# Multiple Mechanisms of Prime-to-Behavior Effects

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## Abstract

Recent research has explored how the activation of social constructs via priming can affect behavior. Multiple mechanisms have received support, including direct activation of behavioral representations, goal activation, biases in person perception, biases in situation perception, and biases in self-perception. We review the evolving complexity of proposed prime-to-behavior mechanisms, discuss the predictions of each mechanism, and suggest some integrative principles that influence how and when primed constructs affect behavior.

Environmental stimuli can subtly activate mental constructs that direct behavior even when people are unaware of the source of activation. For example, casting one's vote in a school (vs. another polling location) can increase the likelihood of one supporting a sales tax increase to fund education, even though people are unlikely to identify polling location as an input into their decision making (Berger, Meredith, & Wheeler, 2008). An extraordinarily wide range of behaviors can be affected by subtle environmental stimuli, such as walking speed (Bargh, Chen, & Burrows, 1996), speech volume (Aarts & Dijksterhuis, 2003), academic performance (Dijksterhuis & van Knippenberg, 1998), economic decisions (Smeesters, Warlop, Van Avermaet, Corneille, & Yzerbyt, 2003), helping (Macrae & Johnston, 1998), and cleaning (Holland, Hendricks, & Aarts, 2005), just to name a few. Although these effects are robust and widespread, their underlying basis is still debated.

Explanations for these effects all center on processes involving construct accessibility. Specifically, features of the environment make some constructs more accessible in memory, and this accessibility somehow translates into behavior. For example, exposure to pictures of libraries increases the accessibility of silence (Aarts & Dijksterhuis, 2003) and the presence of business-related objects in a room increases the accessibility of competitiveness (Kay, Wheeler, Bargh, & Ross, 2004). There are many ways these accessible constructs can influence behavior, and each mechanism suggests the possibility of different moderating and mediating variables. In this paper,

we provide a brief review of the literature on prime-to-behavior effects along with the various pathways that have been proposed for their operation.

## Mechanisms of Prime-to-Behavior Effects

Figure 1 shows the pathways that have been proposed for prime-to-behavior effects. It is not designed to be a formal model of prime-to-behavior effects, but rather a graphical integration of the many means by which subtle primes can direct behavior. The first box, Prime, represents the feature of the environment that activates constructs in memory. The second box, Activated Construct, represents this activation. The activation itself (Path A) can be moderated. For example, some people may exhibit stronger construct activation than others (Dijksterhuis, Aarts, Bargh, & van Knippenberg, 2000; Gawronski, Ehrenberg, Banse, Zukova, & Klauer, 2003), and the same prime can activate different, and even opposite, constructs across individuals (Wheeler & Berger, 2007).

The rightmost box of the model represents observed behavior. In many prime-to-behavior effects, the conceptual dependent variable is motor movement (e.g., walking speed or reaction time) that is directly observed by the experimenter. In other cases, the behavioral representations that are activated are only superficially related to the underlying construct of interest. For example, several studies have shown the effects of primes on intellectual performance (e.g., Dijksterhuis & van Kinppenberg, 1998; Dijksterhuis et al., 1998; Wheeler, Jarvis, & Petty, 2001). The conceptual variable of interest in these studies (i.e., intelligence, or perhaps problem solving) is not directly observed, but inferred from test performance. For these types of variables, the motor or behavioral representations involved in observing the dependent variable (e.g., moving a pen to check box A) may be only superficially related to the underlying conceptual construct. However,
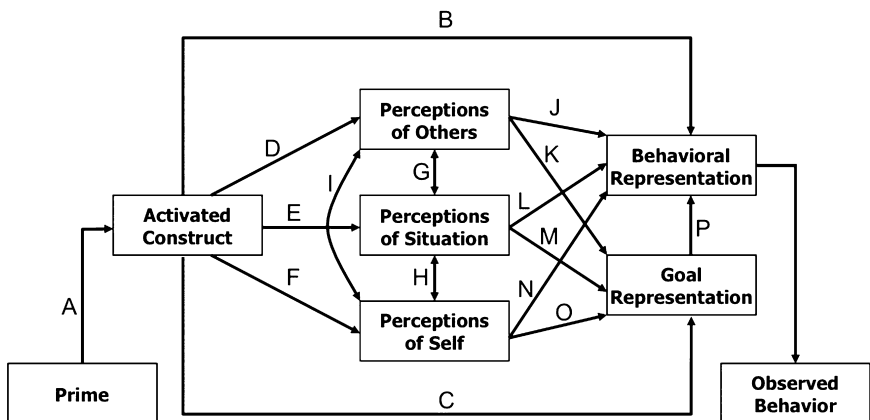


