

## A theoretical review of consumer priming: Prospective theory, retrospective theory, and the affective–behavioral–cognitive model

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### ABSTRACT

Primes are pervasive in marketing. Despite frequent use in practice, there has yet to be a framework to categorize priming techniques that is inclusive of measurement challenges and methods for administering primes as well as provides insight for researchers on how to think about and construct research using priming. Prior researchers have provided reviews of priming research, which have set the stage for discussions of priming theories and challenges of using primes in survey research. We build from their review and contribute in four ways by (i) reviewing priming theories rooted in both prospective and retrospective models of memory; (ii) developing a priming framework based on the ABC model of attitudes (affective, behavioral, and cognitive priming) that incorporates lexical priming, priming fluency effects, and methods for administering primes; (iii) addressing priming challenges including discrepancies between the priming method and measurement method; and (iv) positing the influence of personal characteristics on priming, such as the role of skepticism in assimilation and contrast effects. The final model is offered and elaborated upon as a guide for future research. Copyright © 2016 John Wiley & Sons, Ltd.

Primes abound in marketing – whether marketers are manipulating the color in advertising to prime emotions (Klauer and Musch, 2002), highlighting consumer goals to make goal pursuit prominent (Papies and Hamstra, 2010), or using advertising elements such as an elevator door, associated with speed, to emphasize purchase urgency (Dahlén, 2005). Despite frequent use, an integrative framework of priming in marketing, incorporating priming theories, has yet to be developed. Most marketing research cites spreading activation theory as the underlying process model of priming, without adequate attention to other theories of priming. Also, research often employs priming techniques in isolation, and as an artifact, little clarity about relations among priming techniques is developed.

Fuzzy distinctions regarding priming theories and priming techniques should raise concern among researchers, especially when experimental priming techniques are borrowed from prior research where they may be contextually bound or even poorly developed. In their review of priming in marketing, Janiszewski and Wyer (2014) acknowledge the poor understanding of differences between content and process priming (inclusive of affective, behavioral, and cognitive priming) and help to clarify this distinction. They do not, however, address differences among priming theories, and they specifically acknowledge that their review does not discuss priming effects related to survey responses, relationships among priming and fluency, and lexical priming effects. Although these authors cite studies that use various priming methods, their review does not include a review of methods of priming (e.g., masked, repetition, or perceptual versus conceptual priming). In suggesting future research, Janiszewski and Wyer (2014) state that “it would be interesting to design priming paradigms for controlling/influencing what is being primed” (p. 113).

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The paper herein addresses this call for further research as well as the limitations just listed, with specific contributions to the field of survey research made through identifying discrepancies between the type of prime used and the measurement method to assess successful priming. Additionally, Janiszewski and Wyer (2014) argue that contrast priming effects are a result of different processing nodes, and we add that consumer skepticism is critical to identifying whether a prime is likely to produce an assimilation or contrast effect among consumers.

Contributions of the current work stem from (i) reviewing priming theories relevant to marketing rooted in two main categories: prospective and retrospective priming theories; (ii) proposing a comprehensive framework of priming rooted in affective, behavioral, and cognitive priming that includes priming features not discussed by Janiszewski and Wyer (2014), including lexical priming, priming fluency effects, and methods for administering primes (e.g., repetition priming, conceptual versus perceptual priming); (iii) identifying priming challenges such as discrepancies between prime type and measurement of such prime; and (iv) positing personal characteristics that influence consumers' response to primes, inclusive of skepticism for assimilation and contrast effects. Specific distinctions made by Janiszewski and Wyer (2014), such as the nuances distinguishing content versus process priming, are not further discussed here in order to focus on new contributions.

To serve as a guide to the structure of this paper as well as a tool for researchers in the development of priming techniques, a holistic priming framework is provided in Figure 1. As seen in the left side of the framework, the prime (e.g., word, picture, or sound) is coupled with a priming technique (affective, behavioral, or cognitive) and a priming method (e.g., contextual priming). Following this model overview, this paper begins by defining priming before discussing priming techniques and methods. In the middle of the framework, the priming method/outcome combination

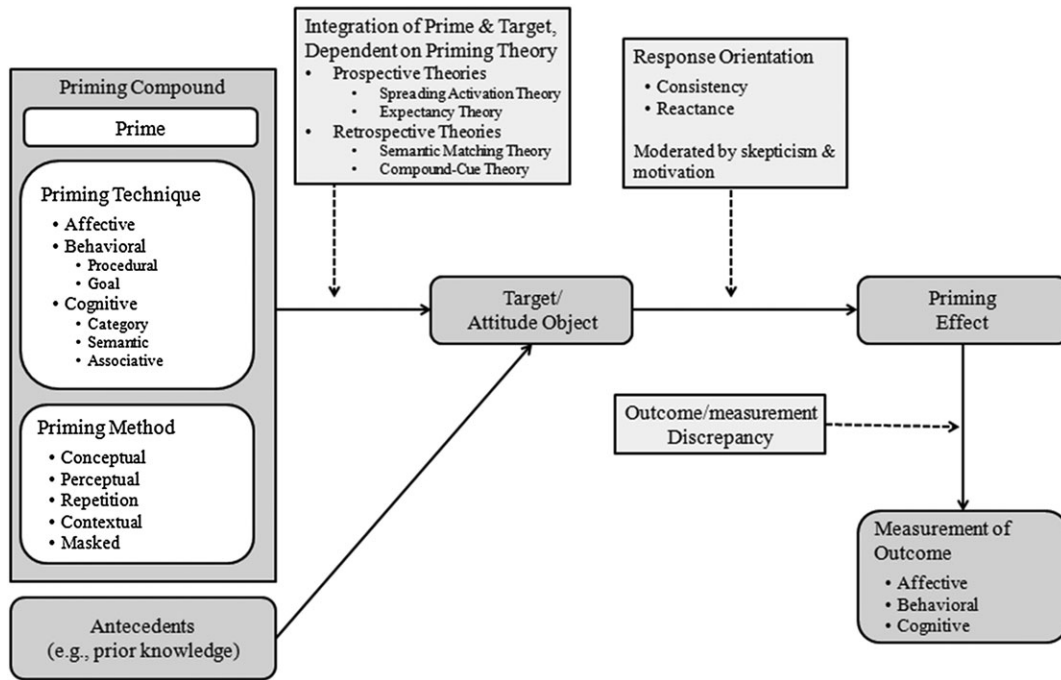


Figure 1. Holistic priming framework.

then influences response to the target, also known as the attitude object. The specific combination of prime and target utilized depends on the base priming theory. Thus, this paper proceeds to elaborate on priming theories after priming methods are discussed. Turning to the right side of the framework, the response to the target results in a response orientation of either consistency or reactance. The desired priming outcome is then measured by the researcher, which can result in discrepancies when the researcher’s desired priming outcome does not match measurement of the outcome (i.e., not affective–affective, behavioral–behavioral, or cognitive–cognitive). Thus, the last part of the paper identifies priming challenges rooted in response orientation and measurement discrepancy. After each of these framework sections are discussed, the paper concludes with future research directions that elucidate how a researcher can test and incorporate elements of the holistic priming framework (e.g., measurement discrepancy issues) into further research.

