Understanding the Role of the Self in Prime-to-Behavior Effects: The Active-Self Account

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In this article, the authors review research showing the different roles that the self-concept can play in affecting prime-to-behavior effects. As an organizing framework, an Active-Self account of stereotype, trait, and exemplar prime-to-behavior effects is presented. According to this view, such primes can influence people's behavior by creating changes in the active self-concept, either by invoking a biased subset of chronic self-content or by introducing new material into the active self-concept. The authors show how involvement of the active self-concept can increase, decrease, or reverse the effects of primes and describe how individual differences in responsiveness of the self to change and usage of the self in guiding behavior (e.g., self-monitoring) can moderate prime-to-behavior effects. The Active-Self account is proposed as an integrative framework that explains how the self is involved in prime-to-behavior effects and helps predict how changes in the self determine which motivational and behavioral representations will guide behavior.

Keywords: priming; automaticity; self; social comparison; ideomotor

The activation of stereotypes, traits, goals, and related constructs can influence individuals' behavior without their intention or awareness (see Dijksterhuis & Bargh, 2001; Wheeler & Petty, 2001, for reviews). For example, activation of the elderly stereotype can lead both elderly (Hausdorff, Levy, & Wei, 1999) and young individuals (Bargh, Chen, & Burrows, 1996) to walk more slowly. Furthermore, the effects have been shown for positive stereotypes (e.g., professors; Dijksterhuis & van Knippenberg, 1998) and negative stereotypes (e.g., African Americans; Wheeler, Jarvis, & Petty, 2001); overt actions (e.g., hostile facial expressions and demeanor; Bargh et al., 1996) as well as relatively covert behaviors (e.g., forgetting; Dijksterhuis, Aarts, Bargh, & van Knippenberg, 2000); motor actions (e.g., reaction time; Dijksterhuis, Spears, & Lepinasse, 2001) as well as cognitive activities (e.g., performance on difficult math questions; Wheeler et al., 2001); and for relatively effortful responses (e.g., helping; Macrae & Johnston, 1998) and less effortful ones (e.g., walking more slowly; Bargh et al., 1996).

Although these effects have received considerable attention since their publication, the full set of mechanisms involved in their occurrence is not clear (Wheeler & Petty, 2001). Recently, a rapidly burgeoning body of research has developed that suggests the self can play an important role in affecting both the magnitude and direction of prime-to-behavior effects. Despite the consistent patterns observable across studies, these effects have generally emerged in isolation and have yet to be integrated under a single conceptual umbrella. In this article, we review this research and use as an organizing framework an approach we call the Active-Self account of prime-to-behavior effects.

The key idea of this account is that the activation of traits, stereotypes, and other social constructs can drive behavior by temporarily affecting active self-representations in ways either consistent or inconsistent with the primed constructs. We argue that the available evidence shows that accurate prediction of prime-to-behavior effects can be enhanced by knowing not only the characteristics of the prime (e.g., salient attributes associated with an exemplar) but also the effects of the prime on the active self-concept. This article focuses on effects that appear to operate via this route. As reviewed elsewhere (e.g., DeMarree, Wheeler, & Petty, 2005; Wheeler, DeMarree, & Petty, 2005; Wheeler & Petty, 2001), other mechanisms also are possible and can operate under some circumstances. Here, we restrict our focus to effects that appear to involve the active self-concept, but we will discuss other possible mechanisms (e.g., the social functional account; Chartrand, Maddux, & Lakin, 2005) as relevant throughout the article. Before introducing the Active-Self account, we will first review the dominant and original framework in this area of research: ideomotor theory.

AN IDEOMOTOR ACCOUNT

The theoretical account first and most frequently applied to explain the effect of stereotype and trait activation on a person's own behavior is the theory of ideomotor action (Dijksterhuis & Bargh, 2001). As implied by the name, this theory refers to an automatic link between ideation and motor action. The basic tenet of this theory, popularized in the late 1800s (Carpenter, 1893; James, 1890/1950), is that ideation about an action is sufficient to initiate that action, in the absence of an additional "push" from intention or will, so long as it is not overwhelmed by inhibitory forces (e.g., thoughts about competing actions). Research is consistent with this notion. For example, individuals told to imagine falling forward unintentionally exhibit significant forward movements (C. L. Hull, 1933). Similarly, individuals holding a pendulum between their thumb and forefingers tend to inadvertently move the pendulum in a direction consistent with their expectations (Carpenter, 1893; Easton & Shor, 1975, 1976, 1977). Intentions not to perform a particular action often are ineffective because these counterintentions can ironically lend activation to the action representation (Wegner, Ansfield, & Pilloff, 1998).

The ideation required for ideomotor effects need not be effortful. Consistent with the idea of a perception–behavior link, research suggests that mere perception of an action or movement can be sufficient to elicit corresponding behavior. For example, watching someone fall forward leads to the same tendency in an observer (C. L. Hull, 1933), and visual and auditory pulses can lead one to unintentionally move a pendulum in concert (Easton & Shor, 1975, 1976, 1977). Individuals have been shown to spontaneously and unintentionally mimic the gestures and vocal intonations of others, and the evidence for such mimicry is long-standing and robust (see Chartrand et al., 2005; Dijksterhuis & Bargh, 2001, for reviews). This link between observed behavior and enacted behavior has been labeled the perception–behavior link (Dijksterhuis & Bargh, 2001). Hence, both thought about actions and perception of actions appear to automatically generate those same actions in the thinker or perceiver. Some of this correspondence could be due to overlap in the neural regions responsible for perception (e.g., watching someone engage in an action; Iacoboni et al., 1999), imagination (e.g., imagining engaging in the action oneself; Decety, Jeannerod, Germain, & Pastene, 1991), and actual action (e.g., engaging in that action oneself; see Dijksterhuis & Bargh, 2001, for a review).

The types of behavioral effects under consideration in this article are more abstract than the aforementioned findings in that they need not involve imitation of directly perceived or imagined actions. In fact, manipulations used in stereotype and trait prime-to-behavior studies to date vary in the extent to which the prime itself could directly activate related actions. In some priming inductions, such as an open-ended essay-writing assignment, it is possible (but not certain) that participants would write about the action that subsequently serves as a dependent measure (e.g., Dijksterhuis & van Knippenberg, 1998; Wheeler et al., 2001), whereas in other tasks, such as subliminal priming with faces, no motor actions could be a direct part of the prime (Bargh et al., 1996). Hence, activation of behavioral representations is most typically indirect in this paradigm.

In addition, although some dependent measures have involved explicit overt motor movements (e.g., walking speed; Bargh et al., 1996), others have involved only indirectly observable mental changes (e.g., forgetting; Dijksterhuis et al., 2000). Wheeler and Petty (2001) reviewed ideomotor-framed stereotype priming effects published before 2001 and found two published experiments that measured motor behavior (walking speed and hostility; Bargh et al., 1996), one that measured length of essays written (Dijksterhuis & van Knippenberg, 2000), seven that measured intellectual performance (Dijksterhuis & van Knippenberg, 1998, 2000; Wheeler et al., 2001), and three that measured memory (Dijksterhuis et al., 2000; Levy, 1996). Hence, the ideomotor literature has, since its revival in the mid-1990s, had both mental and motor behaviors well represented. Because ideomotor theory and related neuropsychological research concerns

motor actions and not mental processes, the applicability of these mechanisms to nonmotor outcomes such as forgetting or intellectual performance is debatable.

Most of the behaviors studied by social psychologists are not simple motor behaviors (but see Bargh et al., 1996) but rather higher order behavioral sequences requiring coordination between multiple motor behavior representations. Such relatively complex actions could result from the activation of behavioral schemata in which parent schemata activate and regulate lower order schemata (e.g., Baars, 1992; Kirsch & Lynn, 1997; Norman, 1981; Norman & Shallice, 1986), although the action of such schemata might share more in common with goal-related activity than simple perceptual action per se. Nevertheless, it is presumably possible for traits and stereotypes to activate one of a finite (but certainly very large) number of script sequences or higher order behavioral schemata that automatically generate specific, lower order motor actions.

The ideomotor account, as applied to stereotype-to-behavior effects, therefore suggests that the activation of behaviors is the indirect result of the linkages individuals have between their stereotype representations and behavioral representations. According to this account, activation of the stereotype results in activation of all of the traits that comprise the stereotype. Linked to these traits in memory are behavioral motor representations of actions or scripts that typify the trait. For example, activation of the elderly stereotype would activate the trait "slow," which would in turn activate the behavioral representation of slow walking and associated motor representations. The observed behavior, slow walking, would therefore be the result of activation that spreads from higher level stereotype representations to lower level motor representations. This relatively direct and unmediated pattern therefore leaves all individuals equally susceptible to the behavioral effects of primes, at least so long as they have the relevant stereotype-to-trait and trait-to-behavior linkages equally available and accessible (Dijksterhuis et al., 2000; cf. Kawakami, Young, & Dovidio, 2002).