**Figure 1**   Proposed mechanisms for prime-to-behavior effects.

because this is the proximal variable for all prime-to-behavior effects to date, we include this as the penultimate variable in Figure 1.

*Direct activation of behavioral representations (path A → B)*

One potential way that primed constructs can affect behavior is through the direct activation of behavioral representations. This pathway is unmediated, except for the activation of associated traits (but see Kawakami, Young, & Dovidio, 2002). In this pathway, perceptual inputs are translated directly into corresponding behavior, and it is therefore best suited for explaining assimilation effects.

Considerable research suggests perception and action instigation are processed in overlapping regions of the brain (for a review, see Prinz, 1990), and perception of an action can therefore directly facilitate engagement in that action oneself. The expansion of this mechanism to accommodate behavioral shifts following primed traits and stereotypes proposes that a social construct prime (e.g., an African-American face) increases the accessibility of related constructs (e.g., the 'aggressive' component of the African-American stereotype), which in turn activate behavioral representations (e.g., aggression-related motor scripts; see Dijksterhuis & Bargh, 2001).

Presumably, a very large number of behavioral representations could be activated by any single prime. For example, the elderly stereotype is associated with a large number of behaviors, such as forgetting or walking slowly. One would expect that behaviors more strongly associated with the stereotype would be the most likely to be activated following a stereotype prime. Put another way, strength of association between construct activation and behavioral representation should moderate prime-to-behavior effects occurring along this pathway (moderation of path B). Although this moderation has not been tested, there is evidence showing that primes can affect behaviors that are likely only weakly associated with the stereotype (e.g., slow typing; Kawakami et al., 2002). Similarly, in a reverse activation effect, the elderly stereotype can be activated by behaviors (e.g., slow bicycle pedaling) that, although stereotype consistent, are unlikely to be prototypical stereotype behaviors (Mussweiler, 2006).

*Activation of goal representations (path A → C → P)*

Primes can sometimes affect behavior in ways not easily accounted for by a direct behavioral activation account. For example, some prime-to-behavior effects are larger after a delay and lead to behavior that persists after an interruption (Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001). Additionally, some priming effects are larger when positive affect is associated with the primed construct (Aarts, 2007). These effects do not follow easily from a direct activation account and are more consistent

with a pathway in which primes activate goals, which then direct behavior (through the activation of behavioral representations). Goal-based effects can be differentiated from direct activation effects by a number of features such as temporal patterns of accessibility, behavioral persistence, extent of goal strength, and so forth (see Förster, Lieberman, & Friedman, 2007 for a review of features that distinguish motivational from direct activation effects).

The A → C → P pathway is only slightly less parsimonious than the direct activation pathway, but the decreased parsimony allows for additional moderators. One type of moderator, moderators of the pathway C (from construct activation to goals), parallels those for path B (from construct activation to behavioral representations). A given prime should activate a goal to the extent that the goal is highly associated with the prime (e.g., environmental context) in memory (Bargh & Barndollar, 1996). For example, one's office may activate the goal to work to the extent that working is a goal strongly associated with one's office.

Moderators of pathway C can determine not just how strongly a goal is activated, but *which* goal is activated. For example, in one study (Cesario et al., 2006: study 2), participants exposed to pictures of elderly (vs. young) people subsequently walked more slowly when they had positive implicit attitudes toward the elderly, but walked more quickly when they had negative implicit attitudes toward the elderly. These results were explained on the basis that if one likes the elderly, one should act similarly to facilitate the social interaction (e.g., walking slowly to keep pace with an elderly person), but if one dislikes the elderly, one should act dissimilarly (e.g., walking more quickly to get away!). Hence, one's attitude toward the primed social category can determine which goal (facilitating or hindering interaction) is activated.