This holistic priming framework extends Janiszewski and Wyer’s (2014) priming review to show the importance of priming limitations, especially in relation to survey research (i.e., measurement discrepancy). Additionally, this framework identifies important consumer-level characteristics that influence priming response, such as a consumer’s skepticism and prior knowledge. This framework also fulfills the call by Janiszewski and Wyer (2014) to identify methods “for controlling/influencing what is being primed” by identifying methods for administering primes (masked, repetition, conceptual, perceptual, and contextual priming).

### PRIMING DEFINED

The priming research we refer to today dates back to psychology in the 1960s where Segal (1966) investigated

priming words in one task, thereby cueing retrieval of similar words in a later task. In this same decade, Quillian (1967) introduced spreading activation theory, the first theory of priming; however, it was not until the mid-1980s that priming techniques began to appear in business, and more specifically, marketing. Priming research in marketing was conducted before the 1980s, although not explicitly grounded in priming theory. For example, Steinberg and Yalch (1978) showed that grocery store meat samples (a form of in-store advertisement) increased final purchase amounts for obese consumers. In essence, the food samples acted as a prime for increased consumption, although the authors described the process as the food stimuli influencing internal cues for hunger.

McNamara (2005) defines priming as “an improvement in performance in a perceptual or cognitive task, relative to an appropriate baseline, produced by context or prior experience” (p. 3). This general priming concept is also known as the *priming paradigm* (Higgins *et al.*, 1985). It is important to note that while McNamara (2005) describes priming as an improvement in performance, priming can also involve a change in performance that is neutral or results in poorer performance, as will be evidenced in a later discussion on reactant priming responses. Within the priming paradigm, the prime is the item used to manipulate or increase knowledge activation, and the target is what the prime is applied to in an effort to produce specific outcomes (Higgins *et al.*, 1985). Some researchers also refer to the prime as the *stimulus* or *independent variable*; however, a stimulus or an independent variable is only a prime if it increases knowledge activation that influences response to a target. Discussion now turns from general priming to specific priming techniques.

## PRIMING TECHNIQUES

In developing the priming framework, each type of prime is categorized by priming outcome: affective, behavioral, and cognitive, which follows suit with the tri-component ABC model of attitudes (Breckler, 1984). These three priming outcomes build upon prior research that distinguishes between affective and cognitive priming (cf. Erdley and D'Agostino, 1988) and between behavioral and affective priming (Wyer *et al.*, 2010). Although studies have shown that priming can be non-conscious, the result of priming still falls into one of these three outcomes of priming (Chartrand *et al.*, 2008). For example, a Wal-Mart poster can non-consciously prime low cost, which results in low-cost consistent thrifty shopping, which is a behavioral outcome. Thus, a three-category priming framework centered on affective, behavioral, and cognitive priming outcomes is offered.

### Affective priming

Affect refers to the feelings and emotions related to an attitude (Breckler, 1984). The concept of affective priming was developed by Fazio *et al.* (1986) and shows that a consumer's affective responses vary significantly as a result of affect-loaded stimuli. Specifically, Klauer and Musch (2002) define affective priming as "the phenomenon that processing of an evaluatively polarized word (e.g., love)... proceeds faster and more accurately when it is preceded by an evaluatively consistent prime word (e.g., sunshine) rather than an evaluatively inconsistent prime word (e.g., death)" (p. 9–10). Note that this example indicates primes that are both affective and cognitive in nature, although here the affective component is stronger.

There are a variety of conditions under which affective priming occurs: with pictures and colors, at different time lengths between prime and target, and with or without distracter tasks (Klauer and Musch, 2002). For example, Raska and Nichols (2012) affectively primed consumers with love-related symbols, which influenced healthy eating behavior. In a series of experimental studies, Spruyt *et al.* (2002) examined affective priming with affectively congruent and incongruent pictures. When the prime picture was affectively congruent with a target picture (e.g., both conveyed happy or both sad emotions), response time to the target picture was significantly quicker, thereby supporting the affective priming effect. Additionally, Spruyt *et al.* (2002) found that pictures (as opposed to words) produced greater affective priming effects, perhaps as a result of appealing to more of the senses.

### Behavioral priming

In contrast to affect, which focuses on feelings and emotions, behavior refers to actions as well as behavioral intentions according to Breckler's (Breckler, 1984) tri-component model of attitudes. Behavioral priming, sometimes also referred to as social priming, results in increased participation in prime-activated behaviors. See Dijksterhuis (2010) for a review of behavioral priming studies.

In the consumer domain, behavioral priming investigates how priming with attributes under the marketer's control can alter consumer behavior. For example, Fitzsimons *et al.* (2008) found that priming with an Apple logo led consumers to behave more creatively than priming with an IBM logo. Mandel (2003) showed that priming consumers to think of the interdependent self as opposed to the independent self led consumers to take higher financial risks (e.g., buy a more expensive product) and lower social risks (e.g., not buy a product that may not be socially accepted). As yet another example, Laran *et al.* (2011) found that consumers primed with low-quality brand names (e.g., Wal-Mart) were more likely to shop for low-value products as opposed to consumers primed with high-quality brand names (e.g., Nordstrom). In contrast, these authors found that consumers primed with low-quality brand slogans (e.g., "Save money. Live better") actually increased desire for high-value products in reactance to a perceived persuasion attempt. This idea of consistent and inconsistent responses to primes will be discussed again when elaborating on challenges to priming consumers.

