional information from memory, selecting relevant information and using it to form or update evaluations. Some of these stages can be bypassed in some situations,

for instance, when people infer their attitudes from past behavior and then directly use these attitudes, without modifying them with situational information. Low cognitive ability or motivation to process have different effects at different stages of the model. If processing ability or motivation are low during interpretation, people are more likely to only use easy-to-process cue information, such as source expertise or current affect (although even this may not occur when cognitive resources are extremely low; Albarracín & Kumkale, 2003). When cognitive processing ability and motivation are high, people are more likely to interpret and use information that is more difficult to process, that is, message arguments. An intervention that impacts a later stage of processing, for example, by making people enact message-consistent behavior, is assumed to have a stronger impact on behavior than a message that influences an earlier stage. In future situations people may use this past behavior as a shortcut to determine that they have a favorable attitude (see Bem, 1965), instead of having to recall, identify as relevant, and use factual information from the message. These contemporary process models thus offer some insight into how to design effective persuasive messages.

Models of Resistance to Persuasion

Perceiving persuasive intent is generally sufficient for a host of resistance processes to develop. Audiences abandon the communicator and avoid similar messages in the future (Festinger, 1964; Hart et al., 2009) and actively counter-argue the message to resist its influence (Sagarin & Cialdini, 2004; Wegener & Carlston, 2005). Interestingly, the initial research on attempts to counter an external influence had the objective of studying experimental participants who act contrary to the experimenter's hypothesis (Weber & Cook, 1972). Masling (1966) described this effect as a participant's *screw you* reaction to the suspicion that the experimenter was attempting to control their minds. In a classic set of two studies (Christensen, 1977),

participants were induced to suspect, actually experience, or neither suspect nor experience being victims of psychological manipulation. In the suspicion condition, the experimenter indicated that psychological experiments often include procedures to manipulate behaviour without the participants' knowledge. In the experience condition, participants were asked to copy telephone numbers. While participants wrote numbers, the experimenter told them that fast copying was indicative of an obsessive-compulsive personality disorder, which they later learned was a calculated strategy to jeopardize their performance. As a control, the third condition had neither instructions nor experience manipulations. Participants in these three conditions then underwent a verbal conditioning task (Taffel, 1955) during which the experimenter attempted to condition some responses by repeating *good*. The experimenter's statements would normally increase the occurrence of the reinforced responses, but participants' resistance may actually eliminate this effect. As expected, participants showed conditioning only when they did not have a recent manipulative experience.

The fascinating phenomenon of resistance to an external influence has received the attention of social psychologists from the beginning of the study of communication and persuasion. For example, McGuire (1964) directly manipulated the motivation to self-defend from a persuasive message by having participants counter-argue weak forms of the message before a subsequent stronger attack. According to him, the process of counter-arguing should not only increase refutational ability, but also the motivation to self-defend from the attack. Although the two processes cannot be disentangled in McGuire's work, the refutational practice does in fact decrease vulnerability to later attack.

Recent work by Sagarin, Cialdini, Rice, and Serna (2002) has advanced our understanding of the role of motivation in defending our attitudes against influence attempts.

Participants received training to discriminate between legitimate and illegitimate sources based on whether the source had expertise in a particular domain. This treatment was designed to make participants aware that there was a potential influence source, able to discriminate between legitimate and illegitimate sources, and also willing to make this discrimination. As predicted, the treatment increased persuasion for legitimate sources but decreased it for illegitimate ones. Other studies of the same series confirmed that the perception of manipulation decreases persuasion both directly, and by mediating influences on specific counter-arguments of the message content (see also Schul, Mayo, & Burnstein, 2004).

Sources of influence may also be rejected when they are perceived as being hypocritical. Over 1,500 inner-city high school students were assigned to different conditions of an HIV-prevention-intervention trial: The key conditions were a teacher-led intervention and a student-led intervention (Fisher, Fisher, Bryan, & Misovich, 2002). Findings revealed that, compared to the teacher-led intervention, the peer-led intervention was more effective at the 3-month follow up, but less effective at the one-year follow up. Apparently, over the course of a year, the student interventionists were perceived as hypocritical because they displayed some of the behaviors they had previously tried to discourage in their peers. This perception of the source as hypocritical presumably decreased the effectiveness of the peer-led intervention.

Another interesting facet of reacting against a seemingly active environment is that the influence source provides an anchor for reflecting about attitudes. Rucker and Petty (2002) presented participants with a strong ad promoting a pharmaceutical product and instructed participants either to list negative thoughts (for an introduction to the technique of induce biased thoughts, see Killeya & Johnson, 1998), or simply to list their thoughts about the message. Presumably, participants who listed only negative thoughts attempted to resist the

communication to a greater extent than those who were free to list any (positive, negative, and/or neutral) thoughts. Findings indicated that participants were persuaded regardless of what thoughts they listed, probably because the ad was difficult to refute. However, participants who attempted to resist the message (and failed) were more confident in their favorable attitude toward the product than those who did not make an effort to resist persuasion. In other words, confidence was established in relation to prior reactions to the message.

Albarracín, Cohen, and Kumkale's (2003) research also suggests that message recipients consider the degree to which a prior message was persuasive. In this research, participants received a message that recommended either abstinence from, or moderation in, the use of a new type of alcohol product. After reading these materials, participants either tried the product or performed a filler task before reporting their intentions to drink in the future. As predicted, participants who did not try the product reported similar intentions to drink when they received the moderation message and when they received the abstinence message ($d = .03$). In contrast, when participants tried the product after receiving the message, recipients of the abstinence message had significantly stronger intentions to drink than recipients of the moderation message ($d = .76$). One interpretation of these results is that participants inferred their intentions after considering their trial behavior vis-à-vis an external influence (the message recommendation). Apparently, trying the product after a strong recommendation led participants to conclude that they truly liked the forbidden product. Another potential interpretation is that the discrepancy made people anxious, and thus, more likely to resolve these feelings by justifying their drinking behavior (Festinger & Carlsmith, 1959). Although this particular interpretation seemed less plausible than the self-perception account based on additional data, both processes are relevant to situations in which the recipients' behavior contradicts an earlier persuasive message.

Reactions to perceived influence intent are in many ways similar to phenomena identified in the context of cognitive dissonance. In Festinger and Carlsmith's (1959) classic study, male participants worked for one hour on boring tasks such as turning spools on a board. Immediately after this task, participants were told that the experimenter was investigating the effects of expectancies on performance. They were further informed that they were in a control condition that did not receive any information before beginning the tasks. However, they learned that other participants were to receive information designed to create a positive expectation about the task. The positive expectations were ostensibly instilled by asking the participants to tell another student that the task was enjoyable. Importantly, participants were offered either $1 or $20 for providing a positive evaluation of the task to the other participant (actually an experimenter's accomplice). Results of how enjoyable the task was to the participants depended on the amount of money they received in exchange for lying. Participants who were paid $1 for describing the experiment as enjoyable rated the tasks as more enjoyable than did participants who were paid $20. Festinger and Carlsmith argued that participants who lied experienced dissonance created by the cognitions *The tasks were boring* and *I told someone the tasks were enjoyable*. Those who were paid $20, however, had an important consonant cognition in *I was paid a lot of money to tell someone the tasks were enjoyable*. This awareness of an environmental influence was sufficient to reduce the dissonance magnitude and the associated influence of the behavior on private reports.

Cognitive dissonance theorists give arousal and perceived self-determination central roles in attitude change (Harmon-Jones et al., this volume; Olson & Stone, 2005), and highlight how awareness of a reward's influence can increase the level of arousal associated with an object. In particular, arousal measured with skin conductance is greater when participants undergo typical

dissonance manipulations and have no opportunity to reduce this dissonance (Croyle & Cooper, 1983; Elkin & Leippe, 1986). This finding has received repeated support (see Harmon-Jones, Brehm, Greenberg, Simon & Nelson, 1996) and is generally taken as an indication that affective feelings are necessary for the experience and consequences of cognitive dissonance. Even more definitive, however, is evidence from studies using *misattribution paradigms* (Zanna & Cooper, 1974). For example, in one study, participants engaged in belief-discrepant behavior, and for some, physiological measures of arousal were obtained (Croyle & Cooper, 1983). When physiological measures were obtained, participants' beliefs were not affected by their behavior, presumably because they attributed their experienced arousal to the elaborate measurement apparatus. In contrast, when no such measures were obtained, participants supposedly attributed their feelings to the behavior and changed their beliefs accordingly. Participants were either instructed to write a counter-attitudinal essay (low choice), or politely asked to write a counter-attitudinal essay (high choice). Further, all participants were given a placebo tablet. Some were informed that the pill would, "produce a reaction of tenseness," others that the pill would, "produce a reaction of relaxation," and others that the pill had no side effects (p. 705). Participants in the low choice conditions showed minimal attitude change – for low choice participants, writing the essay was not a counter-attitudinal behavior because they were able to make an external attribution for their dissonant behavior (e.g., "the experiment required that I write that essay"). Participants in the high choice conditions showed varying degrees of attitude change. Those in the "tenseness" condition showed minimal attitude change – they, too, were able to make an external attribution (to the placebo) for the physiological arousal induced by their dissonant behavior. Those in the "no side effect" condition showed moderate attitude change, consistent with other research on cognitive dissonance. And those in the "relaxation"

condition showed a great deal of attitude change – they "showed an increased need to deal with their arousal by changing their opinions," (p. 707).

<div align="center">**Models of the Attitude-Behavior Association**</div>

There is abundant research indicating that general attitudes are good predictors of broad patterns of behavior, with correlations ranging from $r = .63$ (Fishbein & Ajzen, 1974) to $r = .73$ (Bandura, Blanchard & Ritter, 1969). In contrast, the association between general attitudes and individual behaviors is weak, such that general attitudes are only infrequently, and inconsistently, able to predict specific behaviors (Ajzen, 2012; Ajzen & Fishbein, 2005). Models of the association between attitudes and behavior provide a framework for understanding when and how attitudes are predictive of behavior. Therefore, while attitudes are often of interest because of their relation to behavior, further understanding the strength of that association and the psychological pathways underlying it, are important (see Ajzen et al., this volume).

Theory of Reasoned Action and Theory of Planned Behavior

According to the theory of reasoned action (TRA; Ajzen & Fishbein, 2005; Fishbein & Ajzen, 1975), behavior can be predicted from an individual's *intention* to perform the behavior. Intentions are in turn predicted from attitudes toward the behavior and subjective norms. The attitude towards the behavior is the individual's evaluation that the behavior is desirable or undesirable. The subjective norm is the perceived normative pressure to perform the behavior. Both of these components are predicted from salient beliefs.

The attitude towards performing a behavior is determined by the subjective values or evaluations of the outcomes associated with the behavior and by the strength of these associations. Specifically, the evaluation of each outcome contributes to the attitude in direct proportion to the person's subjective probability that the behavior will lead to the outcome in

question. The basic structure of the model is shown in the equation below, where A_B is the attitude toward the behavior, b_i is the strength of the belief that the behavior will lead to outcome i, e_i is the evaluation of outcome i, and the sum is over all salient outcomes (see Fishbein & Ajzen, 1975):

$$A_B = \Sigma b_i e_i$$

The subjective norm depends on a set of normative beliefs. Normative beliefs comprise of expectations that important social referents, like the person's family, support the behavior. These normative beliefs can be combined with the motivation to comply with the referents to predict subjective norms regarding the behavior.

The TRA assumed that individuals have control over all of their behaviors, and thus, was not designed to explain behaviors performed outside an individual's volitional control. The theory of planned behavior (TPB; Ajzen, 1991) was consequently developed as an extension of the TRA. Similar to the TRA, the TPB is an expectancy value model that describes the relation between attitudes, subjective norms, behavioral intentions, and behaviors. However, it improves the TRA by including perceived behavioral as another factor that can facilitate or impair performance of a given behavior.