A third type of moderator would moderate path P in the model, from goals to behavioral representations. Actions that are strongly associated with a given goal should be more easily activated following a goal prime. For example, travel-related primes (e.g., going shopping) activate associated behaviors (e.g., travel by bicycle) to the extent that the behavior is a strongly associated means of goal attainment (Aarts & Dijksterhuis, 2000). The intermediary goal construct can explain not only differences in activation of behavioral constructs given equal prime accessibility, but can also account for multifinality or the substitutability of various sorts of behaviors resulting from a single prime (Kruglanski et al., 2002).

Last, path P also opens the possibility of slippage between what goal is activated by the prime and what behavior results. For example, an intelligence-related prime might not directly activate intelligence-related behavioral representations, but rather lead to the goal to be intelligent, and this goal could be pursued in a number of ways, some of which might be more successful than others. This type of formulation is one possible account for the finding that activating the Asian stereotype (of

intelligence) among Asians can decrease their test performance (Cheryan & Bodenhausen, 2000; see also Baumeister & Showers, 1986).

## Biased Perception Accounts

Several mechanisms of prime-to-behavior effects involve perceptions of a relevant target (i.e., other people, the situation, or the self) that can shift in response to a prime and activate related goal and behavioral representations. Although these prime-biased perceptions may often be conscious, they need not be. Automatic or implicit person, situation, and self-perceptions can also shift with construct accessibility and direct behavior. Even if people are aware of the prime-biased perceptions, they may be unaware that these perceptions had any influence on their behavior (cf. Nisbett & Wilson, 1977).

### Biases in person perceptions (paths A → D → J or A → D → K → P)

Primes can affect perceptions of others, which then determine which goals and behavioral representations are activated. The notion that construct accessibility can affect perceptions of others (Path D) is supported by over three decades of research in social psychology. For example, people are perceived to be hostile as a function of the accessibility of the trait 'hostile' (Srull & Wyer, 1979) and are perceived to be either reckless or adventurous depending on which of these two traits are more accessible (Higgins, Rholes, & Jones, 1977). To the extent that perceptions of others are used in determining goals or behaviors (Paths J and K), perceptions of others can mediate prime-to-behavior effects.

As one example of this type of effect (Smeesters, Wheeler, & Kay, 2009), participants were primed with unkind or neutral words before playing a reciprocal dictator game in which they made an allocation to another player and believed that player would later reciprocate. Results indicated that unkindness primes led to lower allocations (i.e., more unkind behavior) than neutral primes. Perceptions of the other also assimilated to the prime (i.e., the other players were perceived to be more unkind following unkind primes), and these perceptions mediated behavior.

This pathway introduces additional potential moderators. Features increasing the extent to which primes affect perceptions of others (e.g., ambiguity of the perceptual target) should increase the magnitude of prime-to-behavior effects through this mechanism (moderation of path D). Additionally, factors that increase the use of perceptions of others as a guide to behavior (paths J or K) should also increase the likelihood of effects through this pathway. One variable influencing both of these factors is other focus (Smeesters et al., 2009). When people are focused on another person, they are more likely to form an impression of that person and use accessible constructs to do so. They are also more likely to use

those impressions as a basis for action. Last, as discussed in more detail later, because perceptions of others can have varied implications for behavior, this account provides another reason why primes might lead to behaviors that are different from those directly implied by the prime.

*Biases in situation perceptions (paths $A \rightarrow E \rightarrow L$ or $A \rightarrow E \rightarrow M \rightarrow P$)*

Primes can also affect behavior by first affecting perceptions of situations (Wheeler & Petty, 2001; Kay & Ross, 2003; Kay et al., 2004). Much as people sometimes use their perceptions of others as a basis for behavior, they also use perceptions of situational norms. Perceptions of situations can therefore serve as another mediator of prime–to–behavior effects. In one study showing evidence for this pathway (Kay & Ross, 2003), participants were primed with competition or cooperation before playing a prisoner's dilemma game. Participants also indicated which name (e.g., 'Wall Street Game' or 'Community Game') they thought was most appropriate for the game. Results indicated that participants cooperated more and thought that a cooperative name (e.g., 'Community Game') was a more appropriate name for the game when they were primed with cooperation. Additionally, perceptions of the game mediated their behavior, but only when perceptions were measured first. Hence, situation construal mediated behavior, but only when participants were explicitly induced to construe the situation before choosing how to act.