THE ACTIVE-SELF ACCOUNT

Ideomotor theory provides a straightforward account for perception-based behavioral shifts as described by the perception–behavior link (Dijksterhuis & Bargh, 2001). Thus, ideomotor theory likely provides either a complete account or contributes to understanding the effects of certain prime-to-behavior studies. Under many circumstances, however, behavioral shifts may involve more complex processes that require going beyond direct perception–behavior linkages to account for the results

TABLE 1:   Postulates of the Active-Self Account

1. The self-system directs behavior, and the features of the self that guide behavior are those that are currently in the active self-concept.
2. The active self-concept can shift rapidly in response to external inputs such as primed constructs leading to shifts in behavior.
3. Features that enhance assimilative change in the active self-concept increase assimilative behavioral change, and features that decrease assimilative change in the active self-concept reduce assimilative behavior change.
4. Features that enhance contrast in the active self-concept increase contrast in behavior, and features that decrease contrast in the active self-concept reduce contrast in behavior.
5. Primes can have idiosyncratic meaning and generate behavior that follows from this unique meaning.
6. Features that affect usage of the (changed) self-concept in guiding behavior moderate prime-to-behavior effects.

obtained (e.g., contrast effects in which the resulting behavior is the opposite of what is perceived or part of the primed representation). As a framework for predicting and understanding such effects, we propose a complement to ideomotor theory, an Active-Self account, in which primed constructs can affect behavior by temporarily altering the active (currently accessible) self-concept. Whereas the ideomotor account predicts that abstract social and trait representations directly activate congruent motor representations, the Active-Self account predicts that changes in the self can determine which motivational and behavioral representations will guide behavior. This complement to the ideomotor account permits the prediction of a wide range of effects that are not easily derived from the basic perception–behavior link framework.

The Active-Self account comprises a number of specific postulates. We briefly outline the postulates here and detail support for each postulate throughout the article. The postulates are summarized in Table 1. The first postulate, in accord with much prior research and theory regarding the self (Markus & Wurf, 1987), is that the self-concept guides behavior and that the determinants of behavior are those components currently included in the active self-concept. Hence, as detailed below, the Active-Self account builds on research suggesting that the self-concept includes both an active self-concept and a chronic self-concept. The active self-concept is the subset of chronic self-concept material that is currently accessible. The second postulate is that the active self-concept can shift rapidly in response to external inputs such as primed constructs, thereby leading to changes in behavior. That is, primes are capable of creating changes in the active self-concept, which in turn lead to changes in behavior.

According to the Active-Self account, the influence of many potential moderators of prime-to-behavior effects can be predicted by knowing the type of influence they

have on the self-concept. Postulate 3 suggests that, all other things equal, features that increase assimilative self-change (i.e., incorporating the primes into the active self-concept) increase behavioral change in an assimilative direction. Postulate 4 states that features that induce contrast in the active self-concept induce contrast in behavior. Postulate 5 recognizes that primes do not have the same meaning for everyone. Because of this, primes can lead to behavior that is neither strictly assimilative or contrastive with respect to the salient features of the primed target (e.g., striving for achievement following activation of one's parent who is neither high nor low in achievement) but rather correspond to aspects of the self-concept that have previously been associated with the primed target (e.g., being an achieving person in the presence of one's parent). Last, Postulate 6 indicates that features that affect usage of the (changed) self-concept in guiding behavior will moderate the magnitude of prime-to-behavior effects.

Importance of the Self in Guiding Behavior

Postulate 1 builds on prior research emphasizing the importance of the self in generating and regulating action. For example, Cross and Markus (1990) have suggested that linking an action to the self increases the likelihood of that action occurring (see also J. G. Hull, Slone, Meteyer, & Matthews, 2002). This is consistent with William James's (1890/1950) notion that the self is the source of willful action because "connecting an idea or an action with the self implies making it self-relevant, moving it from the vague, the global, or the abstract to the personal, the individual, or the concrete" (Cross & Markus, 1990, p. 727). Theorists have argued that linking actions to the self permits the type of sustained attention and simulation that James (1890/1950) believed necessary for willful action (Cross & Markus, 1990). Research has in fact shown that linking imagined actions to the self strengthens effects on subsequent behavior. For example, research has shown that imagining actions facilitates subsequent performance of those actions, but such performance enhancements are greatest when the actions are imagined as though one is actually performing them rather than when imagined from an observer's viewpoint (see Hinshaw, 1991, for a meta-analysis).

In addition to these more direct effects, self-relevant concepts and actions can exert greater influence on behavior because the self exerts strong influence over a wide range of cognitive, motivational, and behavioral activities. For example, considerable research points to the importance of the working self-concept in directing attention, perception, motivation, and information processing (Higgins, 1987, 1997; Kihlstrom & Cantor, 1984; Markus & Nurius, 1986; Ruvolo & Markus,

1992). Thus, information linked to the self is more likely to affect the cognitive and motivational processes that ultimately lead to action.

The effects of the self-concept on behavior also can occur automatically and without awareness because of linkages between the self-concept and behavioral sequences. For example, Markus and Wurf (1987) wrote,

> The restaurant script is linked to declarative knowledge about restaurants; similarly, a wall-flower script may be attached to a person's shy self-schema. Such links between declarative and procedural knowledge may be crucial for tying cognitive structures about the self to behavior. Links between self-schemas and scripts are likely to be well developed and automatically executed in the appropriate circumstances, which suggests the self may be involved even in non-conscious self regulation. (p. 311)

Representation of the Self-Concept

Although the importance of the self in guiding behavior is widely recognized, the nature of the self has been the subject of more debate. Much research has conceptualized the self as composed of content stored in long-term memory that is then retrieved and acted on in short-term memory. The chronic self-concept refers to those aspects of the self that are represented in long-term memory. These types of models of self-concept representation vary, but most share in common the notion that the chronic self-concept includes declarative and episodic contents that are linked to or associated with a self node (Kihlstrom & Cantor, 1984; Linville & Carlston, 1994; Markus & Sentis, 1982; Markus & Wurf, 1987). Some of these various components may be more strongly associated with the self than others and may be more resistant and persistent than others (DeMarree & Petty, 2006; Markus, 1977).

The active self-concept, on the other hand, refers to the subset of chronic self-concept content that is either consistently or temporarily active and used to guide action (e.g., Markus & Wurf, 1987). Some components may be consistently part of the active self-concept (e.g., aspects for which one is "schematic"; Markus, 1977), whereas other components only may become part of the active self-concept when some feature of the situation increases their accessibility. It is even possible that under certain circumstances, the contents of the chronic self-concept and the active self-concept might exhibit relatively little overlap.

DeSteno and Salovey (1997) suggest that changes in the active self-concept occur as the result of changes in schema dominance. That is, dynamic shifts in the active self-concept can result from the activation of roles, motivations, emotions, or subsets of the self-concept

that facilitate changes not only in activated self-concept content but also in the organization of such content. This can lead to shifting patterns of accessibility and interrelatedness of self-content, depending on which self-schema has been made dominant in that context. When the active self-concept is organized around salient schemata, it can lead to differences in the experience of the self, including self-categorization, social comparisons, and emotional reactions to stimuli. These shifts in self-structure can occur without awareness and can account for the context dependency of self-reported characteristics (e.g., McGuire & McGuire, 1988). As discussed shortly, situational features can activate unrepresentative parts of the self-concept or even potentially introduce nonchronic components into the active self-concept. These types of models all suggest that the active self-concept can vary substantially even in the face of a relatively stable chronic self-concept.

Other views emphasize even more strongly the self as a dynamic set of shifting structural and procedural representations. For example, according to one view (Kurzban & Aktipis, 2007), the self consists of a number of functionally specialized modules that guide ongoing information processing and action. These modules are hypothesized to be "encapsulated" in that they are designed to only process certain types of information. This encapsulation provides another possible account for why people can simultaneously hold and believe inconsistent cognitions regarding the self.

A third type of account represents the active self-concept as a dynamic processing system (Mischel & Morf, 2003). In structural terms, the active self-concept can be thought of as the current state in a connectionist network. Although the underlying pattern of connections between nodes may be relatively stable, the active state can flexibly shift to accommodate situational inputs. An advantage of this type of formulation is the explicit emphasis on the self-concept as a director of action rather than just as a collection of static attributes or characteristics. Hence, this type of account views the self as a

> coherent organization of mental-emotional (cognitive-affective) representations. Further, it portrays the self as a motivated, dynamic, action system. It is dynamic in that the system continuously accommodates and assimilates to information from the social world within which it is contextualized, and it is an action system insofar as it generates behavior. (Mischel & Morf, 2003, p. 23)

This formulation of the self explicitly includes within the self-concept a variety of constructs, including self-knowledge, goals, beliefs, affect, values, and personal standards.