Perceived behavioral control reflects one's perceptions that one can engage in a behavior if one wants to (Ajzen, 1991). It is closely related to self-efficacy (Bandura, 1998) and has strong influences on behaviors that require persistence and effort. The strength of an individual's belief in their capability to perform a behavior also determines whether they form a behavioral intention to do so. Consequently, perceived behavioral control not only has a direct effect on behavior through its influence on persistence displayed during the execution of behaviors, but also indirectly via its effects on the formation of behavioral intentions. Like attitudes and

subjective norms, global perceptions of control are related to specific beliefs, including beliefs about resources and obstacles. For example, one may believe that one has a resource and that this resource in turn facilitates a target behavior. Both of those conditions should increase perceived behavioral control. Thus, beliefs contribute to perceived behavioral control, which thereby facilitates or inhibits behavioral performance.

Since its inception, the TPB has been used to predict a variety of behaviors (for reviews see Albarracín et al., 2001, 2004; Armitage & Conner, 2001; Godin & Kok, 1996; McEachan, Conner, Taylor & Lawton, 2011). For example, several studies have applied the TPB in predicting – and in some cases, promoting – health-related behaviors, including diet (Matta et al., volume 2; Omondi, Walingo, Mbagaya & Othuon, 2011), (un)healthy food intake (Fila & Smith, 2006; Guillaumie, Godin, & Vézina-Im, 2010), binge drinking (Ross & Jackson, 2013), and condom use (Albarracín et al., 2001, 2004; Glasman & Scott-Sheldon, volume 2). This model has also been applied to explain such disparate behaviors as safe driving (Conner et al., 2007), mobile learning readiness (Cheon, Lee, Crooks & Song, 2012), and environmentally friendly behaviors (Han, Hsu & Sheu, 2010; Milfont & Schultz, volume 2). This abundance of research illustrates the importance and applicability of this model in contemporary research and practice.

A large number of meta-analyses have been conducted on both the TRA and TPB to explain the relation between intentions and behaviors across different contexts (e.g., Albarracín et al., 2001; Webb & Sheeran, 2006). Meta-analytic reviews of this literature have found that the average correlation between intention and behavior is $r = .45$ (Albarracín et al., 2001) and $r = .57$ (Webb & Sheeran, 2006). This association has been shown to decrease when the intention is measured long before the behavior is performed (Albarracín et al., 2004; Webb & Sheeran,

2006) and when the behavior is habitual in nature (Webb & Sheeran, 2006). These models thus appear to be excellent at predicting the association between attitudes, intentions and behavior.

Considering Emotions and Habits

The TRA and TPB have since evolved to include additional constructs, as well as provide the foundation for other models. One such model is the model of goal-directed behavior (MGDB; Perugini & Bagozzi, 2001). This model posits that *desires* are the proximal antecedents of intentions, and that the antecedents described in the TPB act through desires. Additionally, the model describes how consequences of behavior can be entered into the model as *anticipated emotions*, which serve as determinants of desires, alongside attitudes, subjective norms, and perceived behavioral control. Finally, the model highlights the importance of *frequency* and *recency* of information regarding past behaviors in influencing behavioral enactments directly and indirectly via intentions.

The TRA and TPB provide reasons for what prompts individuals to engage in a behavior, but, according to Perugini and Bagozzi (2001), they do not include a motivational component needed to describe what induces the generation of a behavioral intention. Desires, in this case, provide this motivational component that trigger intentions, making them a conduit through which attitudes, subjective norms, and perceived behavioral control work through. When these antecedents provide a reason for performing the behavior, it produces a desire to act that motivates an individual to form the intention to do so. Desires thus helps explain how the existing predictors influence intentions.

By incorporating anticipated emotions as an antecedent, this model also takes into account the fact that individuals use the emotional consequences tied to performing a behavior as another criteria in their decision to enact, thereby making it a factor influencing their behavioral

intentions. Although this construct shares some overlap with attitudes, there are some dissimilarities. For example, attitudes toward behaviors are a function of learning, and once learned, are triggered automatically when exposed to the attitude object. Anticipated emotions, however, are more dynamic, and are a result of the appraisal of the consequences associated with performing a behavior. Therefore, they are more contingent on a particular instance and change depending on the context.

Perugini and Bagozzi (2001) tested their model and found that desires are strong predictors of intention formation, and thus important motivators in decision-making. The researchers also found that their model accounted for more variance in intentions, compared to the TPB. A recent study on international travel intentions lends further support to this conclusion. By comparing the TRA, TPB, and the MGDB, the researchers found that the MGDB was superior in its predictive validity, accounting for significantly more variance in travel intentions, compared to the either the TRA or TPB (variance accounted for by the TRA, TPB and MGDB: 53.4%, 57.3%, and 79.3% respectively; Lee, Song, Bendle, Kim & Han, 2012). Thus, the model of goal-directed behavior further broadens our understanding of the associations between attitudes, intentions and behavior.

Finally, the role of habit in behavior prediction has received considerable attention. Ouellette and Wood (1998) conducted a meta-analysis to find a robust effect of past behaviors on both intentions and future behaviors. This model takes this into account and posits that, for frequently enacted behaviors, past behaviors reflect habit strength that has a direct effect on future behaviors. Conversely, for behaviors that are not well learned, the frequency of past behaviors has an indirect influence via intentions, with more frequently enacted behaviors generating more favorable intentions.

Concluding Remark

We have engaged a rather lengthy discussion of issues that concern the psychology of attitudes, including classic and contemporary notions. Why? Because this handbook is a collection of the voluminous scientific knowledge that has been accrued about attitudes: What is an attitude? How are attitudes measured? How can attitudes be formed and changed? What are the cognitive, emotional, behavioral, and social influences on attitudes (and vice versa)? Yet, the chapters in this handbook go further and explore the importance of attitudes to domains, including health, marketing, and politics, demonstrating that, this field is vital and relevant to many applications, and thus, is likely to inspire many generations of social and personality psychologists in the decades to come.

References

Aarts, H., & Dijksterhuis, A. (1999). How often did i do it? Experienced ease of retrieval and

frequency estimates of past behavior. *Acta Psychologica*, *103*(1-2), 77–89. doi:

10.1016/S0001-6918(99)00035-9

Abelson, R. P. (1988). Conviction. *American Psychologist, 43*, 267-275.

Abelson, R. P., & Miller, J. C. (1967). Negative persuasion via personal insult. *Journal of

Experimental Social Psychology, 3*, 321-333. doi: 10.1016/0022-1031(67)90001-7

Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision

Processes, 50, 179-211. doi:10.1016/0749-5978(91)90020-T

Ajzen, I. (1999). Dual-mode processing in the pursuit of insight is no vice. *Psychological

Inquiry*, *10*(2), 110–112. doi:10.1207/S15327965PL100202

Ajzen, I. (2001). Nature and operation of attitudes. *Annual Review of Psychology, 52,* 27-58. doi:

10.1146/annurev.psych.52.1.27

Ajzen, I. (2012). Attitudes and persuasion. In K. Deaux, & M. Snyder (Eds.), *The Oxford

Handbook of Personality and Social Psychology* (pp. 367-393). New York, NY: Oxford

University Press.

Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior.

Englewood Cliffs, NJ: Prentice-Hall.

Ajzen, I., & Fishbein, M. (2005). The influence of attitudes on behavior. In D. Albarracín, B. T.

Johnson, & M. P. Zanna (Eds.), *The Handbook of Attitudes* (pp. 173-221). Mahwah, NJ:

Lawrence Erlbaum.

Albarracín, D. (2002). Cognition in persuasion: an analysis of information processing in

response to persuasive communications. In M. P. Zanna (Ed.), *Advances in Experimental*

Social Psychology (Vol. 34, pp. 61–130). San Diego, CA: Academic Press.

doi:10.1016/S0065-2601(02)80004-1

Albarracín, D., Cohen, J. B., & Kumkale, G. T. (2003). When persuasive communications

collide with behavior: Effects of post-message actions on beliefs and intentions.

Personality and Social Psychology Bulletin, 29, 834-845.

Albarracín, D., & Handley, I. M. (2011). The time for doing is not the time for change: Effects of

general action and inaction goals on attitude retrieval and attitude change. *Journal of

Personality and Social Psychology*, *100*(6), 983-998. doi:10.1037/a0023245

Albarracín, D., Handley, I., Noguchi, K., McCulloch, K.C., Li, H., Leeper, J., ... Hart, W. P.

(2008). Increasing and decreasing motor and cognitive output: A model of general action

and inaction goals. *Journal of Personality and Social Psychology*, *95*, 510-523.

doi:10.1037/a0012833

Albarracín, D., Hepler, J., & Tannenbaum, M. (2011). General action and inaction goals: Their

behavioral, cognitive, and affective origins and influences. *Current Directions in

Psychological Science, 20,* 119-123. doi:10.1177/0963721411402666

Albarracín, D., Johnson, B. T., Fishbein, M., & Muellerleile, P. A. (2001). Theories of reasoned

action and planned behavior as models of condom use: A meta-analysis. *Psychological

Bulletin, 127*(1), 142-161. doi:10.1037/0033-2909.127.1.142

Albarracín, D., & Kumkale, G. T. (2003). Affect as information in persuasion: A model of affect

identification and discounting. *Journal of Personality and Social Psychology*, *84*(3), 453–

469. doi:10.1037/0022-3514.84.3.453

Albarracín, D., & McNatt, P. S. (2005). Change maintenance and decay of the influences of past

behavior: Anchoring attitudes on beliefs following inconsistent actions. *Personality and*

Social Psychology Bulletin, 31(6), 719-733. doi: 10.1177/0146167204272180

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.

doi:10.1177/0146167204271180

Albarracín, D., Mitchell, A. L., Durantini, M. R., Earl, A., & Levitt, J. (2007). Believing that one

is strong as a defensive weakness: Using defensive confidence to attract reluctant audiences.

Advances in Consumer Research, 34, 266-267.

Albarrací, D., & Vargas, P. (2010). Attitudes and persuasion: From biology to social responses to

persuasive intent. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *The handbook of*

social psychology (pp. 394-427). Hoboken, NJ: John Wiley & Sons Inc.

Albarracín, D., Wang, W., & Leeper, J. (2009). Immediate increase in food intake following

exercise messages. *Obesity*, *17,* 1451-1452. doi:10.1038/oby.2009.16

Albarracín, D., Zanna, M. P., Johnson, B. T., & Kumkale, G. T. (2005). Attitudes: Introduction

and scope. In D. Albarracín, B. T. Johnson, & M. P Zanna (Eds.), *The handbook of attitudes*

(pp. 3-19). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Altemeyer, B. (1981). *Right-wing authoritarianism*. Winnipeg, Canada: University of Manitoba

Press.

Anand, P., & Sternthal, B. (1991). Perceptual fluency and affect without recognition. *Memory &*

Cognition, *19*, 293-300. doi:10.3758/BF03211153

Anderson, C. A. (1982). Inoculation and counterexplanation: debiasing techniques in the

perseverance of social theories. *Social Cognition*, *1*, 126–139.

Anderson, N. H. (1971). Integration theory and attitude change. *Psychological Review*, *78*, 171-206.

Anderson, N. H. (1981). Integration theory applied to cognitive responses and attitudes. In R. Petty, T. Ostrom, & T. Brock (Eds.), *Cognitive responses in persuasion* (pp. 361-397). Hillsdale, NJ: Erlbaum.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology, 40*(4), 471-499. doi:10.1348/014466601164939

Ayers, M. S., & Reder, L. M. (1998). A theoretical review of the misinformation effect: Predictions from an activation-based memory model. *Psychonomic Bulletin & Review*, *5*(1), 1–21. doi:10.3758/BF03209454

Baeyens, F., Crombez, G., Van den Bergh, O., & Eelen, P. (1998). Once in contact, always in contact: Evaluative conditioning is resistant to extinction. *Advances in Behaviour Research and Therapy*, *10*, 179-199. doi:10.1016/0146-6402(88)90014-8

Baeyens, F., Díaz, E., & Ruíz, G. (2005). Resistance to extinction of human evaluative conditioning using a between-subjects design. *Cognition & Emotion*, *19*(2), 245-268.