The paths in this model suggest new potential moderators of prime–to–behavior effects. Factors increasing the strength of path E (from construct activation to situation perceptions) should increase the magnitude of prime–to–behavior effects operating through this mechanism (Kay et al., 2004). Similarly, factors that increase the use of situations in directing behavior (e.g., conformity) should increase prime–to–behavior effects that are operating through this route (moderation of paths L or M). The order effects described above are consistent with moderation of all three paths. Making participants report their perceptions of the situation prior to acting likely increased the likelihood both that participants explicitly formed perceptions about what the situation required and also used them as a basis for determining how to act.

*Biases in self–perceptions ($A \rightarrow F \rightarrow N$ or $A \rightarrow F \rightarrow O \rightarrow P$)*

A final way primes can guide behavior is through biasing content in the active self–concept. This can occur because accessible content is used to disambiguate ongoing self–perceptions or because the prime selectively activates a biased subset of content from the chronic self–concept (see Wheeler, DeMarree, & Petty, 2007). Parallel to the above accounts, variables that moderate active self–concept shifts following primes (path F) should moderate behavioral effects operating through this pathway. This

prediction has received considerable empirical support. For example, factors such as social comparisons (Dijksterhuis et al., 1998; Schubert & Häfner, 2003), self-relevant processing (Galinsky, Wang, & Ku, 2008; Hull et al., 2002; Wheeler et al., 2001; Wheeler, Morrison, DeMarree, & Petty, 2008), ambiguity in self-representation (DeMarree, Morrison, Wheeler, & Petty, 2009), and self-focused attention (DeMarree & Loersch, 2009) have all been shown to determine the magnitude and/or direction of self-change and behavior.

Across all of these moderators, factors that increase the magnitude of self-concept change tend to increase the magnitude of prime-to-behavior effects (see Wheeler et al., 2007, for a review). This change in the active self-concept can serve as a mediator for subsequent behavioral outputs (e.g., Galinsky et al., 2008; Hansen & Wänke, 2009). Paralleling the pathways involving biased person perceptions and biased situation perceptions, the active self-concept serves to determine which goals and behavioral representations become active and direct behavior.

This pathway suggests that factors that affect the usage of the self-concept as a guide to behavior (paths N and O) should moderate prime-to-behavior effects. Counterintuitively, according to this pathway, factors that increase use of the self-concept as a guide to behavior should increase the magnitude of prime-to-behavior effects. One variable that affects usage of the self-concept in guiding behavior is self-monitoring (Snyder, 1974). Low self-monitors are more likely to act according to their perceived self-characteristics, and they also show larger prime-to-behavior effects (DeMarree, Wheeler, & Petty, 2005; Wheeler, DeMarree, & Petty, 2008; Wheeler, Morrison et al., 2008).

This pathway can also explain contrast from (i.e., behavior inconsistent with) primed constructs. For example, because disliked others are more likely to be perceived to be different from and discrepant from oneself (Morry, 2005), primes representing disliked others are more likely to generate contrast in the active self-concept and behavior (cf. Cesario et al., 2006). This pathway also explains why behavioral contrast can result from highly discrepant, but positively evaluated exemplars (e.g., Einstein or Claudia Schiffer). Research has shown that primed exemplars (e.g., Einstein) can increase the general accessibility of congruent content (e.g., 'smart', assimilation in path A), but activate incongruent content in the active self-concept (e.g., 'I am stupid', contrast in path F), and it is this incongruent active self-concept content that guides behavior (see Dijksterhuis et al., 1998).

An untested possibility is that one could observe behavior that is inconsistent with prime-biased changes in the self-concept (i.e., contrast in paths N or O). For example, unwanted changes in the self-concept (e.g., perceiving oneself as stupid) could potentially activate the opposite motivations (e.g., wanting to be smart) as the result of an attempt to alter the unwanted self-perceptions. As noted above, these motivations can also

sometimes fail. This would lead to apparent assimilation that was further mediated by contrast in path P.