Although these various characterizations differ in many important ways, they share multiple similarities that are critical for the Active-Self account. First, they suggest that the active self-concept can shift rapidly in response to external inputs. For primes to plausibly affect behavior via affecting the active self-concept, the active self-concept must be capable of flexibly shifting in response to external inputs, and these models of the self all share this feature. Second, they suggest that the active self-concept can change even when the underlying chronic representation remains relatively static. Because research supports the notion that the chronic self-concept is relatively stable (e.g., Markus & Kunda, 1986), the active self-concept should be capable of shifting without substantial change in the chronic representation. Third, these models suggest that the self-system directs behavior but that the features of the self that guide behavior are those that are currently active. If all components of the self-concept affected behavior equally, then the shifting active self-concept would still be insufficient to explain prime-induced behavioral change.

Postulate 1 of the Active-Self account recognizes a critical distinction between information that is active generally within working memory and information that is activated within the active self-concept. According to the Active-Self account, two pieces of information can be equally accessible in memory but differ in the extent to which they are associated with the self-concept or self-related processes. Hence, one can have the thought that one's boss is angry, or one can have the thought that one is angry oneself. One can have the belief that Einstein is intelligent, or one can have the idea that oneself is intelligent. The current active cognition that oneself is angry or intelligent would be part of the active self-concept, whereas the notion that another person is so would not. In both cases, however, the concepts of anger and intelligence are highly accessible in working memory.

According to the Active-Self account, whether a trait is part of the active self-concept (i.e., linked to the self-system) or part of general working memory (e.g., assumed to be about another person) has implications for its effects on behavior. The accessibility of intelligence, for example, if assumed to be about Einstein, might not affect one's behavior at all unless it changes one's active self-concept (e.g., makes one think that he or she is relatively unintelligent in comparison; Dijksterhuis et al., 1998). As a result, according to the Active-Self account, it is important not only to know whether a construct is accessible but also to know whether a construct is part of the active self-concept.

For expositional purposes, the examples above deal with consciously experienced cognitions about the self and associated traits, but changes to self-structures are not limited to consciously retrievable self-characteristics. The self-representations that can influence behavior include both deliberative and consciously endorsed representations as well as those automatic (implicit) associations

that may not be consciously endorsed (Markus & Kunda, 1986). Research on the implicit self-concept has revealed an ironic property, such that implicit aspects of the self-concept are sometimes considered to reside outside of awareness (see Fazio & Olson, 2003; Petty, Wheeler, & Tormala, 2003) yet are highly accessible, such that they are automatically activated and can automatically influence responses (Devos & Banaji, 2003; Greenwald & Farnham, 2000). For our purposes, this implies that prime-induced changes in the self-concept do not need to enter conscious awareness to produce the effects commonly found in prime-to-behavior effects.

Research suggests that both implicit (automatic) and more explicit (deliberative) self-concept elements can predict behavior, depending on the circumstances and the specific outcome of interest (Spalding & Hardin, 1999). For example, some research suggests that implicit (automatic) self-representations, similar to other implicit constructs (e.g., implicit attitudes; see Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997), are more likely to predict spontaneous or uncontrollable behaviors, whereas explicit (deliberative) self-representations are more likely to predict deliberate or controllable behaviors (Asendorpf, Banse, & Muecke, 2002; McClelland, Koestner, & Weinberger, 1989). However, in other situations, self-representations assessed with implicit and explicit measures appear to operate jointly to affect behavior (Briñol, Petty, & Wheeler, 2006). Hence, the self-related processes that direct behavior can simultaneously operate at varying levels of awareness and either in an automatic or controlled manner (Mischel & Morf, 2003).

SELF AND BEHAVIOR CHANGE

At the conceptual level, the Active-Self account argues that because the active self-concept is an important determinant of behavior and primes can affect the active self-concept, primes can affect behavior. This portion of the model contains several postulates, as indicated above and in Table 1. Below, we review evidence for the effects of primes on self-change and behavioral change.

Primes Can Change the Active Self-Concept

As noted above, Postulate 2 of the Active-Self account suggests that primes can change features of the active self-concept. This prediction has been supported across a number of experiments and is critical to the Active-Self account. That is, if primes did not affect the self-concept, then the self-concept could not play a role in prime-to-behavior effects. In one study demonstrating self-change, primes of intelligence-related social constructs such as

Albert Einstein or the professor stereotype affected self-perceived intelligence (Dijksterhuis et al., 1998; LeBouef & Estes, 2004; Schubert & Häfner, 2003). In other research, African American stereotype primes led to confusion of African American stereotype traits with one's own traits (DeMarree, Wheeler, & Petty, 2003; Galinsky, Wang, & Ku, 2005, cited in Galinsky, Ku, & Wang, 2005). In still other studies, primes of overweight people affected perceptions of one's body type (Kawakami, 2004) and primes of the male stereotype affected perceptions of one's emotional sensitivity (Marx & Stapel, 2006). Finally, primes of relationship partners, or even individuals who merely happen to resemble relationship partners, have modified the active self-concept in line with the self when with the relationship partner (Hinkley & Andersen, 1996).

As indicated above, trait constructs are only one of several types of self-system contents that can direct behavior. In addition to affecting perceptions of one's traits, primes also have been shown to affect constructs such as one's own feelings and attitudes. For example, African American stereotype primes can increase feelings of aggression (DeMarree et al., 2005, Study 1) and can lower self-esteem (Kawakami, 2004). Primes of the number 7 can increase feelings of luck (DeMarree et al., 2005, Study 2). Primes also can affect one's social attitudes. For example, young people primed with the elderly stereotype report more conservative attitudes, and non-skinheads primed with the skinhead stereotype report more racist attitudes (Kawakami, Dovidio, & Dijksterhuis, 2003). Similarly, women primed with the female stereotype exhibit stereotype-consistent, deliberative, and automatic attitude shifts (i.e., preferences for the arts vs. mathematics; J. R. Steele & Ambady, 2006). Hence, primes can lead people to associate more stereotype-consistent traits, personal evaluations, and social attitudes with the self.

Means of Active Self-Concept Change

How do primed constructs affect the active self-concept? The Active-Self account combines research highlighting the malleability of the working self-concept (e.g., McGuire & Padawer-Singer, 1976) and research on the effects of primes on impression formation (e.g., Higgins, Rholes, & Jones, 1977) to describe the dynamic responsiveness of self-representations to the activation of social constructs. Paralleling the different perspectives of these two research traditions, the Active-Self account offers two potential mechanisms by which primes could alter self-representations and drive subsequent behavior.

Biased activation model. The first mechanism, the biased activation model, suggests that primes could alter self-representations by selectively activating a biased

subset of one's chronic self-representation. The self-concept is vast and multifaceted (Markus & Kunda, 1986; Markus & Wurf, 1987) and can contain diverse and potentially contradictory elements, including behaviors, evaluations, goals, self-characteristics, episodic memories, aspirations, obligations, and so on (e.g., Greenwald & Pratkanis, 1984; Kihlstrom & Cantor, 1984; Markus & Wurf, 1987). For example, individuals can have self-information solely supporting the notion that one is lazy, solely supporting the notion that one is industrious, or information supporting both conclusions. Similarly, one can believe that one is currently lazy but would like or ought to be industrious (Higgins, 1987, 1997; Markus & Nurius, 1986). Likewise, individuals may have episodic memories of both lazy and industrious behaviors.

As reviewed above, it is impossible for individuals to have the entire chronic self-concept and associated information activated simultaneously within the active self-concept (e.g., Andersen & Chen, 2002; Linville & Carlston, 1994; Markus & Kunda, 1986; Niedenthal & Beike, 1997). Rather, the active self-concept contains only a very small portion of all available self-concept content. Hence, the active self-content can shift over time depending on factors such as active goals (e.g., the goal to achieve could activate self-content regarding one's intelligence), situational contexts (e.g., an American abroad may have the "American" portion of the self-concept more salient; McGuire & Padawer-Singer, 1976), and current experiences (e.g., winning a basketball championship could make the "athletic" portion of one's self-concept salient; Markus & Wurf, 1987).

According to the biased activation account, a prime does not introduce previously unrepresented information into the self-concept but rather serves to increase the accessibility of a limited subset of chronically available, prime-relevant self-concept material. It suggests that the components of the self-concept that are active and affect behavior are different from what they would have been in the absence of the prime. Accordingly, then, this alternative does not require that individuals have nebulous or poorly defined self-concepts. In some cases, coherent self-representations could sometimes facilitate the effects of primes so long as the primes are consistent with available self-content and ceiling effects are not operable.