Bandura, A. (1998). Personal and collective efficacy in human adaptation and change. *Advances in Psychological Science, 1*, 51-71.

Bandura, A., Blanchard, E. B., & Ritter, B. (1969). Relative efficacy of desensitization and modeling approaches for inducing behavioral, affective, and attitudinal changes. *Journal of Personality and Social Psychology, 13*, 173-199.

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*, 637-653. doi: 10.1037/0022-3514.71.4.637

Bassili, J. N. (2008). Attitude strength. In W. D. Crano & R. Prislin (Eds.), *Attitudes and attitude change* (pp. 237-260). New York, NY: Psychology Press.

Bassili, J. N., & Brown, R. D. (2005). Implicit and explicit attitudes: Research, challenges, and theory. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The Handbook of Attitudes* (pp. 543-574). Mahwah, NJ: Lawrence Erlbaum.

Baumeister, R. F., Bratslavsky, E., Finkenauer, C., & Vohs, K. D. (2001). Bad is stronger than good. *Review of General Psychology*, *5*(4), 323–370. doi:10.1037//1089-2680.5.4.323

Beatty, S. E. & Hawkins, D. I. (1989). Subliminal stimulation: Some new data and interpretation. *Journal of Advertising, 18*, 4-8.

Bechara, A., Damasio, H., Damasio, A. R., & Lee, G. P. (1999). Different contributions of the human amygdala and ventromedial prefrontal cortex to decision-making. *Journal of Neuroscience, 19*, 5473-5481.

Bem, D. J. (1965). An experimental analysis of self-persuasion. *Journal of Experimental Social Psychology*, *1*(3), 199–218. doi:10.1016/0022-1031(65)90026-0

Berlyne, D. E. (1970). Novelty, complexity, and hedonic value. *Perception & Psychophysics*, *8*, 279-286.

Birnbaum, M. H., & Stegner, S. E. (1979). Source credibility in social judgment: Bias, expertise, and the judge's point of view. *Journal of Personality and Social Psychology, 37*, 48-74.

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

Bornstein, R. F., & D'Agostino, P. R. (1994). The attribution and discounting of perceptual

   fluency: Preliminary tests of a perceptual fluency/attributional model of the mere

   exposure effect. *Social Cognition*, *12*, 103-128. doi:10.1521/soco.1994.12.2.103

Bradley, M. M., Codispoti, M., Cuthbert, B. N., & Lang, P. J. (2001). Emotion and motivation I:

   Defensive and appetitive reactions in picture processing. *Emotion*, *1*, 276-298.

Bradley, M. M., & Lang, P. J. (2007). Motivation and emotion. In J. T. Cacioppo, L. G.

   Tassinary, & G. Berntson (Eds.) *Handbook of psychophysiology* (2nd Ed., pp. 581-607).

   New York, NY: Cambridge University Press.

Breckler, S. J. (1984). Empirical validation of affect, behavior, and cognition as distinct

   components of attitude. *Journal of Personality and Social Psychology, 47*(6), 1191-1205.

   doi:10.1037/0022-3514.47.6.1191

Brooks, J. O., & Watkins, M. J. (1989). Recognition memory and the mere exposure effect.

   Journal of Experimental Psychology: Learning, Memory, and Cognition, *15*, 968-976.

Budd, J. M., Sievert, M., & Schultz, T. R. (1998). Phenomena of retraction: Reasons for

   retraction and citations to the publications. *JAMA*, *280*(3), 296–7. Retrieved from

   http://www.ncbi.nlm.nih.gov/pubmed/9676689

Cacioppo, J. T., Berntson, G.G., & Crites, S. L., Jr. (1996). Social neuroscience: Principles of

   psychophysiological arousal and response. In E.T. Higgins & A.W. Kruglanski (Eds.),

   Social psychology: Handbook of basic principles (pp. 72-101). New York, NY:

   Academic Press.

Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social

   Psychology, 42*(1), 116–131. doi:10.1037//0022-3514.42.1.116

Cacioppo, J. T., & Petty, R. E. (1984). The elaboration likelihood model of persuasion. *Advances*

in Consumer Research, *11*(1), 673–675.

Calvillo, D. P. (2014). Individual differences in susceptibility to misinformation effects and

hindsight bias. *The Journal of General Psychology*, *141*(4), 393–407.

doi:10.1080/00221309.2014.954917

Campbell, M. C., Mohr, G. S., & Verlegh, P. W. J. (2013). Can disclosures lead consumers to

resist covert persuasion? The important roles of disclosure timing and type of response.

Journal of Consumer Psychology, *23*(4), 483–495. doi:10.1016/j.jcps.2012.10.012

Cappella, J. N., & Jamieson, K. H. (1994). Broadcast adwatch effects: A field experiment.

Communication Research, *21*(3), 342–365. doi:10.1177/009365094021003006

Center for Disease Control and Prevention. (2015). Measles cases and outbreaks. Retrieved from

http://www.cdc.gov/measles/cases-outbreaks.html

Cesario, J., Corker, K. S., & Jelinek, S. (2013). A self-regulatory framework for message

framing. *Journal of Experimental Social Psychology*, *49*(2), 238–249.

doi:10.1016/j.jesp.2012.10.014

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.

doi:10.1037/0022-3514.86.3.388

Chaiken, S. (1980). Heuristic versus systematic information processing and the use of source

versus message cues in persuasion. *Journal of Personality and Social Psychology*, *39*(5),

752–766. doi:10.1037/0022-3514.39.5.752

Chaiken, S. (1987). The heuristic model of persuasion. In M. P. Zanna, J. M. Olson, & C. P.

Herman (Eds.), *Social influence: The Ontario symposium* (Vol. 3, pp. 143-177).

Hillsdale, NJ: Lawrence Erlbaum.

Chaiken, S., Duckworth, K. L., & Darke, P. (1999). When parsimony fails. *Psychological Inquiry*, *10*(2), 118–123. doi:10.1207/S15327965PL100204

Chaiken, S., Liberman, A., & Eagly, A. H. (1989). Heuristic and systematic information processing within and beyond the persuasion context. In J. S. Uleman & J. A. Bargh (Eds.), *Unintended thought* (pp. 212–252). New York, NY: Guilford.

Chambers, K. L., & Zaragoza, M. S. (2001). Intended and unintended effects of explicit warnings on eyewitness suggestibility: Evidence from source identification tests. *Memory & Cognition*, *29*(8), 1120–1129. Retrieved from

http://www.ncbi.nlm.nih.gov/pubmed/11913748

Cheesman, J., & Merikie, P. M. (1986). Distinguishing conscious from unconscious perception. *Canadian Journal of Psychophysics, 40*, 343-367.

Chen, S., & Chaiken, S. (1999). The heuristic-systematic model in its broader context. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 73–96). New York, NY: Guilford.

Chen, R., & DeStefano, F. (1998). Vaccine adverse events: Causal or coincidental? *Lancet*, (9103), 611. doi:10.1016/S0140-6736(05)78423-3

Cheon, J., Lee, S., Crooks, S. M., & Song, J. (2012). An investigation of mobile learning readiness in higher education based on the theory of planned behavior. *Computers & Education, 59*, 1054-1064. doi:10.1016/j.compedu.2012.04.015

Christensen, L. (1977). The negative subject: Myth, reality, or a prior experimental experiences effect? *Journal of Personality and Social Psychology, 35*, 392-400.

Cialdini, R. B., Cacioppo, J. T., Bassett, R., & Miller, J. A. (1978). Low-ball procedure for producing compliance: Commitment then cost. *Journal of Personality and Social*

Psychology, *36*(5), 463–476. doi:10.1037//0022-3514.36.5.463

Cialdini, R. B., Vincent, J. E., Lewis, S. K., Catalan, J., Wheeler, D., & Darby, B. L. (1975).
Reciprocal concessions procedure for inducing compliance: The door-in-the-face technique.
Journal of Personality and Social Psychology, *31*(2), 206–215. doi:10.1037/h0076284

Clark, J. K., Wegener, D. T., Habashi, M., & Evans, A. T. (2012). Source expertise and
persuasion: The effects of perceived opposition or support on message scrutiny. *Personality
& Social Psychology Bulletin, 38*(1), 90-100. doi: 10.1177/0146167211420733

Cobb, M. D., Nyhan, B., & Reifler, J. (2013). Beliefs don't always persevere: How political
figures are punished when positive information about them is discredited. *Political
Psychology*, *34*(3), 307–326. doi:10.1111/j.1467-9221.2012.00935.x

Cohen, A. R., Stotland, E., & Wolfe, D. M. (1955). An experimental investigation of need for
cognition. *The Journal of Abnormal and Social Psychology*, *51*(2), 291–294.
doi:10.1037/h0042761

Conner, M., Lawton, R., Parker, D., Chorlton, K., Manstead, A. S. R., & Stradling, S. (2007).
Application of the theory of planned behaviour to the prediction of objectively assessed
breaking of posted speed limits. *British Journal of Psychology, 98*, 429-453.
doi:10.1348/000712606X133597

Cook, J., Nuccitelli, D., Green, S. A., Richardson, M., Winkler, B., Painting, R., … Skuce, A.
(2013). Quantifying the consensus on anthropogenic global warming in the scientific
literature. *Environmental Research Letters*, *8*(2), 1-7. doi:10.1088/1748-9326/8/2/024024

Cooper, J., & Cooper, G. (2002). Subliminal motivation: A story revisited. *Journal of Applied
Social Psychology*, *32*(11), 2213–2227. doi:10.1111/j.1559-1816.2002.tb01860.x

Corneille, O., Yzerbyt, V. Y., Pleyers, G., & Mussweiler, T. (2009). Beyond awareness and

resources: Evaluative conditioning may be sensitive to processing goals. *Journal of

Experimental Social Psychology*, *45*(1), 279-282. doi:10.1016/j.jesp.2008.08.020

Critchley, H. D. (2005). Neural mechanisms of autonomic, affective, and cognitive integration.

The Journal of Comparative Neurology, *493*, 154-166. doi: 10.1002/cne.20749

Croskerry, P., Singhal, G., & Mamede, S. (2013). Cognitive debiasing 1: Origins of bias and

theory of debiasing. *BMJ Quality & Safety*, *22*(Suppl 2), 58–64. doi:10.1136/bmjqs-2012-

001712

Crowe, E., & Higgins, E. T. (1997). Regulatory focus and strategic inclinations: Promotion and

prevention in decision-making. *Organizational Behavior and Human Decision Processes*,

69(2), 117–132. doi:10.1006/obhd.1996.2675

Croyle, R. T., & Cooper, J. (1983). Dissonance arousal: physiological evidence. *Journal of

Personality and Social Psychology, 45*(4), 782.

Cunningham, W. A., Johnson, M. K., Gatenby, J. C., Gore, J. C., & Banaji, M. R. (2003). Neural

components of social evaluation. *Journal of Personality and Social Psychology*, *85*, 639-

649. doi: 10.1037/0022-3514.85.4.639

Cunningham, W. A., Packer, D. J., Kesek, A., & van Bavel, J. J. (2009). Implicit measurement of

attitudes: A physiological approach. In R. E. Petty, R. H. Fazio & P. Brinol (Eds.),

Attitudes: Insights from the new implicit measures (pp. 485-512). New York, NY:

Psychology Press.