### Procedural priming

Procedural priming falls under the umbrella of behavioral priming but focuses specifically on priming a process, such as strategies or methods for processing information. Procedural priming, also known as process priming, results in more enduring changes in processing than other priming methods, such as cognitive priming, where a word or fact is primed rather than a behavior (Forster *et al.*, 2009). The enduring effects of procedural priming over other methods of priming stem from the distinction between declarative and procedural knowledge. Priming via declarative knowledge (e.g., images, facts, and serial strings) activates a node in memory, which maintains knowledge activation in short-term memory until new information enters short-term memory, usually resulting in decay of the priming effect in several seconds (Smith, 1990). In contrast, priming procedural knowledge (e.g., if-then statements) actively retrieves and acts on several steps in a procedure and "may activate information in memory, deposit new representations into memory, or perform motor actions" (Smith, 1990, p. 5). Because greater cognitive resources are devoted to following the procedure, decay of procedural primes is much slower than primes involving declarative knowledge, and this is borne out in many empirical findings.

In a study by Smith and Branscombe (1987), participants were placed in one of two conditions – either trait priming (i.e., priming consumer personality characteristics) or procedural priming. In the trait-primed condition, participants unscrambled words that related to hostile behaviors (i.e., priming the trait of hostility). In the second condition, participants were instructed to match unscrambled sentences with traits (i.e., priming procedures related to matching sentences). After 15 min, consumers in the trait-primed condition were much less likely to exhibit hostile attitudes than consumers in the procedure-primed condition, thereby suggesting that procedural priming is more enduring than task priming (for a review, see Shen and Wyer,

2008). These authors also conducted a series of studies showing that procedural priming influences decision making most when consumers are placed under time pressure (e.g., evaluating a computer in a short amount of time). Tong *et al.* (2011) show that procedural priming can be used to change perspectives regarding cross-border transactions. Specifically, these authors show that priming consumers to use a transactional (e.g., cost–benefit analysis) influences voting behavior and could potentially change international business regulations because cross-border transactions are often initially affective and stem from national pride, whereas procedural priming can promote a rational transactional mindset to evaluate the costs and benefits of such cross-border transactions. Shen and Wyer (2008) note, however, that excessive repetition can lead to a process being practiced so much as to cause a procedural prime to have a reduced influence on behavior or even become ineffective. Thus, procedural priming, just like other types of priming, has its limitations.

#### *Goal priming*

Goal priming, another type of behavioral priming, focuses on activation of end-goal states thereby leading individuals to behave in ways consistent with goal attainment (Forster *et al.*, 2009). Papies and Hamstra (2010) describe goal priming as either encouraging a specific goal or highlighting conflict between two goals whereby the individual pursues the primed goal. For example, marketers often prime goal pursuit near the New Year with weight loss cues, which can be in conflict with food and socialization-based goals. Recent research suggests that goal priming is often confused with the previously discussed procedural priming. Förster *et al.* (2007) provide seven traits that distinguish goal priming: (i) it is value oriented, (ii) motivation decreases after goal is attained, (iii) priming effects differ based on distance to goal, (iv) priming effects are proportional to likelihood of achieving the goal, (v) it causes inhibition for goal conflicts (in the case when a primed goal is in conflict with an already existing goal), (vi) it is self-control oriented, and (vii) it is moderated by the number of ways a goal can be achieved.

In the context of consumer behavior, Papies and Hamstra (2010) show that goal priming is successful when consumers are primed for healthy consumption with a healthy recipe poster resulting in consumption of fewer meat samples offered in store than consumers receiving no goal prime. However, Laran *et al.* (2008) show that goal priming is contextually dependent. For example, these authors randomly assigned consumers to either make a dinner reservation for tonight (time context similar) or make a reservation for a month from now (time context dissimilar). Through an unscrambling task, participants were primed with either “have fun” or “impress others” and then asked to choose a restaurant for a reservation. In the contextually congruent situation (i.e., making a reservation for tonight), participants in the “have fun” priming condition were more likely to choose a restaurant regarded as “having fun,” whereas these effects were less pronounced when in a non-congruent situation (i.e., making a reservation for a month in the future). Thus, the success of goal priming is dependent on many factors

including context and congruence between prime and target. See Bargh (2006) and Dijksterhuis *et al.* (2007) for reviews of goal priming.

#### **Cognitive priming**

Cognitive priming refers to changes in thought based upon the presence of a prime (Myers and Hansen, 2012). In psychology, cognitive priming is often focused on word outcomes, also known as semantic priming. For example, Yi (1990b) studied cognitive priming effects with two conditions – one where “versatility” was primed and another where “ease of use” was primed. When an advertisement’s features were congruent with the prime, brand attitudes were greater than when features were incongruent with the prime, thereby showing cognitive priming effects. It is important to note that many priming studies in marketing and consumer behavior are in fact cognitive priming studies (i.e., measuring what a consumer thinks after being exposed to a prime) even when studies are not explicitly labeled as cognitive priming.

#### *Category priming*

Category priming is a type of cognitive priming that occurs when a subset of terms (e.g., high class) is primed thereby influencing response to a target. Herr (1989) states that “by unobtrusively presenting exemplars of a category, that category becomes temporarily more accessible from memory and more likely to be used subsequently in processing new information” (p. 67). In Herr’s (1989) work, college students completed either a low-class or high-class car prime (i.e., the category prime) before evaluating two fictitious car brands. As expected, estimated car cost was significantly higher for students in the high-class prime condition.

Also, substantial research has investigated how category priming can be used to activate stereotypes. For example, Stafford *et al.* (1995) showed that activating a pushy salesmen stereotype using a picture of a car salesman resulted in instantly lower attitudes toward an unrelated salesperson. As the authors note, category activation (or in this case, stereotype activation) can occur quickly and easily. Also, Kawakami *et al.* (2012) show that category priming can be used in terms of social categories (e.g., jocks, hippies, and overweight) and can influence self-construal. Across many different situations, category priming results in mostly consistent responses to a target based upon the category that is activated by the prime.