At first blush, the biased activation model may appear implausible given the research showing that individuals' self-representations and behavior can be altered by stereotype primes that lack objective applicability to the self (i.e., they are out-group stereotypes). Although out-group stereotypes are objectively inapplicable to the perceivers in whom they are activated, there still may be overlapping content between the stereotype and the self, despite the objective inapplicability of the group membership itself. For example, although young college students are not themselves nurses, they may still have aspects of the nurse stereotype (e.g., helpful) that they believe to be at least somewhat or sometimes descriptive of themselves. A nurse stereotype prime could therefore activate such content among participants in whom the stereotype is primed because overlap between the self-concept and stereotype content already exists.

A key prediction of the biased activation model is that the effects of primes on behavior should be affected by the extent of preexisting overlap between the self-concept and prime content or its opposite. For example, the magnitude of the effect of a "conscientiousness" prime on behavior could depend both on one's chronic level of conscientiousness and the amount of conscientiousness-relevant material in the self-concept available for activation. According to this model, if two individuals report equal levels of conscientiousness but have different amounts of conscientiousness self-concept material available for activation, then larger conscientiousness priming effects should be observed in the individual for whom there is more conscientiousness self-material that is available to enter the active self-concept. Indeed, recent research supports the idea that stereotype priming effects are more likely to occur when the self-concept has preexisting overlap with the stereotype (Aarts et al., 2005). Of interest, however, as a result of this type of process, observed priming effects could sometimes be larger for those low on a given trait than for those high on a given trait if those high on the trait have the trait content chronically activated and those low on the trait have available but inactive content that is made accessible by the prime.

An additional prediction from the biased activation viewpoint is that the strength of effects of a stereotype prime on different dependent measures will vary within individuals as a function of their preexisting self and stereotype overlap. That is, individuals who have high amounts of some stereotype content (e.g., the slow component of the elderly stereotype) and low amounts of other stereotype content (e.g., the forgetful component of the elderly stereotype) stored in the self-concept will exhibit larger behavioral effects on those dimensions for which there is more preexisting overlap. This type of mechanism could explain some of the variance in effect sizes across individuals on a single dependent measure as well as variance within individuals across multiple dependent measures.

Last, if an individual has very little prime-consistent material available in memory and considerable prime-inconsistent content available but not already highly accessible, then a prime could make the active self-concept more inconsistent with the prime. Because activation of a concept (e.g., extraversion) is likely to activate relevant concept information linked in memory, an extraversion prime in this context could make the self-concept more discrepant via the activation of a greater amount of

stored introversion material. This shift of the self-concept away from the content of the prime is a contrast effect and is discussed in more detail later.

Expansion model. A second possible mechanism for prime-to-behavior effects from the Active-Self account, the expansion model, suggests that the boundaries between self and nonself are somewhat permeable. As a result, it is possible for people to sometimes be confused about whether activated mental contents pertain to the self, others, the situation, or are completely irrelevant. The classic priming literature (see Higgins, 1996, for a review) has shown repeatedly that the activation of constructs in one context can bias perceptions of other individuals in a subsequent context. For example, Higgins et al. (1977) showed that individuals sometimes choose between potential descriptors of another (e.g., reckless or adventurous) based on the extent to which one or another construct was made accessible in a previous context. That is, a trait activated by one stimulus is misperceived as one's own internal reaction to some completely different stimulus. Similarly, Srull and Wyer (1979) showed that ambiguously acting individuals can be characterized as relatively more hostile or kind depending on the extent to which hostility was made accessible in a previous context.

This phenomenon is similar to that found in research on misattribution of arousal, in which externally activated states are incorrectly thought to be of internal origin. In that literature, arousal stemming from one source (e.g., bicycle exercise) can become confused with and attributed to another source (e.g., my anger at my boss; see Petty & Cacioppo, 1983; Zillmann, 1983, for reviews). We do not propose that expansion processes necessarily occur as the result of conscious attribution processes. In fact, it may be that in most cases, the misattribution of prime content to the self occurs outside of awareness.

According to connectionist models, the context sensitivity of self-concept representations is due to automatic continuous construction processes that involve prior information (as stored in the self-concept system) and situational and contextual sources of activation. For example, Smith (1996) writes, "In this process [of activating mental representations], any other current sources of activation (e.g., patterns representing the person's mood, perceptually present objects, current concerns, or goals) will also influence the resulting representation" (p. 901). Hence, primed constructs could be another current source of activation that could bias the ongoing construction of the active self-concept.

The likelihood of self-concept expansion occurring depends on features of the context and content that create ambiguity regarding the source of the activation. This idea receives support from similar types of misattribution phenomena in other domains. For example, research on reality (or source) monitoring effects has shown that individuals can be induced to believe that they personally experienced events that did not occur (Johnson, Hashtroudi, & Lindsay, 1993). This work has shown that consistency between the memorial features of an event (e.g., perceptual details) and a source (e.g., actual experience) can lead to misattribution (e.g., thinking a fictional event actually occurred; Johnson et al., 1993). Mussweiler and Neumann (2000) applied a similar perspective to judgmental priming effects. These authors argued that participants "have to identify the source of accessibility and determine whether it is best attributed to the judgmental target itself or to a potentially contaminating factor" (Mussweiler & Neumann, 2000, p. 195). These types of judgments can operate across a wide range of conditions, although they are typically made heuristically or automatically (Johnson et al., 1993). As in the impression formation literature, the consequences of the prime for changes in the active self-concept likely depend on the extent to which the prime content can plausibly be attributed to the self. That is, expansion is likely dependent on the prime's potential fit or applicability to the target (here, the self). Hence, features that promote feelings of fit, such as fluency, should promote expansion processes. Research showing that feelings of greater ease can lead to greater changes in self-perceptions than retrieval of greater amounts of information is consistent with this basic notion (e.g., Schwarz et al., 1991).

Because of this feature, effects of primes also could differ as a function of their discrepancy from the prime recipient. A moderately discrepant prime content may lead to assimilation effects (i.e., misattribution of the prime content to the self), whereas extremely discrepant prime content may lead to contrast because the content, after being deemed as inapplicable to the self, makes the self appear to be very different, either by comparison (e.g., Herr, Sherman, & Fazio, 1983) or correction (e.g., Martin, 1986; Wegener & Petty, 1997) processes. Extreme exemplars may be more likely to lead to contrast for the same reason (i.e., linkage of the content to a specific individual makes it less likely to be confused with active self-concept material) as may be constructs primed in contexts that promote differentiation between the self and the prime (e.g., intergroup contexts may make outgroup primes less likely to be confused with the self).

The biased activation and expansion accounts are conceptually distinct and may, in many cases, have independent effects on behavior. Nevertheless, they could sometimes work in concert, such that biased activation of self-content could facilitate or inhibit the inadvertent inclusion of nonself content into the active self-concept. This is because activation of a biased subset of identity components could either facilitate or diminish fit with primed content and therefore

affect the likelihood of expansion processes. For example, a nonaggressive, Harley-riding Buddhist monk may exhibit differential effects of an aggression prime depending on which component of his identity (biker or Buddhist) is salient at the time. If his biker identity were salient (e.g., due to seeing a Harley Davidson logo), it could increase the likelihood of subsequent expansion of the self-concept to include aggression content because the aggression content, although not part of the chronic self-concept, would be consistent with the temporarily activated biker identity. On the other hand, if his Buddhist identity were salient (e.g., due to seeing a temple), it could decrease the likelihood of subsequent expansion of the self-concept to include aggression content because the aggression content would be inconsistent with the temporarily activated Buddhist identity.

Research suggests that biased activation of some identity content can not only influence the extent of facilitation of other identity content but also actually lead to inhibition. In one study, fraternity students for whom their Greek identity was made salient exhibited reduced accessibility of words related to being a student (Hugenberg & Bodenhausen, 2004). Nonfraternity students did not exhibit such an effect. Hence, it was not that simple accessibility of one construct inhibited accessibility of the other construct but rather that the biased activation of one self-identity inhibited the activation of constructs associated with conflicting self-identities. Although these effects were found with participants' actual identities, these effects could plausibly generalize to self-concept expansion as well. For example, activation of a fraternity student's fraternity identity could potentially inhibit the activation of non-fraternity-identity contents (e.g., "political activist"), even when those contents do not pertain to actual identities the student holds.

In addition to biased activation affecting expansion processes, expansion processes could potentially influence biased activation by means of spreading activation. For example, when expansion occurs and content becomes active in the self-concept, biased activation of other, related contents could occur. Hence, both biased activation and expansion could sometimes trigger each other, depending on the level of fit and association between chronic self-concept contents and those primed by the situation.