## Interactions among Mechanisms

Figure 1 also depicts reciprocal pathways between perceptions of situations, persons, and the self (paths G, H, & I), suggesting the possibility that the mechanisms proposed to date do not always operate in isolation. Most of these pathways are speculative at this point, but there is evidence consistent with at least some of these effects. In one study, Smeesters et al. (2009) primed participants with dominance- or submissiveness-related words and then had them complete a task in the presence of an ambiguously dominant person. Prior to the prime, participants' level of focus on the other person in the situation was subtly altered. As described above, other-focus is a variable that can moderate whether or not primes bias perceptions of others. In the low other-focus conditions, primes did not bias perceptions of the person, but led to an assimilation effect on participants' posture. Dominance primes led to more postural expansion (a sign of dominance), whereas submissiveness primes led to more postural constriction (a sign of submissiveness). This finding is potentially consistent with direct behavior or goal activation as well as biased perceptions of the situation or the self. In the high other-focus conditions, the primes led to an assimilation effect on perceptions of the confederate (consistent with the bias in person perceptions account), and a contrast effect on participants' posture. Although self-perceptions were not assessed in this study, these findings are consistent with the idea that primes biased perceptions of the other person's dominance, which then led to complementary changes in self-perceptions and behavior in turn (see Tiedens & Fragale, 2003; Tiedens & Jimenez, 2003). Participants' posture could not have been based on mimicry or actual postural complementarity in any of the conditions, because the other person's posture was held constant. Rather, these findings are most consistent with the idea that the prime-biased perceptions of the other person led to complementary shifts in the participants' active self-concept. Although not designed for this purpose, this experiment provides evidence that is consistent with the reciprocal pathways in Figure 1.

Similarly, Kay et al. (2008) found that one way that primes can bias perceptions of an interaction partner is through the direct effect a prime has on perceptions of the situation. Following Kelley's (1971) augmentation and discounting principles, a given behavior is attributed to a person's disposition to the extent that situations hinder, rather than facilitate, that behavior. For example, competition primes can lead to perceptions of an ambiguously competitive person as more cooperative (a contrast effect) by virtue of making a situation seem more competitive. Thus, although research examining interactions among these mechanisms is only beginning to accumulate, the existing evidence indicates that such interactions are

possible, and exploring such pathways suggest novel predictions beyond those that could be made by considering each pathway in isolation.

## Discussion

As can be seen from the above review, there are multiple mechanisms by which construct accessibility affects behavior. Our integration of these mechanisms is more complex than the original direct activation formulation, but this complexity comes with clear benefits. Each additional path suggests new testable moderators and can account for a wider range of findings. Although the parsimony and elegance of the simpler models is certainly desirable, the diversity of empirically established moderators and mediators point to the utility of considering more complicated prime-to-behavior mechanisms.

As discussed above, there is evidence in support of most of the proposed pathways. The next critical question is *when* each mechanism operates, because knowing what initial target is affected by a prime can sometimes help researchers determine which behavioral effect will emerge (Smeesters et al., 2009), if any (DeMarree & Loersch, 2009). On the other hand, the pathway by which prime–to–behavior effects operate can be moderated without moderation in the dependent variable. That is, different pathways can sometimes lead to identical effects (see e.g., Smeesters et al., 2009). Therefore, showing moderation of pathways can require process evidence in addition to measurement of the overall effect. Research has only begun identifying factors that predict the domain of operation of each mechanism, and there is currently limited evidence for moderators of mechanisms producing prime–to–behavior effects. In our final section, we review existing evidence for such process moderation and speculate about other moderators of prime–to–behavior effects and mechanisms.

### Applicability, ambiguity, and salience

The accounts involving biased perceptions of a target (i.e., biased perceptions of others, situations, and the self) are subject to classic principles affecting all effects of construct accessibility on judgment (see Förster & Liberman, 2007; Higgins, 1996). However, whereas past theory has often considered only single-target situations (e.g., will the prime affect perceptions of Donald or not), we extend these principles to situations where multiple potential targets are available (e.g., an interaction partner, the situation, the self).