Cunningham, W. A., Raye, C. L., & Johnson, M. K. (2004). Implicit and explicit evaluation:

fMRI correlates of valence, emotional intensity, and control in the processing of attitudes.

Journal of Cognitive Neuroscience, *16*, 1717-1729. doi: 10.1162/0898929042947919

Cunningham, W. A., & Zelazo, P. D. (2007). Attitudes and evaluations: a social cognitive

　　neuroscience perspective. *Trends in Cognitive Sciences*, *11*, 97-104.

Curşeu, P. L. (2011). Need for cognition and active information search in small student groups.

　　Learning and Individual Differences, *21*(4), 415–418. doi:10.1016/j.lindif.2011.02.005

Cuthbert, B. N., Schupp, H. T., Bradley, M. M., Birbaumer, N., & Lang, P. J. (2000). Brain

　　potentials in affective picture processing: Covariation with autonomic arousal and

　　affective report. *Biological Psychology*, *52*, 95-111.

Davey, G. C. L. (1994). Is evaluative conditioning a qualitatively distinct form of classical

　　conditioning? *Behaviour Research and Therapy*, *32*, 291-299.

Davis, B. P., & Knowles, E. S. (1999). A disrupt-then-reframe technique of social influence.

　　Journal of Personality and Social Psychology, *76*(2), 192–199. doi:10.1037/0022-

　　3514.76.2.192

De Dreu, C. K. W., & van Knippenberg, D. (2005). The possessive self as a barrier to conflict

　　resolution: Effects of mere ownership, process accountability, and self-concept clarity on

　　competitive cognitions and behavior. *Journal of Personality and Social Psychology, 89*,

　　345-357. doi: 10.1037/0022-3514.89.3.345

De Fleur, M. L. & Petranoff, R. M. (1959). A televised test of subliminal persuasion. *Public

　　Opinion Quarterly, 23*, 168-180.

De Houwer, J., Thomas, S., & Baeyens, F. (2001). Association learning of likes and dislikes: A

　　review of 25 years of research on human evaluative conditioning. *Psychological Bulletin*,

　　127, 853-869. doi:10.1037/0033-2909.127.6.853

de Graaf, A., Hoeken, H., Sanders, J., & Beentjes, J. W. J. (2012). Identification as a mechanism

　　of narrative persuasion. *Communication Research*, *39*(6), 802–823.

doi:10.1177/0093650211408594

Dijksterhuis, A., & Aarts, H. (2010). Goals, attention, and (un)consciousness. *Annual Review of Psychology*, *61*, 467-490. doi:10.1146/annurev.psych.093008.100445

Ditto, P. H., & Lopez, D. F. (1992). Motivated skepticism: Use of differential decision criteria for preferred and nonpreferred conclusions. *Journal of Personality and Social Psychology*, *63*(4), 568–584. doi:10.1037/0022-3514.63.4.568

Durantini, M. R., Albarracín, D., Mitchell, A. L., Earl, A. N., & Gillette, J. C. (2006). Conceptualizing the influence of social agents of behavior change: A meta-analysis of the effectiveness of hiv-prevention interventionists for different groups. *Psychological Bulletin*, *132*(2), 212–248. doi:10.1037/0033-2909.132.2.212

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

Eagly, A. H., & Chaiken, S. (2007). The advantages of an inclusive definition of attitude. *Social Cognition, 25*(5), 582-602. doi: 10.1521/soco.2007.25.5.582

Ecker, U. K. H., Lewandowsky, S., Fenton, O., & Martin, K. (2014). Do people keep believing because they want to? Preexisting attitudes and the continued influence of misinformation. *Memory & Cognition*, *42*(2), 292–304. Retrieved from http://search.proquest.com/docview/1503089088?accountid=14553

Ecker, U. K. H., Lewandowsky, S., & Tang, D. T. W. (2010). Explicit warnings reduce but do not eliminate the continued influence of misinformation. *Memory & Cognition*, *38*(8), 1087–1100. Retrieved from http://search.proquest.com/docview/846926668?accountid=14553

Edwards, K. (1990). The interplay of affect and cognition in attitude formation and change.

Journal of Personality and Social Psychology, *59*(2), 202–216. doi:10.1037/0022-3514.59.2.202

Eiser, J. R. (1973). Judgement of attitude statements as a function of judges' attitudes and the judgemental dimension. *British Journal of Social and Clinical Psychology, 12*(3), 231-240. doi:10.1111/j.2044-8260.1973.tb00063.x

Eiser, J. R., & White, C. J. M. (1974). The persuasiveness of labels: Attitude change produced through definition of the attitude continuum. *European Journal of Social Psychology, 4*(1), 89-92. doi:10.1002/ejsp.2420040107

Elkin, R. A., & Leippe, M. R. (1986). Physiological arousal, dissonance, and attitude change: Evidence for a dissonance—arousal link and a "don't remind me" effect. *Journal of Personality and Social Psychology, 51*, 55-65.

Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology, 72*(1), 218–232. doi:10.1037/0022-3514.72.1.218

Epley, N., & Gilovich, T. (2006). The anchoring-and-adjustment heuristic: Why the adjustments are insufficient. *Psychological Science*, *17*(4), 311–318. doi:10.1111/j.1467-9280.2006.01704.x

Fabrigar, L. R., MacDonald, T. K., Wegener, D. T. (2005). The structure of attitudes. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The Handbook of Attitudes* (pp. 543-574). Mahwah, NJ: Lawrence Erlbaum.

Fabrigar, L. R., & Petty, R. E. (1999). The role of the affective and cognitive bases of attitudes in susceptibility to affectively and cognitively based persuasion. *Personality and Social Psychology Bulletin*, *25*(3), 363–381. doi:10.1177/0146167299025003008

Fang, X., Singh, S., & Ahluwalia, R. (2007). An examination of different explanations for the

    mere exposure effect. *Journal of Consumer Research*, *34*, 97-103. doi:10.1086/513050

Fazio, R. H. (1995). Attitudes as object-evaluation associations: Determinants, consequences,

    and correlates of attitude accessibility. In R. E. Petty, & J. A. Krosnick (Eds.), *Attitude*

    strength: Antecedents and consequences (pp. 247-282). Mahwah, NJ: Lawrence Erlbaum.

Fazio, R. H., Powell, M. C. & Herr, P. M. (1983). Toward a process model of the attitude-

    behavior relation: Accessing one's attitude upon mere observation of the attitude

    object. *Journal of Personality and Social Psychology, 44*(4), 723-735. doi: 10.1037/0022-

    3514.44.4.723

Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., & Kardes, F. R. (1986). On the automatic

    activation of attitudes. *Journal of Personality and Social Psychology, 50*(2), 229-238.

    doi: 10.1037/0022-3514.50.2.229

Fennis, B. M., Das, E., & Pruyn, A. T. H. (2006). Interpersonal communication and compliance -

    The disrupt-then-reframe technique in dyadic influence settings. *Communication Research*,

    33(2), 136–151. doi:10.1177/00936502052853

Fennis, B. M., & Stel, M. (2011). The pantomime of persuasion: Fit between nonverbal

    communication and influence strategies. *Journal of Experimental Social Psychology*, *47*(4),

    806–810. doi:10.1016/j.jesp.2011.02.015

Feygina, I., Jost, J. T., & Goldsmith, R. E. (2010). System justification, the denial of global

    warming, and the possibility of "system-sanctioned change". *Personality and Social*

    Psychology Bulletin, 36(3), 326-338. doi:10.1177/0146167209351435

Fila, S. A., & Smith, C. (2006). Applying the theory of planned behavior to healthy eating behaviors in urban Native American youth. *International Journal of Behavioral Nutrition and Physical Activity, 3*(11), 11. doi:10.1186/1479-5868-3-11

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

Festinger, L. (1964). *Conflict, decision and dissonance*. Stanford, CA: Stanford University Press.

Festinger, L. & Carlsmith, J. M. (1959). Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology, 58*, 203-210.

Fishbein, M., & Ajzen, I. (1974). Attitudes towards objects as predictors of single and multiple behavioral criteria. *Psychological Review, 81*(1), 59-74. doi:10.1037/h0035872

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research.* Reading, MA: Addison-Wesley.

Fisher, J. D., Fisher, W. A., Bryan, A. D., & Misovich, S. J. (2002). Information-motivation-behavioral skills model-based HIV risk behavior change intervention for inner-city high school youth. *Health Psychology, 21*, 177-186.

Fitzsimons, G. M., & Bargh, J. A. (2003). Thinking of you: Nonconscious pursuit of interpersonal goals associated with relationship partners. *Journal of Personality and Social Psychology, 84*, 148-163. doi:10.1037/0022-3514.84.1.148

Fombonne, E., & Cook, E. H. (2003). Mmr and autistic enterocolitis: consistent epidemiological failure to find an association. *Molecular Psychiatry*, *8*(2), 133–134. doi:10.1038/sj.mp.4001266

Freedman, J. L., & Fraser, S. C. (1966). Compliance without pressure: The foot-in-the-door technique. *Journal of Personality and Social Psychology*, *4*(2), 195–202. doi:10.1037/h0023552

French, J. R. P., & Raven, B. (1959). The bases of social power. In *Studies in social power* (pp. 150–167). Ann Arbor, MI: Institute for Social Research.

Fulcher, E. P., & Hammerl, M. (2005). Reactance in affective-evaluative learning: Outside of conscious control? *Cognition & Emotion*, *19*(2), 197-216. doi:10.1080/02699930441000283

Gawronski, B. (2007). Editorial: Attitudes can be measured! But what is an attitude? *Social Cognition, 25*(5), 573-581. doi:10.1521/soco.2007.25.5.573

Gawronski, B., & Walther, E. (2008). The tar effect: When the ones who dislike become the ones who are disliked. *Personality and Social Psychology Bulletin*, *34*(9), 1276–1289. doi:10.1177/0146167208318952

Gendolla, G. H., & Silvestrini, N. (2010). The implicit "go" masked action cues directly mobilize mental effort. *Psychological Science, 21,* 1389-1393. doi:10.1177/0956797610384149

Gibson, B., & Zielaskowski, K. (2013). Subliminal priming of winning images prompts increased betting in slot machine play. *Journal of Applied Social Psychology, 43*, 106- 115. doi:10.1111/j.1559-1816.2012.00985.x

Glasman, L. R., & Albarracín, D. (2006). Forming attitudes that predict future behavior: A meta-analysis of the attitude-behavior relation. *Psychological Bulletin, 132*, 778-822. doi:10.1037/0033-2909.132.5.778

Gleick, P. H., Adams, R. M., Amasino, R. M., Anders, E., Anderson, D. J., & Anselin, L. E. (2010). Climate change and the integrity of science. *Science, 328*, 689–690. doi:10.1126/science.328.5979.689

Godin, G., & Kok, G. (1996). The theory of planned behavior: A review of its applications to

health-related behaviors. *American Journal of Health Promotion, 11*, 87-98.

Greitemeyer, T. (2014). Article retracted, but the message lives on. *Psychonomic Bulletin & Review*, *21*(2), 557–561. doi:10.3758/s13423-013-0500-6

Griffith, D. A. & Chen, Q. (2004). The influence of virtual direct experience VDE on online ad message effectiveness. *Journal of Advertising, 33*(1), 55-69. doi: 10.1080/00913367.2004.10639153

Griffiths, T. L., Tenenbaum, J. B., & Kemp, C. (2012). Bayesian inference. In K. J. Holyoak & R. G. Morrison (Eds.), *The oxford handbook of thinking and reasoning* (pp. 22–35). Oxford, United Kingdom.: Oxford University Press. Retrieved from http://www.amazon.com/Handbook-Thinking-Reasoning-Library-Psychology/dp/0199734682

Grush, J. E. (1976). Attitude formation and mere exposure phenomena: A nonartifactual explanation of empirical findings. *Journal of Personality and Social Psychology*, *33*, 281-290.