PREDICTING THE MAGNITUDE AND DIRECTION OF BEHAVIOR CHANGE

Research has uncovered a large number of moderators of prime-to-behavior effects. In some cases, these moderators have been shown to affect the magnitude of the effect. In other cases, these moderators have been shown to affect the direction of the effect, leading to behavior that is the opposite of the primed content. The Active-Self account makes the general prediction that behavioral changes should parallel changes in the active self-concept. In the absence of overriding factors, as discussed later, individual differences, processing styles, and situational influences that affect the extent and direction of changes to the active self-concept should have parallel effects on behavior. This prediction differs from predictions made by the ideomotor account, which does not predict that extent or direction of active self-concept change should affect behavior change.

Features That Increase Assimilative Self-Change Increase Behavioral Change

According to Postulate 3 of the Active-Self account, features that promote greater assimilation of primed content into the active self-concept should likewise promote greater assimilation in behavior. More specifically, features of the prime and context that facilitate the activation or integration of prime-consistent self-content can increase the assimilative effects of primes on behavior. Creating linkages between the self and prime content is one such means of increasing prime-consistent self-content activation. According to the biased activation account, this could occur because thinking about aspects of the self that are consistent with the primed construct should make such aspects of the self more accessible. According to the expansion account, this could occur because drawing linkages between the self and the primed content should make the primed content more likely to be confused as being material pertaining to the self. Hence, this type of processing would make assimilation of the self-concept to the primed content more likely and therefore lead to greater assimilation in behavior. Next, we review factors that likely increase assimilation of primed content into the self.

Perspective taking. One means of creating increased linkages between the self and primed content is through perspective taking. When the primed content is treated as though it is characteristic of the self, it can facilitate congruence between the self and the primed content and result in prime-congruent behavior. A number of studies support this idea. In one such study (Wheeler et al., 2001), non–African American participants were randomly assigned to write an essay about a day in the life of a student named either Erik Walker (whom most assumed to be White) or Tyrone Walker (whom most assumed to be African American), ostensibly as part of an experiment on hemispheric dominance and creativity. Following the priming task, participants were told that they would be participating in an unrelated experiment and would take a math test, in actuality, a section of a math Graduate

Record Examination (GRE) practice test. Results indicated that participants who wrote about Tyrone Walker performed significantly worse on the math test than did those who wrote about Erik Walker, consistent with the stereotype of Black academic underachievement.

Additional analysis, however, suggested that the effects of the primes were not equivalent across all individuals. Some individuals spontaneously wrote their essays from the first-person perspective (e.g., "My name is Tyrone, and I play football"), whereas others spontaneously wrote their essays from the third-person perspective (e.g., "His name is Tyrone, and he plays football"). Analyses indicated that individuals who wrote about Tyrone from the first-person perspective, as though Tyrone's activities and characteristics were their own, were the ones who showed the test performance decrements. Hence, individuals who actively related the African American prime content to their self-concept showed larger assimilation effects of the prime.

Similarly, a series of studies by Galinsky and colleagues (Galinsky, Wang, & Ku, 2005, cited in Galinsky et al., 2005) showed that perspective taking leads to larger assimilation effects in both self-judgments and behavior. For example, participants instructed to take the perspective of an African American individual when writing an essay about a typical day in his life rated their self-characteristics as more consistent with the African American stereotype than did both participants in the control condition and participants told to suppress the stereotype. The effects on changes in the self-concept extended to behavior. In one study, participants listened to an audiotape in which the speaker, identified as an assistant professor of political science, described a typical day in his life. Participants were then told to imagine either how the person was feeling and thinking, how they would think and feel if they were that person, or to simply listen to the tape objectively. The dependent measure was performance on a series of analytical questions. Results indicated that individuals in both perspective-taking conditions outperformed those individuals who were told to listen to the tape objectively. Because professors are stereotypically very analytically skilled, this result suggests that perspective taking increased assimilation effects on behavior relative to those who did not take the perspective of the individual.

Although certainly consistent with the idea that perspective taking increases self–other overlap, which then leads to larger assimilation effects on behavior, these findings also are potentially susceptible to an alternative account. It could be that those individuals who took the perspective of the targets engaged in greater, more elaborative, or more vivid processing of the prime. If this were the case, the larger assimilation effects on behavior could be due simply to heightened accessibility of the primed content rather than any increased integration of primed content into the self-concept. The ideomotor account would predict that effects on behavior should be a function of elaboration and accessibility. Notably, systematic tests of this possibility are inconsistent with this alternative.

In one experiment, men and women were instructed to write an essay about a day in the life of a student named Paul from either the first-person or third-person perspective (Marx & Stapel, 2006). Deliberately confounded with this manipulation was cognitive elaboration. Participants in the first-person perspective condition were instructed to write five concise sentences, whereas participants in the third-person perspective condition were instructed to write nine highly detailed and elaborate sentences. Following the priming manipulation, participants completed a series of emotional sensitivity tasks. One prominent gender stereotype is that women are more emotionally sensitive than men. Hence, assimilation to the prime would be indicated by lower performance on the emotional sensitivity tests. In addition, participants completed similarity, elaboration, and self-reported emotional sensitivity measures as manipulation checks.

Manipulation checks affirmed the success of the manipulations. Participants in the first-person perspective condition reported greater perceived similarity to Paul. They also reported lower levels of elaboration, consistent with the overlapping elaboration manipulation. Results on the emotional sensitivity measure indicated a significant interaction between gender and perspective taking. Women and men reported having equivalent emotional sensitivity in the first-person perspective condition. That is, they both reported relatively low levels of emotional sensitivity, consistent with the male stereotype. In the third-person condition, however, women reported having greater emotional sensitivity than men, presumably reflecting a default gender difference (e.g., Brody, 1985). Viewed differently, manipulation of first versus third person had a greater impact on women than men. The men reported low emotional sensitivity in both conditions, but for women, the first-person condition reduced their perceived level of emotional sensitivity as they presumably incorporated some of Paul's traits into their active self-concept.

What about behavior? Results for the emotion performance tests revealed an identical pattern. Specifically, there was a Gender × Perspective Taking interaction, such that men and women performed identically in the first-person perspective condition, but women outperformed men in the third-person perspective condition. Taken together, these results are inconsistent with the idea that effects of perspective taking on behavior are due to elaboration (Marx & Stapel, 2006). Rather, they suggest that perspective taking increases prime–self overlap in the active self-content, which leads to behavior in kind.

Private self-consciousness. In addition to perspective taking, other forms of self-referent processing also can facilitate self–prime overlap and increase effects of primes on behavior. For example, in one stream of research on self-consciousness (Fenigstein & Levine, 1984), participants were primed with either causality-related or neutral words by means of a story-writing procedure. In addition, self-consciousness was induced by assigning participants to write their stories either using or not using self-relevant pronouns. This required participants to write such that they tied the causality-related words to the self-related words within the same sentences. Following the priming procedure, participants read a series of scenarios in which they imagined themselves as actors. Results indicated that participants who wrote stories with self-pronouns and causality words subsequently attributed more causality to themselves in the scenarios than did participants in the other three conditions. Hence, relating the prime content to the self in a writing task led to larger effects of the content than either self-activation or content-activation alone.

Similar effects (J. G. Hull et al., 2002) have been obtained on behavioral measures using an individual difference assessment of private self-consciousness (Fenigstein, Scheier, & Buss, 1975) to determine individuals who are particularly likely to process and encode information in terms of its self-relevance (i.e., those high in private self-consciousness; J. G. Hull, Van Treuren, Ashford, Propsom, & Andrus, 1988). Because of this self-referent encoding, Hull and colleagues argued, primes that are objectively inapplicable to the self (e.g., that refer to out-groups) can affect one's own behavior. Across four studies and using both subliminal and supraliminal priming methods, they documented that the behavior of high-private self-consciousness individuals was more affected by primes than was the behavior of low-private self-consciousness individuals.

For example, in one experiment, nonelderly individuals completed a scrambled sentence task that required them to rearrange and select words to form a proper sentence (see Bargh et al., 1996). In one condition, the words were related to the elderly stereotype (e.g., *bingo*, *forgetful*), and in the control condition, the elderly related words were replaced with neutral words. Following the task, experimenters surreptitiously timed how long it took the participants to walk along a fixed distance. Results indicated that individuals primed with the elderly words walked more slowly, but only when they were high in private self-consciousness. Hull and colleagues (2002) explained the results by writing,

It is our opinion that this pattern is a consequence of the fact that the prime is processed as self-relevant despite its apparent inapplicability, and, as a consequence, individuals who are prone to process information as self-relevant are more likely to show the effect. (p. 409)

Hence, similar to the work on perspective taking (Galinsky et al., 2005; Marx & Stapel, 2006; Wheeler et al., 2001) discussed above, those individuals who relate the prime content to the self, thereby forming self and stereotype linkages in memory, exhibit larger effects of the prime. Indeed recent research indicates that is the self-reflection aspect of self-consciousness that enhances priming effects rather than the aspect of self-consciousness that relates to awareness of one's internal states (Wheeler, Morrison, DeMarree, & Petty, 2007).