First, primes affect perceptions of targets to the extent that they are applicable to the target (Higgins, Rholes, & Jones, 1977). Targets for which primes are more applicable should be more likely to mediate effects on behavior. Second, perceptions of ambiguous targets are more likely to be biased (Srull & Wyer, 1979). When multiple perception targets (e.g.,

the situation, the self, or others) are available to be interpreted, those targets that are more ambiguous are more likely to be directly biased by a prime (Kay et al., 2008). Clearly, there is some difficulty in comparing the relative ambiguity of the situation, other people, and the self-concept. However, increasing the ambiguity of one target (e.g., another person) while holding the ambiguity of another target (e.g., the situation) constant makes it more likely that perceptions of the increasingly ambiguous target will be biased by the prime (see e.g., Kay et al., 2008). Third, perceptions of more salient targets are more likely to be biased. For example, when participants focus their attention on situations (Kay et al., 2008), others in the social environment (Smeesters et al., 2009), or the self (DeMarree & Loersch, 2009), the likelihood that primes will exert an initial effect on the focal target increases.

Hence, primes are more likely to operate by biasing judgments of a target when the primes are applicable to ambiguous, salient targets. This general principle may depend further on the thoughtfulness of the biasing process. Primes can affect judgments and behavior via relatively low-thought (e.g., Ford & Kruglanski, 1995) or high-thought (e.g., Petty, DeMarree, Briñol, Horcajo, & Strathman, 2008) processes. When a prime exerts its influence under low-thought conditions, it is merely used as a shortcut or heuristic to make a quick decision. However, when a prime exerts its influence under high-thought conditions, it biases the content of ongoing thoughts about a judgment or judgmental target. Applicability and ambiguity are likely to be more critical factors when a person is thinking carefully about a target (e.g., Higgins et al., 1977; Srull & Wyer, 1979) than when they are making low-thought judgments (Wegener, Clark, & Petty, 2006), although the salience of a target is likely to be important regardless of the degree of thought. Whereas both high- and low-thought processes can produce similar outcomes (e.g., assimilation in judgments of a target), judgments formed with extensive thought are likely to be more persistent and predictive of subsequent behavior than those formed with less thought (see Petty, Haughtvedt, & Smith, 1995; Petty et al., 2008; Wegener et al., 2006).

Perceptual targets can be biased not only through online perception formation, but also by the selective activation of stored information regarding that content. For example, according to the biased activation mechanism of the Active-Self account (Wheeler et al., 2005, 2007), a religious prime could selectively activate peace-related aspects of the chronic self-concept (i.e., self-concept content stored in long-term memory), which would shift the active self-concept to be more peaceful. Most research on prime influences on situation and person perceptions has used novel perceptual targets for which no pre-existing information is presumably stored in memory to be activated by a prime. However, a recent study by Lerouge and Smeesters (2008) showed that biased memory retrieval can also play a role in person perception. In the critical conditions of their

study, participants were asked to memorize information about a target *before* being primed with the construct of kindness or unkindness. When participants were subsequently asked to judge the target, participants formed prime-congruent judgments of the targets, and these judgments were mediated by the selective recall of prime-congruent target information (Lerouge & Smeesters, 2008). Hence, the prime activated a biased subset of target-relevant knowledge, and this content then served as a guide to judgments of the target.

## Validity

An emerging body of evidence shows that accessible mental contents are more likely to direct judgment and behavior when those contents are perceived to be valid inputs. Factors such as people's experienced ease of processing (Loersch, Payne, & Jefferis, 2008), the direction of their head movements (DeMarree, Briñol, & Petty, 2008), or their current feelings of power (DeMarree, Briñol, & Petty, 2009) can all affect the extent to which they view their current thoughts as valid, and all have been shown to moderate the effect of these thoughts on relevant judgments and behavior (for reviews of factors affecting thought validity, see Briñol & Petty, 2009; Petty, Briñol, Tormala, & Wegener, 2007). For example, people primed with cooperation (versus competition) were more cooperative when they had been made to feel powerful (which has been associated with increased perceived validity of thoughts; Briñol, Petty, Valle, Rucker, & Becerra, 2007), but not when made to feel powerless (which has been associated with lower perceived validity of thoughts). This perspective offers a new potential interpretation for Custers and Aarts' (e.g., 2005) finding that associating a goal with positive affect increases goal-directed behavior. Because the affectively laden positive words used in this research (e.g., nice, good, funny, friend) are words that are often associated with certainty compared with the neutral or negative affectively laden words (e.g., nearly, almost, sorrow, garbage), the larger effects they obtained when pairing goals with positive relative to negative or neutral words could potentially be a manifestation of the confidence associated with the words, and not the valence per se (see Briñol, Petty, & Barden, 2007).