Guillaumie, L., Godin, G., & Vézina-Im, L.-A. (2010). Psychosocial determinants of fruit and vegetable intake in adult population: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity, 7*(12), 12. doi:10.1186/1479-5868-7-12

Ha, Y. W., & Hoch, S. J. (1989). Ambiguity, processing strategy, and advertising-evidence interactions. *Journal of Consumer Research, 16*(3), 354-360. doi: 10.1086/209221

Haddock, G., Zanna, M., & Esses, V. M. (1994). The (limited) role of trait-laden stereotypes in predicting attitudes toward Native peoples. *British Journal of Social Psychology, 33*, 83-106. doi:10.1111/j.2044-8309.1994.tb01012.x

Hamann, S. B., Ely, T. D., Hoffman, J. M., & Kilts, C. D. (2002). Ecstasy and agony: activation in the human amygdala in positive and negative emotion. *Psychological Science*, *13*, 135-141.

Hamm, A. O., & Vaitl, D. (1996). Affective learning: Awareness and aversion. *Psychophysiology*, *33*, 698-710. doi:10.1111/j.1469-8986.1996.tb02366.x

Han, H., Hsu, L-T., & Sheu, C. (2010). Application of the theory of planned behavior to green hotel choice: Testing the effect of environmental friendly activities. *Tourism Management, 31*, 325-334. doi:10.1016/j.tourman.2009.03.013

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

Harmon-Jones, E., Brehm, J. W., Greenberg, J., Simon, L., & Nelson, D. E. (1996). Evidence that the production of aversive consequences is not necessary to create cognitive dissonance. *Journal of Personality and Social Psychology, 70*, 5-16.

Hart, W., & Albarracín, D. (2009). The effects of chronic achievement motivation and achievement primes on the activation of achievement and fun goals. *Journal of Personality and Social Psychology, 97*, 1129-1141. doi: 10.1037/a0017146

Hart, W., Albarracín, D., Eagly, A. H., Brechan, I., Lindberg, M. J., & Merrill, L. (2009). Feeling validated versus being correct: A meta-analysis of selective exposure to information. *Psychological Bulletin*, *135*(4), 555–588. doi:10.1037/a0015701

Harvey, O. J., Hunt, D., & Schroder, H. (1961). *Conceptual systems and personality organization*. New York, NY: Wiley.

Hausenblas, H. A., Carron, A. V., & Mack, D. E. (1997). Application of the theories of reasoned

action and planned behavior to exercise behavior: A meta-analysis. *Journal of Sport and Exercise Psychology, 19*, 36-51.

Heider, F. (1946). Attitudes and cognitive organization. *Journal of Psychology, 21*, 107–112.

Higgins, E. T. (1997). Beyond pleasure and pain. *American Psychologist*, *52*(12), 1280–1300. doi:10.1037/0003-066X.52.12.1280

Hepler, J., & Albarracín, D. (2013). Attitudes without Objects: Evidence for a Dispositional Attitude, its Measurement, and its Consequences. *Journal of Personality and Social Psychology*.

Hoch, S. J., & Ha, Y. W. (1986). Consumer learning: Advertising and the ambiguity of product experience. *Journal of Consumer Research, 13*(2), 221-233. doi: 10.1086/209062

Hofmann, W., De Houwer, J., Perugini, M., Baeyens, F., & Crombez, G. (2010). Evaluative conditioning in humans: A meta-analysis. *Psychological bulletin*, *136*(3), 390. doi:10.1037/a0018916

Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., Schmitt, M. (2005). A meta-analysis on the correlation between the implicit association test and explicit self-report measures. *Personality and Social Psychology Bulletin, 31*, 1369-1385. doi:10.1177/0146167205275613

Holbrook, A. L., Berent, M. K., Krosnick, J. A., Visser, P. S., & Boninger, D. S. (2005). Attitude importance and the accumulation of attitude-relevant knowledge in memory. *Journal of Personality and Social Psychology, 88*, 749-769. doi:10.1037/0022-3514.88.5.749

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*, 594-601. doi:10.1016/S0022-1031(03)00038-6

Homer, P. M., & Kahle, L. R. (1990). Source expertise, time of source identification, and

involvement in persuasion: An elaborative processing perspective. *Journal of Advertising,*
19(1), 30-39.

Honda, H., Shimizu, Y., & Rutter, M. (2005). No effect of mmr withdrawal on the incidence of

autism: A total population study. *Journal of Child Psychology and Psychiatry*, *46*(6), 572–
579. doi:10.1111/j.1469-7610.2005.01425.x

Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion;*

psychological studies of opinion change. New Haven, CT, US: Yale University Press.

Hovland, C. I., Lumsdaine, A. A., & Sheffield, F. D. (1949). *Experiments on mass*

communication. Princeton, NJ: Princeton University Press. doi:10.1037/14519-000

Hovland, C. I., & Weiss, W. (1951). The influence of source credibility on communication

effectiveness. *Public Opinion Quarterly*, *15*(4), 635. doi:10.1086/266350

Igartua, J.-J., & Barrios, I. (2012). Changing real-world beliefs with controversial movies:

processes and mechanisms of narrative persuasion. *Journal of Communication*, *62*(3), 514–
531. doi:10.1111/j.1460-2466.2012.01640.x

Irwin, W., Davidson, R. J., Lowe, M. J., Mock, B. J., Sorenson, J. A., & Turski, P. A. (1996).

Human amygdala activation detected with echo-planar functional magnetic resonance
imaging. *NeuroReport*, *7*, 1765-1769.

Jacoby, L. L., Kelley, C., Brown, J., & Jasechko, J. (1989). Becoming famous overnight: Limits

on the ability to avoid unconscious influences of the past. *Journal of Personality and*
Social Psychology, *56*, 326-338.

Jarvis, W. B. G., & Petty, R. E. (1996). The need to evaluate. *Journal of Personality and Social*

Psychology, *70*(1), 172–194. doi:10.1037/0022-3514.70.1.172

Jern, A., Chang, K.-M. K., & Kemp, C. (2009). Bayesian belief polarization. In Y. Bengio, D. Schuurmans, J. Lafferty, C. K. I. Williams, & A. Culotta (Eds.), *Advances in neural information processing systems* (pp. 853–861). La Jolla, CA: Neural Information Processing Foundation.

Johnson, B. T., & Eagly, A. H. (1989). Effects of involvement on persuasion: A meta-analysis. *Psychological Bulletin, 106*(2), 290. doi:10.1037/0033-2909.106.2.290

Johnson, B. T., & Eagly, A. H. (1990). Involvement and persuasion: Types, traditions, and the evidence. *Psychological Bulletin, 107*(3), 375-384. doi:10.1037/0033-2909.107.3.375

Johnson, B. T., Lin, H. Y., Symons, C. S., Campbell, L. A., & Ekstein, G. (1995). Initial beliefs and attitudinal latitudes as factors in persuasion. *Personality and Social Psychology Bulletin, 21*(5), 502-511.

Johnson, B. T., Maio, G. R., & Smith-McLallen, A. (2005). Communication and attitude change: Causes, processes, and effects. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 617-669). Mahwah, NJ: Lawrence Erlbaum.

Johnson, H. M., & Seifert, C. M. (1994). Sources of the continued influence effect: When misinformation in memory affects later inferences. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *20*(6), 1420–1436. doi:10.1037/0278-7393.20.6.1420

Johnson, I. R., & Fujita, K. (2012). Change we can believe in using perceptions of changeability to promote system-change motives over system-justification motives in information search. *Psychological Science*, *23*(2), 133-140. doi:10.1177/0956797611423670

Johnson-Laird, P. N. (1994). Mental models and probabilistic thinking. *Cognition, 50*(1), 189-209.

Johnson-Laird, P. N., & Byrne, R. M. J. (1991). *Deduction*. Hillsdale, NJ: Lawrence Erlbaum.

Jou, J., & Foreman, J. (2007). Transfer of learning in avoiding false memory: The roles of

warning, immediate feedback, and incentive. *Quarterly Journal of Experimental*

Psychology, *60*(6), 877–96. doi:10.1080/17470210600831184

Judd, C. M., & Brauer, M. (1995). Repetitive and evaluative extremity. In R. E. Petty & J. A.

Krosnick (Eds.) *Attitude Strength: Antecedents and consequences* (pp. 43-71). Mahwah, NJ:

Lawrence Erlbaum.

Kahneman, D. (2003). A perspective on judgment and choice: Mapping bounded rationality. *The*

American Psychologist, *58*(9), 697–720. doi:10.1037/0003-066X.58.9.697

Kardes, F. R., Fennis, B. M., Hirt, E. R., Tormala, Z. L., & Bullington, B. (2007). The role of the

need for cognitive closure in the effectiveness of the disrupt-then-reframe influence

technique. *Journal of Consumer Research*, *34*(3), 377–385. doi:10.1086/518541

Katz, D. (1960). The functional approach to the study of attitudes. *Public Opinion Quarterly, 24*,

163-204.

Kaufman, G. F., & Libby, L. K. (2012). Changing beliefs and behavior through experience-

taking. *Journal of Personality and Social Psychology*, *103*(1), 1–19. doi:10.1037/a0027525

Killeya, L. A., & Johnson, B. T. (1998). Experimental induction of biased systematic processing:

The directed thought technique. *Personality and Social Psychology Bulletin, 24*, 17-33.

Keller, P. A. (2006). Regulatory focus and efficacy of health messages. *Journal of Consumer*

Research, *33*(1), 109–114. doi:10.1086/504141

Klayman, J., & Ha, Y. (1987). Confirmation, disconfirmation, and information in hypothesis

testing. *Psychological Review*, *94*(2), 211–228. doi:10.1037/0033-295X.94.2.211

Klein, C., & DeBono, K. G. (1993). Source expertise and persuasion: The Moderating role of

recipient dogmatism. *Personality & Social Psychology Bulletin, 19*(2), 167-173.

Kowalski, P., & Taylor, A. K. (2009). The effect of refuting misconceptions in the introductory psychology class. *Teaching of Psychology*, *36*(3), 153–159. doi:10.1080/00986280902959986

Kraus, S. J. (1995). Attitudes and the prediction of behavior: A meta-analysis of the empirical literature. *Personality and Social Psychology Bulletin, 21*(1), 58-75. doi: 10.1177/0146167295211007

Krosnick, J. A., Boninger, D. S., Chuang, Y. C., Berent, M. K., & Carnot, C. G. (1993). Attitude strength: One construct or many related constructs? *Journal of Personality and Social Psychology, 65*, 1132-1151.

Krosnick, J. A., & Smith, W. R. (1994). Attitude strength. *Encyclopedia of Human Behavior, 1*, 279-289.

Kruglanski, A. W. (1980). Lay epistemologic process and contents: Another look at attribution theory. *Psychological Review, 87*, 70–87.

Kruglanski, A. W. (1989). *Lay epistemics and human knowledge: cognitive and motivational bases*. New York, NY: Plenum.

Kruglanski, A. W., & Stroebe, W. (2005). The influence of beliefs and goals on attitudes: Issues of structure, function, and dynamics. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The Handbook of Attitudes* (pp. 543-574). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.

Kruglanski, A. W., & Thompson, E. P. (1999). Persuasion by a single route: A view from the unimodel. *Psychological Inquiry*, *10*(2), 83–109. doi:10.1207/S15327965PL100201

Kruglanski, A. W., Thompson, E. P., & Spiegel, S. (1999). Separate or equal? Bimodal notions of persuasion and a single-process "unimodel." In S. Chaiken & Y. Trope (Eds.), *Dual-*

process theories in social psychology (pp. 293–313). New York, NY: Guilford.