#### *Semantic priming*

Semantic priming, another form of cognitive priming, considers how a word, phrase, sign, or symbol can influence response to a stimulus. McNamara (2005) defines semantic priming as “the improvement in speed or accuracy to respond to a stimulus, such as a word or a picture, when it is preceded by a semantically-related stimulus (e.g., cat-dog) relative to when it is preceded by a semantically-unrelated stimulus (e.g., table-dog)” (p. 4). Introduction to semantic priming comes from Meyer and Schvaneveldt (1971), where participants were given either semantically related words (e.g., nurse–doctor) or semantically unrelated words (e.g., nurse–butter). Participants responded 85 ms

faster for semantically related words than semantically unrelated words. Although speed of response is a behavior, speed is used to capture the priming process triggered by the cognitive prime.

In marketing, Labroo *et al.* (2008) were able to increase purchase intentions for wine by semantically priming wine characters (e.g., a bottle of wine with a frog on it was semantically primed with the word “frog”). These authors also discuss how semantic priming is directly related to fluency research because congruency between a prime and a target increases processing ease and, thereby, perceptual fluency. As another example, Galli and Gorn (2011) used the semantic primes of “black” and “white” along with either black object target words (e.g., cola) or white object target words (e.g., soymilk) and found that brand reactions were more positive for congruent stimuli. Both Labroo *et al.* (2008) and Galli and Gorn (2011) tested unconscious semantic priming, conducted through masked priming (subsequently discussed in more detail), and found that even unconscious semantic primes can successfully alter cognitive reactions and brand evaluations. It is important to note that the distinction between affective and cognitive priming can be muddy, such that brand evaluations can incorporate affective components as well.

#### *Associative priming*

Associative priming, yet another form of cognitive priming, is related to semantic priming, enough that these two terms are often used interchangeably (Lucas, 2000). Semantic priming occurs as a result of direct semantic relation between words (e.g., bronze is a type of gold), whereas associative priming occurs because of common relations developed in the mind that are not necessarily semantically related (e.g., dogs are associated with bones). In a meta-review of semantic priming studies, Lucas (2000) found that associative priming studies resulted in greater effect sizes (average of 0.49) in comparison with semantic priming studies (average of 0.25). See McNamara (2005) for a review comparing associative and semantic priming.

Moss *et al.* (1995) note that priming studies can feature both associative and semantic elements resulting in greater effect sizes through what is called an associative boost. For example, in a lexical priming task, a dog is often only semantically related to a wolf, while a golden retriever is both semantically and associatively related to a dog. In the second example, an individual should be more likely to associate “dog” with “golden retriever” rather than “dog” with “wolf” given the associative boost. Lucas (2000) also shows that the associative boost (i.e., both semantic and associative relationships) increases priming effects by 0.26. Associative priming studies are frequently found in consumer behavior research, but are often referred to as general priming studies. For example, Liu *et al.* (2012) primed participants with one of two unscrambling tasks – monetary related or non-monetary related, which produced differing product choices. Although not explicitly described in the study, it could be assumed that the unscrambled phrases contained a mixture of both semantic and associative primes, thus benefiting from the associative boost.

## PRIMING METHOD

The affective, behavioral, and cognitive primes just reviewed represent *priming techniques*. These priming techniques produce priming outcomes (i.e., the consumer’s response to the prime) that can also be categorized as affective, behavioral, or cognitive. Priming techniques can be partnered with a priming method (e.g., conceptual, perceptual, repetition, or contextual priming) to produce a priming outcome. For example, an affective priming technique (activating feelings) could use a contextual priming method, to be discussed (e.g., beautiful environmental setting) to elicit a behavioral priming outcome (e.g., reduced littering). In the discussion to follow, the most common methods of priming in both psychology and marketing are reviewed, thereby fulfilling a call by Janiszewski and Wyer (2014) to identify ways to influence what is being primed.

#### **Conceptual versus perceptual priming**

Often in the psychology literature, priming is described as either conceptual or perceptual. As McNamara and Holbrook (2003) describe, conceptual priming focuses on meaning, while perceptual priming focuses on the form of the stimulus. For example, a semantic prime would be an example of a conceptual prime because the prime is based on meaning (e.g., “golden retriever” is related to “dog” because of the meaning of the words). In contrast, visual primes or fill-in-the-blank primes (e.g., “d\_g” for “dog”) act as perceptual primes because they focus on stimulus form. In the context of consumer behavior, Lee (2002) states that brand choice can be a result of both conceptual priming (when making a memory-based choice) or perceptual priming (when making a stimulus-based choice). Lee (2002) tested conceptual and perceptual priming effects with brand names in two priming conditions – a fill-in-the-blank prime (i.e., perceptual prime) and a prime involving listing all brand names that come to mind (i.e., conceptual prime). After completing the prime, participants were asked to classify brands into appropriate categories by either writing the names of brands (i.e., conceptually related) or circling the names of brands (i.e., perceptually related). Results showed that correct brand–category recognition was highest with congruent processing (i.e., a conceptual prime with writing brand names or a perceptual prime with circling brand names). In summary, conceptual priming is focused on meaning, while perceptual priming is focused on form. Interestingly, Qin *et al.* (2016) show that when conceptual and perceptual primes are used together, use of persuasion knowledge decreases in comparison with when only perceptual primes are used. They argue this result happens because perceptual primes activate persuasion knowledge about potential insincere motives, whereas conceptual primes alleviate the use of persuasion knowledge.

#### **Repetition priming**

Simple repetition priming is described by Eysenck (2004) as the “more efficient processing of a stimulus when it has been presented and processed previously” (p. 313). The more often the prime is presented (i.e., the amount of repetition),

the more likely the prime will be given as the response to the target. In one of the earliest studies of repetition priming, Tulving (1962) showed study participants a series of words (i.e., the prime) before a word completion task. In the task, half of the words were presented beforehand (i.e., the repetition condition) and half were not (i.e., the no repetition condition). Participants were significantly more likely to correctly complete the word tasks when in the repetition condition. Similarly, Matthes and Naderer (2015) showed that children's consumption of snack foods increased as repetitions of product placement for the foods in a movie increased.