Self-monitoring. Another factor that influences the likelihood of prime-induced self-concept and behavioral change is individuals' level of self-monitoring (Snyder, 1974). Self-monitoring is an individual difference variable that refers to the tendency and ability of individuals to modify their self-presentations in response to situational demands. High self-monitors have been dubbed "social chameleons" (Snyder, 1974) because they have both the ability and motivation to shift their behavior to fit perceived situational demands and they are not troubled by inconsistencies between their attitudes, personality characteristics, and behaviors (Snyder & Swann, 1976; Snyder & Tanke, 1976). Low self-monitors, on the other hand, have been depicted as principled because they prefer consistency between their beliefs and behavior (Snyder & Tanke, 1976) and they seek knowledge of their inner characteristics to guide their behavior. Graziano and Waschull (1995, p. 238) distinguished these two tendencies by suggesting that the prototypical high self-monitor asks, "What does the situation want me to be, and how can I be that person?" whereas the prototypical low self-monitor asks, "Who am I, and how can I be me in this situation?"

One could make different predictions regarding whether low or high self-monitors would exhibit larger priming effects. One recent conceptual analysis, the social functional account, expects high self-monitors to show larger prime-to-behavior effects than low self-monitors. According to this account (Chartrand et al., 2005), humans have evolved automatic tendencies to imitate each other in the service of facilitating social interactions. In an extension of this framework, Kawakami and colleagues (2003) argued that social category primes also facilitate assimilation effects to enhance social interaction. That is, even when social targets are not present, activation of social target categories (e.g., the elderly) creates assimilative shifts in attitudes and behaviors as a generalized product of the functional tendency to fit in with the situation (Kawakami et al., 2003). To the extent that prime-induced shifts in behavior are the result of attempts at social adjustment, one would expect those chronically motivated for social adjustment (i.e., high self-monitors) to exhibit larger prime-to-behavior effects.[1]

On the other hand, the Active-Self account predicts that prime-induced changes in behavior would be more likely for low than high self-monitors. This is because prime-to-behavior effects are presumed due to changes in the active self-concept and reliance on that self-content in guiding behavior.[2] If stereotype and trait primes affect behavior by changing the self-concept, then primes should have the largest effects among those who modify their self-views in response to primes and, as suggested by Postulate 6, among those who act consistently with their (modified) self-concepts. Research suggests that both of these tendencies should be stronger among low than high self-monitors.

First, research shows that low self-monitors are more likely to modify their self-views in response to situational feedback that is perceived to be dispositionally diagnostic. For example, low self-monitors are more likely than high self-monitors to believe that their behaviors are informative with respect to their dispositions (Zanna, Olson, & Fazio, 1980) and they change their attitudes when they believe that they have acted inconsistently with them (DeBono & Edmonds, 1989; Snyder & Tanke, 1976). Similarly, low self-monitors exhibit greater change in their self-reported characteristics after receiving ostensibly dispositional feedback about their abilities (Fiske & von Hendy, 1992). High self-monitors are not responsive to such types of information. If a subtly activated social construct were to be perceived as diagnostic self-information (rather than information about situational demands), it would exert larger effects on the self-concepts of low self-monitors just as does more explicit feedback that is perceived to be dispositionally diagnostic (Fiske & von Hendy, 1992).

Second, low self-monitors are more likely to use their activated attitudes, beliefs, and self-characteristics as a guide to behavior than are high self-monitors (Ajzen, Timko, & White, 1982; Kraus, 1995; Lippa, 1978; Lippa & Donaldson, 1990; Mellema & Bassili, 1995; Snyder & Kendzierski, 1982; Zanna et al., 1980). If stereotype and trait prime-to-behavior effects are due to changes in the self-concept, it is individuals who base their behavior on their (prime-altered) active self-concepts who should exhibit larger changes in behavior. That is, even if primed content were incorporated in the active self of high and low self-monitors equivalently, low self-monitors are more likely to act in accord with their self-views than are high self-monitors.

Hence, the Active-Self account provides two reasons why low self-monitors could exhibit larger assimilative prime-to-behavior effects than high self-monitors: greater changes in the active self-concept following primes and greater reliance on active self-concept content in guiding behavior. Each of these factors is independently sufficient to account for greater observed behavioral change following primes, and if both are operational, they could result in multiplicative increases in behavior change effect sizes

among low self-monitors. If, on the other hand, primes subtly indicate social demands, high self-monitors should exhibit larger effects of the prime due to their chronic motivation to meet social demands.

In an initial test of whether priming effects would have a greater impact on the self-concepts of high or low self-monitors (DeMarree et al., 2005, Study 1), we primed White participants with the African American stereotype by having them write essays about either Tyrone Walker or Erik Walker to activate the African American stereotype (see above and Wheeler et al., 2001). Following completion of the essay, they participated in a task they believed was a measure of subliminal perception. In actuality, this task was an indirect measure of felt aggression, in which participants were asked to rely on their feelings to make judgments about ambiguous stimuli.

The Active-Self account expects a Prime × Self-Monitoring interaction, such that low self-monitors would exhibit a greater change in their self-reported feelings due to the primes than would high self-monitors. Results supported this hypothesis. Participants who wrote essays about Tyrone subsequently selected more aggression-relevant responses than did participants who wrote essays about Erik. However, this effect was moderated by self-monitoring, such that low self-monitors showed the effect of the prime, whereas high self-monitors were unaffected. Hence, individuals who wrote about Tyrone felt more aggressive after writing their essays, but only if they were low in self-monitoring. These results were conceptually replicated when low self-monitors subliminally primed with the number 7 (vs. 13) reported greater feelings of luck but high self-monitors did not (DeMarree et al., 2005, Experiment 2).

Another study (DeMarree et al., 2003) examined more directly the effects of primes on self–stereotype overlap by using methods employed in studying self and other convergence in close relationships (Aron, Aron, Tudor, & Nelson, 1991) and social identity (Smith & Henry, 1996). In this experiment, White participants were first primed with the African American stereotype or not by means of the Tyrone/Erik essay task or by means of a sentence unscrambling task (Srull & Wyer, 1979). Following the priming procedure, participants completed a reaction time exercise in which they were to indicate, as quickly and accurately as possible, whether a trait word was descriptive of the self or not by pressing a key indicating "me" or "not me." Words were consistent with the African American stereotype (e.g., athletic), inconsistent with the African American stereotype (e.g., intelligent), or irrelevant to the African American stereotype (e.g., understanding).

In this method, evidence for overlap between the self and the stereotype content is provided if participants evince greater difficulty responding in stereotype-inconsistent

ways. That is, to the extent that participants can respond more quickly in a stereotype-consistent fashion (i.e., responding "me" to stereotype-consistent traits and responding "not me" to stereotype-inconsistent traits) than they can in a stereotype-inconsistent fashion (i.e., responding "not me" to stereotype-consistent traits and responding "me" to stereotype-inconsistent traits), they are providing evidence of convergence between the self-concept and the stereotype content. Low self-monitors exhibited this pattern. That is, African American stereotype primes led to faster stereotype-consistent and slower stereotype-inconsistent responding. The response latencies of high self-monitors were unaffected by the prime.

The three studies just described provide some evidence for the Active-Self account in finding that out-group stereotype primes can lead to assimilation in the self-concept and in finding that low rather than high self-monitors showed greater self-concept change to primed stereotype content. This supports the first of two reasons why low self-monitors might exhibit greater trait and stereotype prime-to-behavior effects. That is, low self-monitors exhibited greater integration of primed content into their active self-concepts. Of interest, these patterns were observed on relatively implicit measures, suggesting the possibility that the differential effects of primes on the self-concept between high and low self-monitors does not require the use of explicit self-concept retrieval processes. In addition, these measures are inconsistent with the possibility that the differential self-concept change is due to artifacts such as impression management processes.