Kumkale, G. T., & Albarracín, D. (2004). The sleeper effect in persuasion: A meta-analytic review. *Psychological Bulletin*, *130*(1), 143–172. doi:10.1037/0033-2909.130.1.143

Kumkale, G. T., Albarracín, D., & Seignourel, P. J. (2010). The effects of source credibility in the presence or absence of prior attitudes: Implications for the design of persuasive communication campaigns. *Journal of Applied Social Psychology*, *40*(6), 1325–1356. doi:10.1111/j.1559-1816.2010.00620.x

Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin, 108*, 480–498.

Kunda, Z., & Sanitioso, R. (1989). Motivated changes in the self-concept. *Journal of Experimental Social Psychology*, *25*(3), 272–285. doi:10.1016/0022-1031(89)90023-1

Kunst-Wilson, W. R., & Zajonc, R. B. (1980). Affective discrimination of stimuli that cannot be recognized. *Science*, *207*, 557-558.

Lampron, S. F., Krosnick, J. A., Shaeffer, E., Petty, R. E., & See, M. (2003). *Different types of involvement moderate persuasion (somewhat) differently: Contrasting outcome-based and value-based involvement.* Unpublished manuscript.

Lang, P. J., Bradley, M. M., Fitzsimmons, J. R., Cuthbert, B. N., Scott, J. D., Moulder, B., & Nangia, V. (1998). Emotional arousal and activation of the visual cortex: An fMRI analysis. *Psychophysiology*, *35*, 199-210.

Lang, P. J., Öhman, A., & Vaitl, D., (1988). *The international affective picture system* [photographic slides]. Gainesville, FL: The Center for Research in Psychophysiology, University of Florida.

Langer, E. J., Blank, A., & Chanowitz, B. (1978). The mindlessness of ostensibly thoughtful action: the role of "placebic" information in interpersonal interaction. *Journal of*

Personality and Social Psychology, *36*(6), 635–642. doi:10.1037/0022-3514.36.6.635

Laran, J. (2010). The influence of information processing goal pursuit on postdecision affect and

behavioral intentions. *Journal of Personality and Social Psychology, 98,* 16-28.

doi:10.1037/a0017422

Lasswell, H. D. (1948). The structure and function of communication in society. In *The*

communication of ideas: religion and civilization series (pp. 37–51). New York, NY:

Harper & Row.

Latimer, A. E., Rivers, S. E., Rench, T. A., Katulak, N. A., Hicks, A., Hodorowski, J. K., …

Salovey, P. (2008). A field experiment testing the utility of regulatory fit messages for

promoting physical activity. *Journal of Experimental Social Psychology*, *44*(3), 826–832.

doi:10.1016/j.jesp.2007.07.013

Lee, C.-K., Song, H.-J., Bendle, L. J., Kim, M.-J., & Han, H. (2012). The impact of non-

pharmaceutical interventions for 2009 H1N1 influenza on travel intentions: A model of

goal-directed behavior. *Tourism Management, 33*, 89-99. doi:

10.1016/j.tourman.2011.02.006

Lenzner, T. (2012). Effects of survey question comprehensibility on response quality. *Field*

Methods, *24*(4), 409–428. doi:10.1177/1525822X12448166

Leone, C., & Ensley, E. (1986). Self-generated attitude change: A person by situation analysis of

attitude polarization and attenuation. *Journal of Research in Personality*, *20*(4), 434–446.

doi:10.1016/0092-6566(86)90124-8

Lerner, M. J., Miller, D. T., & Holmes, J. G. (1976). Deserving and the emergence of forms of

justice. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp.

133–162). New York, NY: Academic Press.

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

Levey, A. B., & Martin, I. (1975). Classical conditioning of human 'evaluative' responses. *Behaviour Research and Therapy*, *4*, 205-207.

Levitan, L. C., & Visser, P. S. (2009). Social network composition and attitude strength: Exploring the dynamics within newly formed social networks. *Journal of Experimental Social Psychology, 45*, 1057-1067. doi:10.1016/j.jesp.2009.06.001

Lewandowsky, S., Cook, J., Oberauer, K., Brophy, S., Lloyd, E. A., & Marriott, M. (2015). Recurrent fury: Conspiratorial discourse in the blogosphere triggered by research on the role of conspiracist ideation in climate denial. *Journal of Social and Political Psychology*, *3*(1), 161–197. doi:10.5964/jspp.v3i1.443

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

Lewandowsky, S., Oberauer, K., & Gignac, G. E. (2013). Nasa faked the moon landing--therefore, (climate) science is a hoax: An anatomy of the motivated rejection of science. *Psychological Science*, *24*(5), 622–33. doi:10.1177/0956797612457686

Lipp, O. V., & Purkis, H. M. (2006). The effects of assessment type on verbal ratings of conditional stimulus valence and contingency judgments: Implications for the extinction of evaluative learning. *Journal of Experimental Psychology: Animal Behavior Processes*, *32*, 431-440. doi:10.1037/0097-7403.32.4.431

Maio, G. R., & Haddock, G. (2009). *The psychology of attitudes and attitude change*. London, United Kingdom: SAGE Publications.

Maio, G. R., & Olson, J. M. (2000). What is a value-expressive attitude? In G. R. Maio & J. M. Olson (Eds.), *Why we evaluate: Functions of attitudes* (pp. 249-269). Mahwah, NJ: Erlbaum.

Malaviya, P., & Brendl, C. M. (2014). Do hedonic motives moderate regulatory focus motives? Evidence from the framing of persuasive messages. *Journal of Personality and Social Psychology*, *106*(1), 1. doi:10.1037/a0034666

Martin, I., & Levey, A. B. (1978). Evaluative conditioning. *Advances in Behaviour Research and Therapy*, *1*, 57-102.

Martin, I., & Levey, A. B. (1994). The evaluative response: Primitive but necessary. *Behaviour Research and Therapy*, *32*, 301-305.

Masling, J. (1966). Role-related behavior of the subject and psychologist and its effect upon psychological data. *Nebraska Symposium on Motivation, 14*, 67-103.

Maslow, A. H. (1970). *Motivation and Personality* (2nd ed). New York, NY: Harper and Row.

Maxwell-Smith, M. A., & Esses, V. M. (2012). Assessing individual differences in the degree to which people are committed to following their beliefs. *Journal of Research in Personality*, *46*(2), 195–209. doi:10.1016/j.jrp.2012.01.009

Mazzocco, P. J., Green, M. C., Sasota, J. A., & Jones, N. W. (2010). This story is not for everyone: Transportability and narrative persuasion. *Social Psychological and Personality Science*, *1*(4), 361–368. doi:10.1177/1948550610376600

McConnell, J. V., Cutler, R. L., & McNeil, E. B. (1958). Subliminal stimulation: An overview. *American Psychologist*, *13*(5), 229–242. doi:10.1037/h0042953

McEachan, R. R. C., Conner, M., Taylor, N. J., & Lawton, R. J. (2011). Prospective prediction of

    health-related behaviours with the theory of planned behaviour. A meta-analysis. *Health*

    Psychology Review, 5(2), 97-144. doi:10.1080/17437199.2010.521684

McGinnies, E., & Ward, C. (1980). Better liked than right: Trustworthiness and expertise as

    factors in credibility. *Personality and Social Psychology Bulletin, 6*, 467-472.

McGuire, W. J. (1960). A syllogistic analysis of cognitive relationships. In M. J. Rosenberg & C.

    I. Hovland (Eds.), *Attitude organization and change* (pp. 140–162). New Haven, CN:

    Yale University Press.

McGuire, W. J. (1964). Introducing resistance to persuasion: Some contemporary approaches. In

    L. Berkowitz (Ed.), *Advances in experimental social psychology* (pp. 191-229). San Diego:

    Academic Press.

McGuire, W. J. (1968). Personality and attitude change: An information-processing theory. In

    Psychological foundations of attitudes (pp. 171–196). Elsevier. doi:10.1016/B978-1-4832-

    3071-9.50013-1

McGuire, W. J. (1981). The probabilogical model of cognitive structure and attitude change. In

    R. E. Petty, T. M. Ostrom, & T. C. Brock (Eds.), *Cognitive responses in persuasion* (pp.

    291-307). Hillsdale, N. J.: Erlbaum.

Millar, M. G., & Tesser, A. (1986). Effects of affective and cognitive focus on the attitude-

    behavior relation. *Journal of Personality and Social Psychology, 51*(2), 270-276. doi:

    10.1037/0022-3514.51.2.270

Miller, J. M., & Peterson, D. A. M. (2004). Theoretical and empirical implications of attitude

    strength. *The Journal of Politics, 66*, 847-867. doi:10.1111/j.1468-2508.2004.00279.x

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

Moore, T. E. (1988). The case against subliminal manipulation. *Psychology & Marketing, 5*, 297-316.

Morris, J. S., Frith, C. D., Perrett, D. I., Rowland, D., Young, A. W., Calder, A. J., & Dolan, R. J. (1996). A differential neural response in the human amygdala to fearful and happy facial expressions. *Nature, 383*, 812–815.

Moskowitz, G.B., Li, P., & Kirk, E.R. (2004). The implicit volition model: On the preconscious regulation of temporarily adopted goals. In M. Zanna (Ed.), *Advances in experimental social psychology*. San Diego: Academic Press.

Montoya, R. M., Horton, R. S., Vevea, J. L., Citkowicz, M., & Lauber, E. A. (2017). A re-examination of the mere exposure effect: The influence of repeated exposure on recognition, familiarity, and liking. *Psychological Bulletin, 143*, 459-498. doi: 10.1037/bul0000085

Murphy, S. T., Frank, L. B., Chatterjee, J. S., & Baezconde-Garbanati, L. (2013). Narrative versus nonnarrative: The role of identification, transportation, and emotion in reducing health disparities. *Journal of Communication, 63*(1), 116–137. doi:10.1111/jcom.12007

Nestler, S. (2010). Belief perseverance: The role of accessible content and accessibility experiences. *Social Psychology*, *41*(1), 35–41. doi:10.1027/1864-9335/a000006

Newell, B. R., & Shanks, D. R. (2007). Recognizing what you like: Examining the relation between the mere-exposure effect and recognition. *European Journal of Cognitive Psychology*, *19*, 103-118. doi:10.1080/09541440500487454

Nier, J. (2005). How dissociated are implicit and explicit racial attitudes? A bogus pipeline approach. *Group Processes and Intergroup Relations, 8*, 39-52. doi:10.1177/1368430205048615

Nierman, A. J. (2008). Evaluative conditioning in the visual domain: A meta-analysis. Unpublished manuscript, University of Kansas, Lawrence, KS.

Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal report on mental processes. *Psychological Review, 84*, 231-259.

Noguchi, K., Durantini, M.R., Albarracín, D., & Glasman, L.R. (2007). Who participates in which health promotion programs? A meta-analysis of motivations underlying enrollment and retention in HIV prevention interventions. *Psychological Bulletin, 133*, 955-975. doi:10.1037/0033-2909.133.6.955

O'Connor, B. (2006). *Biased evidence assimilation under bounded bayesian rationality.* (Unpublished master's thesis). Stanford University.

Olson, J. M., & Stone, J. (2005). The influence of behavior on attitudes. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 223-271). Mahwah, NJ: Lawrence Erlbaum.

Omondi, D. O., Walingo, M. K., Mbagaya, G. M., & Othuon, L. O. A. (2011). Predicting dietary practice behavior among type 2 diabetics using the theory of planned behavior and mixed methods design. *International Journal of Medical, Health, Biomedical, Bioengineering and Pharmaceutical Engineering, 5*(7), 284-292.

Oreskes, N. (2004). Beyond the ivory tower. The scientific consensus on climate change. *Science, 306*(5702), 1686. doi:10.1126/science.1103618

Osborne, J. (2010). Arguing to learn in science: The role of collaborative, critical discourse.

Science, *328*(5977), 463–466. doi:10.1126/science.1183944

Ouellette, J. A., & Wood, W. (1998). Habit and intention in everyday life: the multiple processes by which past behavior predicts future behavior. *Psychological Bulletin, 124*(1), 54.