In marketing, repetition priming is often associated with the mere exposure effect where consumers like and have greater fluency in processing things seen more often (Obermiller, 1985). Although initially developed by social scientists, many consumer behavior researchers now use the mere exposure effect to explain consumer response to advertising and sponsorship (cf. Lee, 1994; Law, 2002; Cornwell *et al.*, 2005). In contrast to repetition priming, the mere exposure effect focuses specifically on affective responses (Obermiller, 1985). Further, Lee (1994) showed that repetition priming can actually have negative effects on consumer liking with as few as three exposures (e.g., the feeling that a consumer is tired of seeing an ad over and over again). Success of the effect is most variable when contrasting stimuli are presented in close proximity (e.g., an interesting stimulus, then an uninteresting stimulus) leading one stimulus to be preferred (Lee, 1994). As one might expect, Law (2002) found that the success of repetition is dependent upon whether competitors are using repetition techniques at the same time. For a comparison of repetition priming and the mere exposure effect in marketing, see Lee (1994).

### Contextual priming

Contextual priming, also known as environmental cueing, has been defined in communications as manipulation or activation of knowledge using marketing cues that precede or surround a target advertisement (Yi, 1990a, 1990b). This definition has been expanded to include priming through cues in the environment in areas other than just advertising, such as price cues and evaluations of product quality (Schindler, 2006), incidental exposure and product evaluation and choice (Berger and Fitzsimons, 2008), and health claims and product consumption (Wansink and Chandon, 2006). Contextual priming is based on the premise that consumers experience ambiguity in evaluation of goods and services and turn to contextual cues in advertising or the environment to reduce ambiguity before purchasing a product (Yi, 1990b).

Although subtle, contextual priming can be powerful; for example, an experiment by Snyder and Kendzierski (1982) showed that individuals are primed by conversations of surrounding people so that pro-action conversations (in this case, confederates promoting a future psychology study) lead to increased action (in this case, attending the future study). Studies in consumer behavior also show that contextual priming is highly successful, both in the lab and in the field. In the lab setting, Yi (1993) found that contextual advertisements that prime either "oil" or "safety" in a target car

advertisement resulted in consumers desiring the target product to be either fuel efficient or safe. In a series of studies, Berger and Fitzsimons (2008) show how simple contextual factors influence product evaluations. In one study, participants were exposed to one of two product slogans for a digital music player, focused on either luggage or dining trays. Participants were students in a college dorm, and only half of which ate at a cafeteria that had dining trays. Results showed that 10 days after exposure to the slogan, students exposed to the tray slogan that also ate in the cafeteria that had trays exhibited the highest product evaluations of the digital music player. Therefore, the trays in the cafeteria acted as a contextual prime. Although research often uses contextual priming with cognitive outcomes (e.g., product evaluations), contextual priming can be used with affective and behavioral priming outcomes as well.

### Masked priming

In contrast to priming techniques that allow seconds, minutes, or even longer between presentation of the prime and the target, masked priming shows a prime for a short time (sometimes just 50–60 ms) with a target immediately following the prime (Kinoshita and Lupker, 2003). The prime is "masked" in the sense that the prime is shown for such a short time that it is most often unobservable to the consumer (for a review, see Kinoshita and Lupker (2003)). Masked priming was first introduced in psychology in the early 1980s with Evett and Humphreys' (1981) four-field paradigm. This paradigm provides four steps in the masked priming process: step 1 – a mask (a series of pound signs: #####), step 2 – a prime (presented for only a few milliseconds), step 3 – a target, and step 4 – another mask. This process resulted in increased prime-consistent behavior in a related follow-up task. Kinoshita and Lupker (2003) suggest that masked priming can outperform other forms of priming in determining the actual influence of a prime on a target because masked priming eliminates post-perceptual processing.

While having limited use in marketing and advertising, one might expect masked priming to reach similar conclusions to studies referred to as subliminal (Moore, 1982) with both techniques trying to unconsciously manipulate the participant's thought process and actions. Although not described as a masked priming study, Labroo *et al.* (2008) found that brief exposure to the word "frog" led study participants to desire a target wine that featured a frog. Masked priming, along with all the other priming methods, just reviewed come together with the prime and priming technique to produce a priming compound that influences response to a target (or attitude object), as illustrated in the left side of the priming framework introduced at the beginning of this paper. However, how the priming compound influences the target depends on the priming theory adopted. The next section reviews prominent priming theories.

## PRIMING THEORY

Theories of priming can be classified into two main groups: (i) prospective priming and (ii) retrospective priming theories

(Jones, 2012). Prospective theories of priming describe a prime as activating knowledge, which then influences response to a target; thus, the majority of the priming process occurs before exposure to the target. In contrast, retrospective theories of priming posit that the priming process does not begin until after exposure to the target. There are two main prospective priming theories: (i) spreading activation theory and (ii) expectancy theory, as well as two main retrospective priming theories: (i) semantic matching theory and (ii) compound-cue theory.

Spreading activation theory states that a prime activates nodes in memory that are associated with the prime (Quillian, 1967). When an individual responds to a target, they are more likely to use activated nodes, as opposed to non-activated nodes, in the target response. For example, if the prime *water* is used, all nodes in one's memory associated with water become activated (e.g., swim, fish, drink, bathe, and health). Then, when a primed individual is asked what activity they would like to do next, the individual is more likely to respond with water-related activities (e.g., swim, fish, and bathe) because words associated with *water* are more active in the individual's mind. As a result of knowledge activation's occurrence prior to exposure to the target, spreading activation theory is said to be a prospective theory.

In contrast to spreading activation theory, expectancy theory posits that upon exposure to a prime, one's mind automatically creates a set of expected targets, often words (Posner and Snyder, 1975). Because this expected set of words needs to be created, expectancy theory proposes a slower priming process than spreading activation, although this difference may be only a few milliseconds (Neely and Keefe, 1989). Thus, once exposed to the target word, response to the target is much faster than if not previously primed. However, many researchers have shown expectancy theory to not be an accurate representation of the priming process because priming effects occur even when individuals cannot list the target word in response to the prime (cf. Chwilla *et al.*, 1998). In any case, expectancy theory is classified as a prospective theory given that the majority of the priming process (i.e., creation of the expectancy set) occurs prior to exposure to the target.

Turning to retrospective theories, semantic matching theory states that individuals are exposed to both the prime and target and then use the prime to make sense of the target (Neely and Keefe, 1989). This sense-making process involves searching for semantic meaning in the case of non-words, although it could be argued that such a search for meaning applies to logical meaning in addition to semantic meaning. For example, in a cause-related marketing campaign where a cause is partnered with a brand, an individual's mind may grab hold of a cause prime and use that to actively evaluate the relationship between the cause (i.e., prime) and brand (i.e., target). Because of the necessity of having both the prime and the target before the priming process begins, semantic matching theory is classified as a retrospective theory.