If stereotype priming changes the self-conceptions of low self-monitors more than high self-monitors and if low self-monitors rely on the self-concept more as a guide to behavior, then low self-monitors should show greater behavioral effects of primes as well. In one study testing this idea (DeMarree et al., 2005, Study 3), participants were primed with the professor or supermodel stereotype before reading a persuasive message containing strong or weak arguments. Considerable research in persuasion has shown that increases in thinking are generally associated with larger argument quality effects, such that high thinkers are more persuaded by strong than weak arguments, whereas those lower in thinking show attenuated differences in persuasion across the two argument quality conditions (e.g., Petty, Wells, & Brock, 1976; see Eagly & Chaiken, 1993, and Petty & Wegener, 1998, for reviews of this procedure). Hence, if participants assimilated their behavior to the stereotype, then they would show larger argument quality effects in the (high-thought) professor condition than in the (low-thought) supermodel condition. These results were obtained, but only for low self-monitors. High self-monitors were unaffected by the prime.

These findings are not due simply to construct accessibility. For example, in the self and stereotype overlap study reported above, evidence for self and stereotype overlap was provided by faster responses to stereotype words in some circumstances (i.e., when indicating the word is self-descriptive) but slower responses to stereotype words in other circumstances (i.e., when indicating that the word is not self-descriptive). In addition, research suggests that, if anything, high self-monitors have more elaborate and accessible information regarding social groups as a result of their greater reliance on behavioral scripts and prototype information (Schwalbe, 1991; Snyder, 1979; Snyder & Cantor, 1980). Hence, these results are not easily explained by a differential accessibility account.

Although all of the above studies revealed larger priming effects among low self-monitors, it is possible that high self-monitors could show larger effects under some conditions. For example, because high self-monitors are more responsive to situational incentives than low self-monitors, they may respond more to primes that have a normative component (e.g., pictures of a normative situation such as a library) or primes that suggest not what one actually is (e.g., trait or stereotype primes) but instead what one should be (e.g., "ought" primes; Higgins, 1987) or what others want one to be (Morrison, Wheeler, & Smeesters, in press). In addition, if the prime activation is perceived to stem from situational demands (rather than from the self), then one would expect high self-monitors to exhibit effects of the prime.

The experiments reviewed in this section provide robust evidence that processing that creates linkages between the self-concept and the prime content can increase the effects of the prime on the self-concept and behavior. Manipulations and measurements of the tendency to engage in perspective taking or relational processing, the tendency to alter the self-concept in response to information, and the tendency for the self-concept to guide behavior provide triangulating evidence consistent with the importance of the self in determining the magnitude of assimilative prime-to-behavior effects.

Features That Decrease Assimilative Self-Change Decrease Behavioral Change

As discussed previously, the mental contents most likely to guide behavior are those that are currently active. For example, individuals with highly accessible attitudes are more likely to act in attitude-consistent ways (Fazio, 1995), especially if they are low in self-monitoring (Ajzen et al., 1982; DeBono, Green, Shair, & Benson, 1995), and individuals with highly accessible self-concept content are more likely to act in ways consistent with that self-concept content (Markus & Wurf, 1987), especially if they are low in self-monitoring (Aaker, 1999).

As shown in the studies just reviewed, behavior follows the active self-concept content rather than the

(inactive) chronic self-concept content. Thus, just as Postulate 3 indicates that factors that enhance the assimilative effect of primes on the active self-concept increase assimilative behavior change, so too do factors that reduce the assimilative effect of primes decrease assimilative behavior change. If a subset of chronic self-content is always accessible (e.g., for individuals who are "schematic" along a prime-relevant dimension), it should be more difficult to produce prime-induced behavior shifts because behavior-relevant self-content is already part of the active self-concept. Similarly, if chronic self-concept material is temporarily brought into the active self-concept, it should decrease prime-induced behavior shifts for the same reason. Research does indicate that making chronic self-content accessible diminishes the effects of primes on behavior.

For example, in one experiment (Dijksterhuis & van Knippenberg, 2000), participants were primed with the stereotype of politicians (or a control prime) before writing an essay arguing against the French nuclear testing program. Manipulated orthogonally to the prime was the presence or absence of a mirror during the priming and essay task. Results indicated that the politician prime led participants to write significantly longer essays (consistent with the pretested stereotype of politicians as long-winded), but only when the participants were not placed in front of a mirror. The authors argued that the mirror made salient alternative behavioral cues (i.e., participants' chronic self-concepts) that interfered with the prime's effect on the activation of prime-consistent behavioral representations.

In addition to situational manipulations of self-content accessibility, some evidence suggests that chronic accessibility of incompatible self-content also can decrease the magnitude of priming effects. For example, Smeesters and colleagues (Smeesters, Warlop, Van Avermaet, Corneille, & Yzerbyt, 2003) have shown that effects of primes on behavior are moderated by the consistency with which individuals enact behavioral tendencies. In one experiment, participants were classified as pro-social or pro-self individuals on the basis of their responses to the Ring Measure of Social Values (Liebrand, 1984). They also were classified as high or low in consistency regarding their pro-social or pro-self orientation based on the consistency of their responses to the social values measure.

Participants were then subliminally primed with religious, business, or neutral words. Following the priming procedure, participants played a dictator game in which they freely allocated chips worth points to themselves and a partner. The prime had significant assimilative effects (i.e., larger allocations to the partner following a religious prime and smaller allocations following a business prime) on individuals who were low in consistency but not on those who were high in consistency. Furthermore, social value orientation had a reliable effect on allocations made by high-consistency individuals but not low-consistency individuals. That is, when people were consistent in their value orientation, pro-social individuals allocated more to others than did pro-self individuals, regardless of priming. When people were inconsistent in their value orientation, pro-social individuals allocated more to others than did pro-self individuals only in the neutral priming condition and not when primed with religious or business words. Hence, effects of primes were strongest in the absence of consistent, competing self-content, and effects of self-content were strongest among those without competing prime information.

In another experiment, the procedure was the same with the exception that some participants' chronic goals and dispositions were made accessible prior to receipt of the prime. Results indicated that activation of chronic self-characteristics increased the extent to which low-consistency participants acted in accordance with their own social value orientation and decreased the effects of the primes on allocations. Consistent with this finding, recent research suggests that individual differences in chronic awareness of one's internal states also reduces priming effects (Wheeler et al. 2007). These experiments demonstrate that activation of chronic self-content can activate competing behavioral tendencies that can reduce the prime's effects on behavior. In particular, activation of action-relevant, chronic self-concept content has been shown to increase the likelihood that chronic behavioral tendencies, and not prime content, will guide behavior.

In these studies, it is possible that the reductions in the effects of the prime in the face of highly accessible, prime-relevant self-content could have been driven solely by the extent to which the activated chronic self-content (as opposed to the prime-altered self-content) influenced behavior. That is, the effects could be explained simply by considering the chronic self-content as an independent driver of behavior. It is nevertheless possible that the accessibility or coherence of chronic self-content affects the magnitude of priming effects not only by influencing behavior directly but also by affecting the resistance of the self-concept to change. Rather than just serving as an independent contributor of behavior, accessibility of chronic self-concept content could be one of several strength-related self-concept dimensions that reduce the influence of primes on the active self-concept (see also DeMarree & Petty, 2006).

Markus (1977) showed that individuals who were "schematic" for a given trait (i.e., those who were extreme on the trait and rated it as highly important) were those who were most resistant to feedback that contradicted their reported standing on the trait. In addition to importance, other features of self-concept strength also could moderate the effects of primes on self-concept change and behavior, much as attitude strength variables moderate

the effects of persuasion attempts on attitude change (see Petty & Krosnick, 1995). These variables could affect self-change either by affecting the content of the active self-concept or by affecting the perceived validity of different self-concept components and, therefore, their influence on the overall active self-representation.

According to the expansion model, a weaker self-concept should be more affected by a prime because individuals with weaker self-concepts may be more easily confused about their actual self-characteristics. To the extent that the self-concept contains inconsistencies or ambiguities, it could be more susceptible to prime-induced assimilation in the self-concept. Some initial research supports this idea. For example, in one study (DeMarree, Morrison, Wheeler, & Petty, 2006), young college students who had large discrepancies between their actual, ought, and ideal characteristics regarding stereotypically elderly traits (e.g., stubborn) were more affected by an elderly prime than were those who had smaller discrepancies. Specifically, participants with large discrepancies reported more stereotypically elderly attitudes (e.g., endorsement of conservative attitudinal statements) when primed with the elderly stereotype, but those with smaller discrepancies were unaffected by the prime.

In addition to more structural features of self-concept strength, meta-cognitive features of self-concept strength also affect the likelihood of active self-concept change. For example, perceived self-mutability (Stapel & Koomen, 2000b; Stapel & Suls, 2004) and manipulated (Stapel & Blanton, 2004) or measured (Pelham & Wachsmuth, 1995) self-certainty can produce similar effects, such that participants who initially perceive themselves to be changeable or who are uncertain of their self-views show a greater influence of a comparison standard on self-judgments. For example, in one study (Stapel & Koomen, 2000a, Study 2), participants were primed with positive or negative traits and were led to believe that the self is highly mutable or immutable. Results indicated that participants who believed the self to be mutable assimilated their self-impressions to the primed traits— self-ratings were more positive after exposure to positive than negative traits. Participants who believed the self to be immutable were unaffected by the primes.