Perugini, M., & Bagozzi, R. P. (2001). The role of desires and anticipated emotions in goal-directed behaviours: Broadening and deepening the theory of planned behaviour. *British Journal of Social Psychology, 40*, 79-98. doi:10.1348/014466601164704

Petrocelli, J. V, Clarkson, J. J., Tormala, Z. L., & Hendrix, K. S. (2010). Perceiving stability as a means to attitude certainty: The role of implicit theories of attitudes. *Journal of Experimental Social Psychology*, *46*(6), 874–883. doi:10.1016/j.jesp.2010.07.012

Petty, R. E., Briñol, P., Tormala, Z. L., & Wegener, D. T. (2007). The role of meta-cognition in social judgment. In E. T. Higgins & A. Kruglanski (Eds.), *Social Psychology: Handbook of basic principles (2nd ed.)*. New York, NY: Guilford Press.

Petty, R. E., & Cacioppo, J. T. (1981). *Attitudes and persuasion: classic and contemporary approaches*. Dubuque, IA: Wm. C. Brown.

Petty, R. E., & Cacioppo, J. T. (1984). Source factors and the elaboration likelihood model of persuasion. *Advances in Consumer Research*, *11*(1), 668–672.

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). Orlando, FL: Academic Press. doi:10.1016/S0065-2601(08)60214-2

Petty, R. E., Fazio, R. H., & Briñol, P. (2009). The new implicit measures: An overview. In Petty, R. E., Fazio, R. H., & Briñol, P. (Eds.), *Attitudes: Insights from the new implicit measures* (pp. 3-18). New York, NY: Psychology Press.

Petty, R. E., Tormala, Z. L., & Rucker, D. (2004). An attitude strength perspective on resistance to persuasion. In M. R. Banaji, J. T. Jost, & D. Prentice (Eds.). *The yin and yang of social cognition: Festschrift for William McGuire* (pp. 37-51). Washington, DC: American Psychological Association.

Petty, R. E., Wheeler, S. C., & Bizer, G. Y. (1999). Is there one persuasion process or more? Lumping versus splitting in attitude change theories. *Psychological Inquiry*, *10*(2), 156–163. doi:10.1207/S15327965PL100211

Phan, K. L., Taylor, S. F., Welsh, R. C., Ho, S. H., Britton, J. C., & Liberzon, I. (2004). Neural correlates of individual ratings of emotional salience: a trial-related fMRI study. *NeuroImage, 21*, 768-780.

Pornpitakpan, C. (2004). The persuasiveness of source credibility: A critical review of five decades' evidence. *Journal of Applied Social Psychology, 34*(2), 243–281. doi:10.1111/j.1559-1816.2004.tb02547.x

Porter, S., Bellhouse, S., McDougall, A., ten Brinke, L., & Wilson, K. (2010). A prospective investigation of the vulnerability of memory for positive and negative emotional scenes to the misinformation effect. *Canadian Journal of Behavioural Science/Revue Canadienne Des Sciences Du Comportement, 42*, 55–61. doi:10.1037/a0016652

Pratkanis, A. R., & Aronson, E. (1992). *Age of propaganda: The everyday use and abuse of persuasion*. New York, NY: Macmillan.

Purkis, H. M., & Lipp, O. V. (2001). Does affective learning exist in the absence of contingency awareness? *Learning and Motivation, 32*, 84-99. doi:10.1006/lmot.2000.1066

Reed II, A., Wooten, D. B., & Bolton, L. E. (2002). The temporary construction of consumer attitudes. *Journal of Consumer Psychology, 12*(4), 375-388. doi: 10.1207/s15327663jcp1204_09

Reekum, C. M., Urry, H. L., Johnstone, T., Thurow, M. E., Frye, C. J., Jackson, C. A., et al. (2007). Individual differences in amygdala and ventromedial prefrontal cortex activity are associated with evaluation speed and psychological well-being. *Journal of Cognitive Neuroscience, 19*, 237-248.

Regan, D. T., & Fazio, R. H. (1977). On the consistency of attitudes and behavior: Look to the method of attitude formation. *Journal of Experimental and Social Psychology, 13*(1), 28-45. doi: 10.1016/0022-1031(77)90011-7

Remington, N. A., Fabrigar, L. R., & Visser, P. S. (2000). Reexamining the Circumplex Model of Affect. *Journal of Personality and Social Psychology*, *79*, 286-300.

Rempel-Clower, N. L. (2007). Role of orbitofrontal cortex connections in emotion. *Annals of the New York Academy of Sciences*, *1121*, 72-86.

Reyna, V. F., & Brainerd, C. J. (1995). Fuzzy-trace theory: An interim synthesis. *Learning and Individual Differences*, *7*(1), 1–75. doi:10.1016/1041-6080(95)90031-4

Roney, C. J. R., & Sorrentino, R. M. (1995). Reducing self-discrepancies or maintaining self-congruence? Uncertainty orientation, self-regulation, and performance. *Journal of Personality and Social Psychology, 68*, 485–497.

Rosenberg, M. (1979). *Conceiving the self*. New York, NY: Basic Books.

Ross, A., & Jackson, M. (2013). Investigating the theory of planned behaviour's application to binge drinking among university students. *Journal of Substance Use, 18*(3), 184-195. doi:10.3109/14659891.2012.661024

Royet, J. P., Plailly, J., Delon-Martin, C., Kareken, D. A., & Segebarth, C. (2003). fMRI of emotional responses to odors: Influence of hedonic valence and judgment, handedness, and gender. *Neuroimage, 20*, 713-728.

Rozin, P., & Royzman, E. B. (2001). Negativity bias, negativity dominance, and contagion. *Personality and Social Psychology Review*, *5*(4), 296–320. doi:10.1207/S15327957PSPR0504_2

Rucker, D. D., & Petty, R. E. (2002). *Failing to resist persuasion: Consequences for attitude strength*. Paper presented at the Meeting of the Midwestern Psychological Association, Chicago, IL.

Russell, J. A. (2003). Core affect and the psychological construction of emotion. *Psychological Review*, *110*, 145-172.

Saad, L. (2015). *U.S. views on climate change stable after extreme winter*. Retrieved from http://www.gallup.com/poll/182150/views-climate-change-stable-extreme-winter.aspx

Sagarin, B. J., & Cialdini, R. B. (2004). Creating critical consumers: Motivating receptivity by teaching resistance. In E. S. Knowles & J. A. Linn (Eds.), *Resistance and persuasion* (pp. 259–282). Mahwah, NJ: Erlbaum.

Sagarin, B. J., Cialdini, R. B., Rice, W. E., & Serna, S. B. (2002). Dispelling the illusion of invulnerability: The motivations and mechanisms of resistance to persuasion. *Journal of Personality and Social Psychology, 83*, 526-541. doi:10.1037//0022-3514.83.3.526

Sanitioso, R., Kunda, Z., & Fong, G. T. (1990). Motivated recruitment of autobiographical memories. *Journal of Personality and Social Psychology*, *59*(2), 229–241. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/2213492

Schimmack, U., & Crites, S. L., Jr. (2005). The structure of affect. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The handbook of attitudes* (pp. 397-435). Mahwah, NJ: Erlbaum.

Schul, Y. (1993). When warning succeeds: The effect of warning on success in ignoring invalid information. *Journal of Experimental Social Psychology*, *29*(1), 42–62. doi:10.1006/jesp.1993.1003

Schul, Y., Mayo, R., & Burnstein, E. (2004). Encoding under trust and distrust: The spontaneous activation of incongruent cognitions. *Journal of Personality and Social Psychology, 86*, 668-679.

Schwarz, N. (2007). Attitude construction: Evaluation in context. *Social Cognition, 25*, 638-656. doi:10.1521/soco.2007.25.5.638

Schwarz, N., Sanna, L. J., Skurnik, I., & Yoon, C. (2007). Metacognitive experiences and the intricacies of setting people straight: Implications for debiasing and public information campaigns. *Advances in Experimental Social Psychology*, *39*, 127–191. doi:10.1016/S0065-2601(06)39003-X 127

See, Y. H. M., Petty, R. E., & Fabrigar, L. R. (2008). Affective and cognitive meta-bases of attitudes: Unique effects on information interest and persuasion. *Journal of Personality and Social Psychology, 94*(6), 938. doi:10.1037/0022-3514.94.6.938

See, Y. H. M., Petty, R. E., & Fabrigar, L. R. (2013). Affective–cognitive meta-bases versus structural bases of attitudes predict processing interest versus efficiency. *Personality and Social Psychology Bulletin, 39*(8), 1111-1123. doi:10.1177/0146167213490807

Seifert, C. M. (2002). The continued influence of misinformation in memory: What makes a correction effective? *The Psychology of Learning and Motivation*, *41*, 265–292. doi:

10.1016/S0079-7421(02)80009-3

Shavitt, S. (1990). The role of attitude objects in attitude functions. *Journal of Experimental Social Psychology, 26*, 124-148. doi:10.1016/0022-1031(90)90072-T

Shavitt, S., Lowrey, T. M., & Han, S.-P. (1992). Attitude functions in advertising: The interactive role of products and self-monitoring. *Journal of Consumer Psychology, 1*, 337-364. doi:10.1016/S1057-7408(08)80059-9

Shavitt, S., & Nelson, M. R. (2002). The role of attitude functions in persuasion and social judgment. In J. Dillard & M. Pfau (Eds.), *The persuasion handbook: Developments in theory and practice* (pp. 137-155). Thousand Oaks, CA: SAGE Publications.

Sheeran, P., & Orbell, S. (1998). Do intentions predict condom use? A meta-analysis and examination of six moderator variables. *British Journal of Social Psychology, 37*, 231-250.

Sherif, M., & Hovland, C. I. (1961). *Social judgment: Assimilation and contrast effects in communication and attitude change*. Oxford, England: Yale University Press.

Sherman, B. R., & Kunda, Z. (1989). Motivated evaluations of scientific evidence. In *American psycholoigcla society convention*.

Silvestrini, N., & Gendolla, G. H. E. (2013). Automatic effort mobilization and the principle of resource conservation: one can only prime the possible and justified. *Journal of Personality and Social Psychology*, *104*(5), 803–816. doi:10.1037/a0031995

Slater, M. D., & Rouner, D. (2002). Entertainment-education and elaboration likelihood: Understanding the processing of narrative persuasion. *Communication Theory*, *12*(2), 173–191. doi:10.1111/j.1468-2885.2002.tb00265.x

Slovic, P., & Lichtenstein, S. (1971). Comparison of Bayesian and regression approaches to the study of information processing in judgment. *Organizational Behavior and Human*

Performance, 6, 649-744.

Smith, E. R. (1998). Mental representation and memory. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.) *The Handbook of Social Psychology* (pp. 269-322). Boston: McGraw-Hill.

Smith, M. B., Bruner, J. S., & White, R. W. (1956). *Opinions and personality*. New York, NY: Wiley.

Smith, M. J., Ellenberg, S. S., Bell, L. M., & Rubin, D. M. (2008). Media coverage of the measles-mumps-rubella vaccine and autism controversy and its relationship to mmr immunization rates in the united states. *Pediatrics*, *121*(4), 836–843. doi:10.1542/peds.2007-1760

Smith, C. A., & Ellsworth, P. C. (1985). Patterns of cognitive appraisal in emotion. *Journal of Personality and Social Psychology*, *48*, 813-838.

Smith, S. M., Haugtvedt, C. P., & Petty, R. E. (1994). Need for cognition and the effects of repeated expression on attitude accessibility and extremity. *Advances in Consumer Research*, *21*(1), 234–237.

Smith, K. H. & Rogers, M. (1994). Effectiveness of subliminal messages in television commercials: Two experiments. *Journal of Applied Psychology, 79*, 866-874.