Rather than an active process of sense making, compound cue theory posits that a prime and target are stored

together in short-term memory. Once presented with the prime and target, this compound cue in short-term memory is matched to compounds already existing in long-term memory (Ratcliff and McKoon, 1988). Because this matching process is central to compound cue theory, familiarity of the prime–target compound cue is essential to successful priming under this theory. Similar to semantic matching theory, compound cue theory requires presentation of both the prime and target together before the priming process can begin, thereby making compound cue theory retrospective.

Both prospective and retrospective theories lead to the same end result of increased knowledge activation. However, the process by which this knowledge is activated differs greatly among theories. Although it may seem as if these theories are exclusive, meaning that only one theory can be active or even correct, some argue that these theories can be used in conjunction with one another. For example, Neely and Keefe (1989) describe a three-stage model of priming that begins with spreading activation (the most subconscious), proceeds to expectancy theory (where expected targets are automatically created), and then, after exposure to the target, proceeds with semantic matching to understand more complex prime–target pairs.

While Neely and Keefe's (1989) three-stage model of priming allows three different theories of priming to work together, some priming theories cannot be combined to provide a more holistic understanding of the priming process because of fundamental differences in their base models of memory. For example, the compound cue theory of priming operates in coalescence with global memory models, such as search of associative memory or theory of distributed associative memory. The search of associative memory model is a cue-based memory model (i.e., memory is retrieved from cues) and describes that memory is represented by the strength of connection between cues (Raaijmakers and Shiffrin, 1981). Similarly, the theory of distributed associative memory model describes memory as a series of vectors of attributes, and items are retrieved from memory when a current vector is matched with vectors in memory (Murdock, 1993). In contrast to these retrieval memory models, spreading activation models suggests that information spreads between related nodes of memory (Collins and Loftus, 1975). In other words, memory is a fully connected network rather than a scattering of strong and weak connections between objects. Thus, while some theories may be able to work together as Neely and Keefe (1989) describe, compound cue theory and spreading activation, in particular, are in direct opposition to one another because of their foundation in different models of memory.

The process by which knowledge is activated differs greatly among theories, but both prospective and retrospective priming theories lead to the same end result of increased knowledge activation. Understanding consumers' response to knowledge activation leads to several priming challenges that are discussed in the next section and also illustrated in the right side of the priming framework introduced at the beginning of this paper.

## REVEALED PRIMING CHALLENGES FOR RESEARCHERS

### Response orientation

Primes lead consumers to respond in ways that are either consistent or reactant to the prime. For example, a “spend more” slogan could lead a consumer to want to spend more (consistent response) or spend less (reactant response). Most often, the presence of a prime increases prime-relevant affective, behavioral, and cognitive responses. Such a consistent prime response occurs when the consumer responds to a prime in the way the marketer intends, such as was shown with the Apple logo’s ability to prime creativity (Fitzsimons *et al.*, 2008). As an example from cognitive priming, high-value word primes led to higher perceptions of the value of a fictitious car brand (Herr, 1989). As Shen and Chen (2007) describe in terms of priming, individuals assimilate the primed word, idea, or context into existing attitudes. In a study by McFerran *et al.* (2010), the authors found that priming either an obese or thin body type led participants to assimilate the prime into already developed stereotypes. For non-dieters, this result meant decreased consumption with the obese prime and increased consumption with a thin prime as a result of a stereotype that obese individuals should eat less. As another example, Dahlén (2005) showed that assimilation effects are greatest when congruency exists between a brand and an advertising medium (e.g., “fast” Red Bull on a “fast” elevator door), thereby allowing assimilation to easily occur. In other words, assimilation effects are greatest when there is uncertainty surrounding a stimulus, and therefore, the prime is used with existing knowledge in memory to solve the uncertainty.

There are also situations when the presence of a prime decreases prime-relevant affective, behavioral, and cognitive responses, thereby resulting in a response to a target that is inconsistent or reactant to the prime (Glaser, 2003). Glaser (2003) states that this conditionality (i.e., under what conditions reverse priming will and will not occur) is an important, unresolved question in the priming literature. Reactance or reverse priming, also known as contrast effects, was found in the study of Laran *et al.* (2011) where a low-quality brand slogan (e.g., Wal-Mart’s “Save More. Live Better”) primes consumers to spend more money than when primed with a high-quality brand slogan. Janiszewski and Wyer (2014) suggest that contrast effects are produced from priming different processing nodes. Alternatively, research suggests that reverse priming occurs because consumers act in opposition and try to correct for a marketing claim or set of words that appears to be persuasive or biased (Laran *et al.*, 2011). As Glaser (2003) states, “such corrective processes would be driven by a motivation to respond accurately” (p. 96). We argue that reactance (i.e., apparent contrast effects) may stem from trait and state variables such as a consumer’s tendency toward skepticism or manipulation of their concern for persuasion.

In a meta-analysis of priming articles in the social psychology and personality literature, DeCoster and Claypool (2004) note that in conditions where persuasion/bias is not perceived, such as when primes are used by trusted brands, consumers act in prime-consistent ways (e.g., a positive affective prime will

lead to a positive affective outcome). In contrast, in conditions where persuasion/bias is perceived, such as when primes are used by unknown or non-trusted brands, consumers act in prime-inconsistent ways (e.g., a positive affective prime will lead to a negative affective outcome). These effects depend greatly on an individual’s awareness, motivation, and capacity for evaluation. Individual differences in skepticism also influence the effectiveness of primes (Minton, 2015). When motivation is high, processing is higher, leading to correction in judgments to account for persuasion. However, when motivation is low, processing is lower that more likely leads the consumer to assimilate the prime into judgments.