## Relevance for Action

A prime will only influence a person's behavior if the prime affects a relevant input for a person's behavior in a given context. When situational constraints limit the execution of a behavior (e.g., Macrae & Johnston, 1998), or when the biased perceptual target is irrelevant to action (DeMarree & Loersch, 2009), the prime might not exert an impact on behavior. For example, DeMarree and Loersch (2009) primed participants with aggressive or peaceful stereotypes and then manipulated their attention

to themselves or their best friend. The primes produced an assimilation effect on participants' behavior (aggression), but only when participants thought about themselves. When they thought about their best friend, no change in behavior occurred, because their best friend, who was not present in that context, was irrelevant to their behavior at that time. Hence, although the prime biased perceptions of the target that was the focus of attention (self or best friend), it affected behavior only when the target was relevant to behavior in that context.

In addition to whether a target is relevant at all for action, different targets, if biased, can have different implications for action, and the same target can have different implications for different people. For example, viewing oneself as dominant should foster dominant behavior, whereas viewing another person as dominant may instead foster submissive behavior (Smeesters et al., 2009). Similarly, viewing an interaction partner as cooperative has different implications for a person's own behavior depending on whether that person is chronically pro-social or pro-self (Smeesters et al., 2003). Pro-self individuals are more likely to exploit a cooperative partner than are pro-social individuals. Hence, the perception-mediated pathways introduce a large array of additional possible behavioral outcomes from a single prime.

*Conclusion*

Since the seminal Bargh, Chen, and Burrows (1996) paper documenting prime-to-behavior effects, researchers have established extensive and pervasive effects of construct accessibility on behavior. What were once considered shocking and controversial effects are now widely accepted among social psychologists. More recent work has focused not on demonstrating that such effects occur, but on showing how and when they operate. This research has uncovered a wide variety of moderators, both individual difference and situational, that can affect the direction and magnitude of prime-to-behavior effects, and these moderators have been a key basis for arguing for or against various prime-to-behavior mechanisms. A still more recent generation of research is beginning to establish when different mechanisms are operable. We have speculated about some of these determinants in this paper, but this research is still in its infancy. What we do know is that all of the pathways can account for some prime-to-behavior effects, and the pathways do not always operate independently of one another. This rich set of mechanisms and moderators has expanded the potential domain of prime-to-behavior effects from simple assimilation effects to a rich, complex, and interactive set of processes that can lead the same prime to have widely different effects across people or situations. The increasing array of mechanisms reduces parsimony, but increases veridicality and suggests that construct accessibility can potentially contribute to much of the diversity of behavior observed in the world around us.

## Short Biography

S. Christian Wheeler's research comprises three interrelated streams on attitudes and persuasion, automaticity, and the self. His research has been published in outlets such as *Journal of Consumer Research, Journal of Marketing Research, Journal of Personality and Social Psychology, Personality and Social Psychology Review, Proceedings of the National Academy of Science*, and *Psychological Bulletin*. He is an associate professor of marketing at Stanford University. He holds a BA in psychology from the University of Northern Iowa and MA and PhD degrees in psychology from the Ohio State University.

Kenneth DeMarree's research lies at the intersection of attitudes, social cognition, and the self, including the role of the self in stereotype priming effects, attitude and self strength, and the role of the self in persuasion. His research has been published in outlets such as the *Journal of Personality and Social Psychology*, *Personality and Social Psychology Bulletin,* and the *Personality and Social Psychology Review*. He is an assistant professor of psychology at Texas Tech University. He holds a BA in psychology from the University of Rochester and MA and PhD degrees in psychology from Ohio State University.

## Endnote

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