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

Stang, D. J. (1974). Methodological factors in mere exposure research. *Psychological Bulletin*, *81*, 1014-1025.

Strahan, E. J., Spencer, S. J., & Zanna, M. P. (2002). Subliminal priming and persuasion:

Striking while the iron is hot. *Journal of Experimental Social Psychology*, *38*(6), 556–568.

doi:10.1016/S0022-1031(02)00502-4

Sunstein, C. R., & Vermeule, A. (2009). Conspiracy theories: Causes and cures. *Journal of Political Philosophy*, *17*(2), 202–227. doi:10.1111/j.1467-9760.2008.00325.x

Szpunar, K. K., Schellenberg, E. G., & Pliner, P. (2004). Liking and memory for musical stimuli as a function of exposure. *Journal of Experimental Psychology: Learning*, *Memory*, *and Cognition*, *30*, 370-381. doi:10.1037/0278-7393.30.2.370

Taffel, C. (1955). Anxiety and the conditioning of verbal behavior. *Journal of Abnormal Psychology, 51*, 496-501.

Taylor, S. E., & Fiske, S. T. (1978). Salience, attention and attribution: Top of the head phenomena. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 11, pp. 249–288). New York: Academic Press.

The Smoking Gun. (2006, March 22). *Dick Cheney's Suite Demands*. Retrieved from http://www.thesmokinggun.com/documents/crime/dick-cheneys-suite-demands

Tesser, A., Martin, L., & Mendolia, M. (1995). The impact of thought on attitude extremity and attitude-behavior consistency. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 73–92). Mahwah, NJ: Lawrence Erlbaum.

Topolinski, S., & Strack, F. (2009). Motormouth: Mere exposure depends on stimulus-specific motor simulations. *Journal of Experimental Psychology-Learning Memory and Cognition*, *35*(2), 423–433. doi:10.1037/a0014504

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

Tormala, Z. L., Briñol, P., & Petty, R. E. (2007). Multiple roles for source credibility under high elaboration: It's all in the timing. *Social Cognition*, *25*(4), 536–552. doi:10.1521/soco.2007.25.4.536

Tormala, Z. L., & Petty, R. E. (2001). On-line versus memory-based processing: The role of "need to evaluate" in person perception. *Personality and Social Psychology Bulletin*, *27*(12), 1599–1612. doi:10.1177/01461672012712004

Tormala, Z. L., Petty, R. E. (2004). Source credibility and attitude certainty: A metacognitive analysis of resistance to persuasion. *Journal of Consumer Psychology, 14*(4), 427-442. doi:10.1207/s15327663jcp1404_11

Trappey, C. (1996). A meta-analysis of consumer choice and subliminal advertising. *Psychology and Marketing*, *13*(5), 517–530. doi:10.1002/(SICI)1520-6793(199608)13:5<517::AID-MAR5>3.0.CO;2-C

Triandis, H. C., McCusker, C., & Hui, C. H. (1990). Multimethod probes of individualism and collectivism. *Journal of Personality and Social Psychology, 74*, 1006-1020.

Tversky, A., & Kahneman, D. (1974). Judgment under uncertainty: Heuristics and biases. *Science*, *185*(4157), 1124–1131. doi:10.1126/science.185.4157.1124

Tversky, A., & Kahneman, D. (1983). Extensional versus intuitive reasoning: the conjunction fallacy in probability judgment. *Psychological review, 90*(4), 293.

Van Damme, I., & Smets, K. (2014). The power of emotion versus the power of suggestion: Memory for emotional events in the misinformation paradigm. *Emotion*, *14*(2), 310–320. doi:10.1037/a0034629

van Laer, T., de Ruyter, K., Visconti, L. M., & Wetzels, M. (2014). The extended transportation-imagery model: A meta-analysis of the antecedents and consequences of consumers'

narrative transportation. *Journal of Consumer Research*, *40*(5), 797–817.

doi:10.1086/673383

Verplanken, B., Hazenberg, P. T., & Palenéwen, G. R. (1992). Need for cognition and external

information search effort. *Journal of Research in Personality*, *26*(2), 128–136.

doi:10.1016/0092-6566(92)90049-A

Visser, P. S., Krosnick, J. A., & Simmons, J. P. (2003). Distinguishing the cognitive and

behavioral consequences of attitude importance and certainty: A new approach to testing

the common-factor hypothesis. *Journal of Experimental and Social Psychology, 39*, 118-

141. doi:10.1016/S0022-1031(02)00522-X

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*, 779-795. doi:10.1037/0022-3514.87.6.779

Warth, M. (2008). Beiläufige Werbewirkung als Anwendungsbereich des Fluency-Konzepts:

Meta-Analyse und Kosten-Nutzen Analyse. (Unpublished master's thesis). University of

Mannheim, Mannheim, Germany.

Wang, X. (2009). Integrating the theory of planned behavior and attitude functions: Implications

for health campaign design. *Health Communication, 24*, 426-434.

doi:10.1080/10410230903023477

Wang, X. (2012). The role of attitude functions and self-monitoring in predicting intentions to

register as organ donors and to discuss organ donation with family. *Communication

Research, 39*, 26-47. doi:10.1177/0093650211424406

Webb, T. L., & Sheeran, P. (2006). Does changing behavioral intentions engender behavior

change? A meta-analysis of the experimental evidence. *Psychological Bulletin, 132*(2), 249-

268. doi:10.1037/0033-2909.132.2.249

Weber, S. J., & Cook, T. D. (1972). Subject effects in laboratory research: An examination of

subject roles, demand characteristics, and valid inference. *Psychological Bulletin, 77*, 273-

295.

Wegener, D. T., & Carlston, D. (2005). Cognitive processes in attitude formation and change. In

D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The Handbook of Attitudes* (pp. 493-

542). Mahwah, NJ: Erlbaum.

Weingarten, E., Chen, Q., McAdams, M., Yi, J., Hepler, J., & Albarracín, D. (2015). From

primed concepts to action: A meta-analysis of the behavioral effects of incidentally

presented words. *Psychological Bulletin*. Advance online publication.

Weisbuch, M., Mackie, D. M., & Garcia-Marques, T. (2003). Prior source exposure and

persuasion: Further evidence for misattributional processes. *Personality and Social

Psychology Bulletin*, *29*, 691-700. doi:10.1177/0146167203029006002

Werth, L., & Foerster, J. (2007). How regulatory focus influences consumer behavior. *European

Journal of Social Psychology*, *37*(1), 33–51. doi:10.1002/ejsp.343

Whittlesea, B. W. A., & Price, J. R. (2001). Implicit/explicit memory versus analytic/nonanalytic

processing: Rethinking the mere exposure effect. *Memory & Cognition*, *29*, 234-246.

doi:10.3758/BF03194917

Wiggins, N., & Hoffman, P. J. (1968). Three models of clinical judgement. *Journal of Abnormal

Psychology, 73*(1), 70–77. doi:10.1037/h0025445

Wiggins, N., Hoffman, P. J., & Taber, T. (1969). Types of judges and cue utilization in

judgments of intelligence. *Journal of Personality and Social Psychology, 12*(1), 52-59.

doi:10.1037/h0027364

Wilkes, A. L., & Leatherbarrow, M. (1988). Editing episodic memory following the

identification of error. *The Quarterly Journal of Experimental Psychology Section A*, *40*(2),

361–387. doi:10.1080/02724988843000168

Wilson, E. J., & Sherrell, D. L. (1993). Source effects in communication and persuasion

research: A meta-analysis of effect size. *Journal of the Academy of Marketing Science*,

21(2), 101–112. doi:10.1007/BF02894421

Wilson, T. D., & Brekke, N. (1994). Mental contamination and mental correction: Unwanted

influences on judgments and evaluations. *Psychological Bulletin*, *116*(1), 117–142.

doi:10.1037/0033-2909.116.1.117

Wilson, T. D., Lindsey, S., & Schooler, T. Y. (2000). A model of dual attitudes. *Psychological

Review, 107*, 101-126. doi: 10.1037//0033-295X.107.1.101

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*, 989-1000. doi:10.1037/0022-3514.81.6.989

Winkielman, P., Huber, D. E., Kavanagh, L., & Schwarz, N. (2012). Fluency of consistency:

When thoughts fit nicely and flow smoothly. In B. Gawronski & F. Strack (Eds.), *Cognitive

consistency: A fundamental principle in social cognition* (pp. 89–111). New York, NY:

Guilford Press.

Winkielman, P., Schwarz, N., Fazendeiro, T. A., & Reber, R. (2003). The hedonic marking of

processing fluency: Implications for evaluative judgment. In J. Musch & K. C. Klauer

(Eds.), *The psychology of evaluation: Affective processes in cognition and emotion* (pp.

189-217). Mahwah, NJ: Lawrence Erlbaum.

Wooten, D. B., & Reed II, A. (1998). Informational influence and the ambiguity of product experience: Order effects on the weighting of evidence. *Journal of Consumer Psychology, 7*(1), 79-99. doi: 10.1207/s15327663jcp0701_04

Wright, P., Albarracín, D., Brown, R. D., Li, H., He, G., & Liu, Y. (2008). Dissociated responses in the amygdala and orbitofrontal cortex to bottom-up and top-down components of emotional evaluation. *NeuroImage*, *39*, 894-902.

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*, 677-688.

Wyer, R. S. (1970). Quantitative prediction of belief and opinion change: A further test of a subjective probability model. *Journal of Personality and Social Psychology, 16*(4), 559.

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

Wyer, R. S., & Albarracín, D. (2005). Belief formation, organization, and change: Cognitive and motivational influences. In D. Albarracín, B. T. Johnson, & M. P. Zanna (Eds.), *The Handbook of Attitudes* (pp. 273-322). Mahwah, NJ: Erlbaum.

Wyer, R. S., & Carlston, D. E. (1979). *Social cognition, inference, and attribution*. Hillsdale, N. J.: Erlbaum.

Wyer, R. S., & Goldberg, L. (1970). A probabilistic analysis of the relationships among belief and attitudes. *Psychological Review, 77*(2), 100.

Yi, S., & Baumgartner, H. (2009). Regulatory focus and message framing: A test of three accounts. *Motivation and Emotion*, *33*(4), 435–443. doi:10.1007/s11031-009-9148-y

Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology*, *9*, 1-27.

Zajonc, R. B. (2001). Mere exposure: A gateway to the subliminal. *Current Directions in Psychological Science*, *10*, 224-228. doi:10.1111/1467-8721.00154

Zanna, M. P., & Cooper, J. (1974). Dissonance and the pill: an attribution approach to studying the arousal properties of dissonance. *Journal of Personality and Social Psychology, 29*(5), 703.

Zhu, B., Chen, C., Loftus, E. F., Lin, C., He, Q., Chen, C., … Dong, Q. (2010). Individual differences in false memory from misinformation: Cognitive factors. *Memory (Hove, England)*, *18*(5), 543–555. doi:10.1080/09658211.2010.487051

Figure Caption

Figure 1. Google Scholar and PsycINFO searches for *attitudes* over time, with the 2010s only through 2017.

Figure 2. The relation of attitudes with beliefs, intentions, behaviors and goals.

Figure 3. Dimensions of valence and arousal.

```
┌─────────────────────────────┐
│ Direct Experience,          │
│ Conditioning, Mere          │
│ Exposure, Persuasion        │
└─────────────────────────────┘
         │              │
         ▼              ▼
┌──────────┐   ┌──────────┐   ┌──────────┐   ┌──────────┐
│  Belief  │──▶│ Attitude │──▶│Intention │──▶│ Behavior │
└──────────┘   └──────────┘   └──────────┘   └──────────┘
                     ▲              ▲
                     │              │
              ┌──────────────────────────┐
              │          Goals           │
              └──────────────────────────┘
```