### Outcome/measurement discrepancy

As mentioned, Janiszewski and Wyer (2014) noted that their priming review did not address priming in survey research, which is an important and novel area for further discussion. In all survey research, a clear distinction needs to be made between a researcher’s priming method and measurement of the priming outcome. One of the most common discrepancies occurs when researchers create surveys that use behavioral priming methods to encourage a consumer to purchase a product, yet measure the effects of priming through cognitive-based purchase intention questions. Purchase intentions are argued to be an imperfect estimate of actual purchase behavior (Chandon *et al.*, 2005). Similarly, recent research in green marketing shows large gaps between intentions to be sustainable and actual participation in sustainable behaviors (Prothero *et al.*, 2011). Intention and behavior gaps are also found with healthy eating, work–life balance, exercise, and numerous other consumption-oriented situations. Whether it is an affective priming method that is measured with a behavioral outcome or a cognitive priming method that is measured with an affective outcome, the outcome of measurement is going to influence priming effect results. The most accurate assessment of priming effects is expected when the priming method matches the measurement of priming outcome (i.e., affective–affective, behavioral–behavioral, and cognitive–cognitive). There is a great need for further testing of measurement discrepancy issues to identify if measurement similarity provides new and more accurate insight into consumer behavior.

## OPPORTUNITIES FOR FUTURE RESEARCH

Future priming research can build on our review in four areas: (i) prime attributes, (ii) boundary conditions, (iii) processes, (iv) contexts, and (v) assessment techniques. First, more research is needed on prime placement in marketing settings. More and more marketing research is conducted in online environments (e.g., Amazon’s Mechanical Turk, Survey Monkey, and on computers in university labs). Research should identify potential differences in consumer response to primes in these online contexts versus more traditional physical contexts (e.g., challenges with priming smell or lighting conditions). Also, in fitting with prospective versus retrospective theories, more research is needed as to the order of presentation of a prime and target. In other words, does a



prime activate knowledge in the consumer's mind, and then, does this activated knowledge influence response to a target, fitting with prospective priming theories? Or rather, is the prime partnered with the target, thereby producing a situation of sense making for the consumer, ultimately influencing consumer judgments, fitting with retrospective priming theories? Understanding this process will inform marketers as to how close a prime needs to be to a target to have an effect as well as when marketers should be concerned about negative priming effects. Also, whereas prior research has often sought affective, behavior, or cognitive priming techniques, future research would benefit from identifying methods for priming more of a totality of consumer experience with tri-component primes. For maximum effectiveness, such an attempt would need to be accompanied with tri-component measurement instruments.

Second, future research needs to better identify boundary conditions to priming effects. Boundary conditions, such as a consumer's latitude for change, should be explored. Specifically, how do primes nearly consistent with a consumer's inclination influence response to a prime differentially from a prime very different from a consumer's stand? Such effects could be easily identified in the context of political advertising or related areas where strong opinions are present. Subtle environmental factors also deserve more exploration, such as how priming responses differ based on day of week, time of day, or situated ambient conditions. Prior research is lacking in details in this area, which may explain why replication studies sometimes fail. For example, primes related to family values may be more effective on weekend days when family is more prominent in the consumer's mind, whereas primes related to productivity may be more effective during the workweek. Potential integration of such insight by marketers is growing as interactive marketing grows. Additionally, boundary conditions related to perceived control in the decision-making process would be worthy of further exploration. A consumer may feel ease in acting on low-cost, food-related purchase decision and associated priming techniques, whereas other decisions that require consultation with others, expertise from others, or appear beyond a consumer's ability to act could diminish prime effectiveness. Clarity in meaning of both the prime and the surrounding environment would also benefit from further research. For example, a prime could have multiple effects, but often research only assesses one expected outcome of the prime.

Third, more research is needed on priming processes. As mentioned previously, consumer skepticism is a motivator to reactant prime responses (Laran *et al.*, 2011); however, more research is needed to identify if skepticism mediates all prime techniques (affective, behavioral, and cognitive) and what other mediators could predict reverse priming effects (e.g., psychological reactance, need for cognition, and trust). Additionally, the prior discussion up to this point explores the influence of one prime on one outcome. In the consumption environment, primes abound. Thus, research on sequential priming would be an interesting avenue for expansion on our priming model. In other words, how do primes build on one another to influence consumption-related decisions? Related to this issue, how might primes act as a

pendulum when some primes influence a consumer in one direction (e.g., healthy eating), whereas other primes influence the consumer in a different direction (e.g., unhealthy eating). And which types of primes carry more weight in the consumer's decision? Understanding the process of sequential priming could provide great insight to marketing practitioners not understanding why primes are not as effective as prior research suggests they should be.

Fourth, priming research could expand into new contexts. Much of the research reviewed in this paper is in the context of food or simple consumer-packaged goods. Research would benefit by examining primes in more affect-intensive contexts, such as exploring consumer decision making in the fields of health/medicine, sexuality/porn, counseling/marriage, and politics/government. Also, more research in rapidly growing industries where prior research is lacking could be of interest, such as for products and services related to pets (e.g., the explosion of the market for pet costumes). In such fields, how might primes be an effective way for introducing consumers to new categories of products they never knew about previously?

Last, and of great importance, more research is needed to assess the most effect ways to measure prime outcomes. As discussed earlier, discrepancies in the method of priming and method of outcome measurement (e.g., an affective prime with a cognitive outcome measure) likely influence consumer evaluations. Such measurement discrepancy could explain why research results may not match actual consumer behavior. Also, the order in which prime outcomes are measured in relation to other constructs (e.g., mediators) could also influence prime response. While the literature has been improving in reporting these details, more explicit discussion of measurement techniques for primes are needed in academic research to better assist in replication of effects as well as identify why replications fail to work. Failed replications in the area of priming are in need of publishing, given that the failure to replicate a priming outcome may lend insight into measurement necessities. As is often suggested, more field research is also needed. Many of the studies reviewed use multiple-choice measures to assess priming effectiveness, but these measures are simply a consumer report. Especially in the context of behavioral primes, outcome measures need to measure actual consumer behavior. Additionally, researchers should routinely use post-experimental questionnaires to ascertain participant's responses to demand characteristics and awareness of cognitive processes in the role of research participant (cf. Page and Kahle, 1976; McCambridge *et al.*, 2012).

It would also be useful if future research were to consistently describe the priming technique, method, theory, and outcomes. With more consistent use of the full framework, researchers will be better able to build on past findings, identify the source of mixed findings, and explicate the need for additional theory. In sum, the proposed framework offers a summary and an organizing system that if followed should lead to research that makes the best use of primes and the consistent use of terms and approaches. To exemplify the offering of the model, we consider several priming studies that might be conducted, presented, or concluded differently if the framework were employed; see Table 1.

Table 1. Future research extensions for selected existing studies

Opportunity for future research					
	Prime attributes	Boundary conditions	Processes	Contexts	Assessment techniques
	Different prime types, comparison of priming theories	Consumers' latitude for change, context factors (e.g., day of week), perceived control, and expertise	Skepticism, sequential priming, pendulum/bipolar priming	Affect-intensive contexts – health, sexuality, marriage, and politics	Discrepancy in prime method and measurement outcome
	Explanation				
	<b>Current methods used</b>				
Spruyt <i>et al.</i> (2002)	Affective priming with congruent versus incongruent pictures and words; finding different processes for resulting categorization and naming tasks	Assess exposure to words/pictures, test affect changes to words/pictures by time of day or online versus paper survey methods (i.e., do these factors alter perceived congruency)	Identify dominant consumer sense (touch, sight, etc.) and test model application using sense preference as moderator	Test words in similar contexts but that differ in affect intensity (e.g., food versus medicine)	Test other types of outcome measures that also involve affect (e.g., expression of liking for people or brands)
Raska and Nichols (2012)	Affective priming with love symbols to increase healthy eating behavior; finding compassionate love primes produce greater healthy eating than sexual love primes	Assess spouses' views on healthy eating to identify potential latitude for change; factor in surrounding environment of study location (e.g., students may think about love less while taking a survey on campus)	Use prior love attitudes to identify how skepticism and reactance could influence prime response; assess role of social identity need and reliance on approval from others	Assess in more affect-intensive contexts. Take love into the context of sex products or integrate sacredness, with marriage (using a sample other than students), to see if effects hold	Examine consistency in prime type (affective prime with behavioral outcome here) – use behavioral prime to facilitate love prime (e.g., behave in a loving way to another study participant)
Fitzsimons <i>et al.</i> (2008)	Behavioral priming with company logos influenced creativity, honesty, and goal-relevant behavior; finding that brand nature primes similar behavior (e.g., creative brand primes creative behavior)	Assess latitude for change (i.e., willingness to be creative or change company attitudes); identify perceived control in level of creativity or goal achievement	Test other explanations for creativity outcomes, such as companies' perceived openness to new ideas; could correlate with psychological measures of close-mindedness	Identify categories of brands where effects persist and others where they do not; assess small versus large, private versus public, and involvement in different industries – may provide insight into underlying mechanisms	Test a behavioral prime (e.g., actually interacting with business) with the behavioral outcome; Test more marketer-relevant outcome measures (e.g., more creative meal ideas at a grocery store)
Tong <i>et al.</i> (2011)	Behavioral priming of decision-making mindsets (transaction based versus categorization based)	Assess time length of mindset primes; identify how day of week could alter existing process-	Identify how core identity constructs (e.g., defining self by country living in) may	Identify if process priming works for contexts more relevant to daily life	Test actual voting behavior to more accurately assess outcomes; use both

(Continues)

Table 1. (Continued)

Opportunity for future research					
	Prime attributes	Boundary conditions	Processes	Contexts	Assessment techniques
	Different prime types, comparison of priming theories	Consumers' latitude for change, context factors (e.g., day of week), perceived control, and expertise	Skepticism, sequential priming, pendulum/bipolar priming	Affect-intensive contexts – health, sexuality, marriage, and politics	Discrepancy in prime method and measurement outcome
<b>Citation</b>	<b>Current methods used</b>				
Yi (1990b)	influences evaluations of cross-border transactions; findings showed that transactional primes promoted more rational thinking than categorization primes Cognitively primed product attributes (versatility versus ease of use) influence attention to attributes in decision-making process for a computer; finding primed attributes were more accessible and influenced brand attitude, although dependent on context	based mindset; identify potential boundary conditions when primes are inserted on ballots (e.g., influence of a pre-existing "voting mindset") Assess differences between print and online for different audiences and comfort with technology (e.g., in priming ease of use with a computer purchase decision); assess cognitive load in how many attributes can be primed at once	influence processes of cross-border transactions; manipulate how participants are paid to see influence on transaction perceptions Test role of skepticism in product attributes and how many attributes are primed; explore individual processing style potentially moderating effects (e.g., influencing attention to product attributes)	(e.g., local versus global policy decisions); assess differences between policies related to free choice (business) versus limited choice (kids) Examine differences in priming product attributes for products high (e.g., medical) and low (e.g., consumer-packaged goods) in affect intensity; identify when priming product attributes produces consistent or reactant priming responses	positive (e.g., support grants) and negative (e.g., support fines) assessment items to align and contrast with the word "regulation" Examine carryover effects of primes by assessing how cognitively primed product attributes influence nearby products (e.g., computer accessories; related to contamination effects)
Labroo <i>et al.</i> (2008)	Cognitively primed purchase intentions through the use of semantic primes (word "frog" priming desire for wine with a frog on it); finding semantic primes increased perceptual fluency leading to greater purchase intentions	Assess how similar brand associations (e.g., for other products that use a frog in their branding) influence priming effectiveness, particularly for new products; identify how varying levels of cognitive load influence perceptual fluency	Examine the associates for semantic words that are primed (e.g., other words that come to mind when seeing the word "frog"), using this to identify process mechanisms that may be at play with semantic priming	Test differences in semantic priming between hedonic and utilitarian goods; identify which contexts are most receptive to semantic primes (e.g., test for contexts that may be high involvement or require specialty expertise)	Explore other marketplace outcomes from semantic priming (e.g., word of mouth intentions and willingness to pay); could expand to behavioral-based measures such as actual amount paid or actual purchase quantity

Note: Study selection includes two studies each from affective, behavioral, and cognitive priming, leading to six selected studies reviewed here.

## CONCLUSIONS

Priming techniques are frequently used in marketing, advertising, and consumer behavior research but a holistic understanding of these techniques, measurement challenges, and theoretical foundations is not found in the literature. Further, omissions regarding researcher orientation and transgressions of best practice suggest the need for such an overview. The offered framework has benefited from the review of priming by Janiszewski and Wyer (2014) and the theorizing of the tri-component model (Breckler, 1984). We add to this work by providing researchers a means for thinking about and constructing research on priming. We aid in this thinking and construction of research by discussing the importance of type of priming theory, measurement challenges, individual-level influencers, and methods for administering primes, all of which have received inadequate discussion to date.

## BIOGRAPHICAL NOTES

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