The biased activation model makes somewhat more complex predictions regarding how strength-related variables would moderate the effects of primes on self-concept change. Depending on the particular self-concept strength dimension and the difference between the availability and accessibility of self-concept content, self-concept strength could either amplify or diminish effects of primes on behavior. For example, according to this model, the chronic accessibility of self-concept contents should reduce effects of primes on self-change or behavior (as shown in the experiments reviewed above) for two

reasons. First, chronically accessible self-concept content would serve as an independent (nonprime) input to behavior. Second, the accessibility of this content also would reduce further active self-concept change. If the available self-concept content is already accessible, then the prime has no additional material to activate.[3]

On the other hand, highly consistent self-concept contents could have numerous effects on self-concept change and behavior. If the chronic self-concept content were internally consistent but relatively inaccessible, for example, self-concept congruent primes could have larger effects relative to those individuals with more mixed content. This is because all available self-concept material would be congruent with the prime and because the structural consistency might facilitate construct activation. In essence, the primes would bring existing chronic self-content into the active self-concept by making it more accessible. However, if the prime was incongruent with the overall self-concept, highly consistent self-concept content could lead to self-concept and behavioral change in a prime-incongruent direction (i.e., a contrast effect). It is these types of effects to which we next turn our attention.

Features That Induce Contrast in the Self-Concept Induce Contrast in Behavior

Although the effects of stereotype and trait primes reported in the literature are generally assimilation effects (i.e., behavior becomes more similar to the prime; Wheeler & Petty, 2001), contrast effects, in which behavior becomes more dissimilar, also have been demonstrated. Contrast effects are difficult to explain from a perception–behavior link perspective because the behavioral output is inconsistent with the perceptual input. Although contrast effects could result from more general ideomotor mechanisms (i.e., thought activating behavioral representations), a simple perception-to-behavior account is not sufficient to explain how contrasting behavioral representations would be activated in the first place. Furthermore, the social functional account does not expect contrast because this would mean that people are adopting behaviors or attitudes that are opposite to the primed group, making it less likely that one would fit in.

According to Postulate 4 of the Active-Self account, features of a situation that increase the likelihood of a contrast effect on the self-concept also will increase the likelihood of contrast in behavior. Thus, a primary way that contrast can occur is by the activation of prime-inconsistent self-content. That is, under some circumstances, primes can make one type of information generally accessible (e.g., the concept of "stupid") but another (opposite) type of self-information accessible

(e.g., I'm smart). The Active-Self account predicts that it is this self-associated information that will drive behavior.

Previous research has provided insights into a number of factors that affect the likelihood of contrast in judgments of others and the self. For example, although there are some inconsistencies in the literature, research has generally shown that contrast is more likely to occur when the primes are used as a comparison standard (Stapel & Koomen, 2001b), tested for their dissimilarity to the target (Mussweiler, 2003), or used as a reference point for judgment (e.g., Markman & McMullen, 2003).[4] These outcomes can be determined, in part, by features of the prime. More extreme, discrete, and discrepant primes are more likely to lead to contrast effects in judgments. For example, exemplars that are strongly linked to specific characteristics (e.g., traits or attributes) are more likely to lead to contrast than presentation of those characteristics alone (Dijksterhuis et al., 1998; Stapel, Koomen, & van der Pligt, 1997). Similarly, other features of the situation that lead to perceptions of dissimilarity between the prime and target can increase the likelihood of contrast. For example, activating the mindset of the self as distinct and discrepant from others can lead to contrast from an in-group exemplar because it instigates comparison and dissimilarity testing (Stapel & Koomen, 2001a; Stapel & Tesser, 2001). In addition, the salience of an intergroup context can determine whether assimilation or contrast occurs after exposure to out-group primes because it too can determine whether the self is perceived as similar to or discrepant from the out-group prime content (Spears, Gordijn, Dijksterhuis, & Stapel, 2004).

Recent theories of assimilation and contrast have provided unifying accounts by describing how these various moderators affect the way the prime content is processed. Mussweiler (2003) refers to factors that facilitate similarity versus dissimilarity testing, Markman and McMullen (2003) refer to factors that facilitate reflection versus evaluation, and Stapel and Koomen (2001b) refer to factors that facilitate interpretation versus comparison. These theories share in common the idea that processing approaches, in addition to features of the target or the context, can affect whether assimilation or contrast occurs. Specifically, each account outlines a type of processing that promotes thinking about similarities between the prime and the target and a type of processing that promotes thinking about differences between the prime and target. Some theories of social comparison, such as Mussweiler's (2003) Selective Accessibility Model (SAM), are more similar to our biased activation mechanism because they propose that the outcome of comparison with a target depends on the type of self-knowledge that is rendered accessible by a comparison. Other models, such as Markman and McMullen's (2003) Reflection and Evaluation Model (REM), also permit some nonself

information to influence comparison outcomes, such as when individuals engage in mental simulation, and thus are more compatible with our expansion model.

As opposed to the social comparison approach, which has typically been investigated in contexts that promote explicit comparison processes and judgments, the automatic behavior literature typically has examined processes that operate without awareness. Hence, the applicability of these principles to the automatic behavior domain depends on the extent to which primed content can automatically lead to comparison and contrast in the self and whether such self-content could automatically direct behavior.

Recent evidence suggests that contrast can in fact occur even when individuals are unaware that a comparison target has been presented. For example, in one experiment (Mussweiler, Ruter, & Epstude, 2004b), subliminal presentation of extreme exemplars led to contrast in recipients' self-perceptions, presumably because the subliminal activation of the exemplar served as a comparison standard against which the person was highly discrepant. Extreme exemplars are particularly likely to lead to contrast effects in self-perceptions because the exemplar provides a concrete, distinct, and highly discrepant comparison standard against which the self can be viewed.

Research supports the notion that extreme exemplars are generally more likely to lead to contrast than are primed stereotypes. For example, in one experiment (Dijksterhuis et al., 1998, Study 4), participants wrote an essay about the characteristics of a professor or Albert Einstein prior to a lexical decision task. In the lexical decision task, participants indicated whether each letter string was a word as quickly as possible. There were three types of actual words: intelligence words (e.g., *smart*), stupidity words (e.g., *stupid*), and neutral words. Immediately prior to the presentation of each letter string was a subliminal prime of "me" words (e.g., *self*) or control words. The inclusion of "me" and control words prior to presentation of the letter strings potentially allows for the separate measurement of general and self-construct activation because the task allows for measuring the overall facilitation of intelligence and stupidity words relative to neutral words as well as whether such facilitation differs depending on whether the self is activated.

Results indicated that both the professor and Einstein primes increased the accessibility of intelligence words, and the facilitation of intelligence words did not differ based on whether it was preceded by a "me" or control prime. Results also indicated that responses to stupidity words were facilitated in the Einstein essay condition but that responses to the words were faster only when preceded by a "me" prime. Hence, both the

professor and Einstein essays activated the construct of intelligence generally, as evidenced by the facilitation of responses to such words across the "me" and control prime trials. However, the Einstein essay also increased stupidity associations with the self, as evidenced by the facilitation of stupidity words following the "me" prime trial but not the control prime trial.

Given that both intelligence (an association with Einstein) and stupidity ("me" in relation to Einstein) were activated in participants, which construct would eventually guide behavior? In this case, the construct linked to the self was not the one that exhibited the most general accessibility. Nevertheless, according to the Active-Self account, the construct most closely associated with the self should drive behavior. Although there were no behavioral measures collected in this experiment, other experiments in this article showed that stereotype primes led to assimilation effects (i.e., better quiz performance following professor primes), whereas exemplar primes led to contrast effects (i.e., worse quiz performance following the Einstein prime). These results suggest that even though exemplar primes can activate both the features of the exemplar's category (e.g., intelligence of professors) and social comparison information (e.g., that one is not as intelligent as Einstein), the information that is uniquely tied to the self drives eventual behavior. This type of finding is difficult to explain with a perception–behavior link account alone, which predicts assimilation to the features of primed constructs but is consistent with the Active-Self account, which suggests that information in the active self-concept affects behavior.

Research has shown that exemplars will not always lead to contrast in self-perceptions and behavior. The effects of exemplars depend both on the perceived relevance of the exemplar and the explicitness of the comparison. When exemplars are perceived to be relevant comparison standards, they are more likely to be used as such. When this occurs, if the exemplar is sufficiently extreme, contrast typically results. When the exemplars are perceived to be irrelevant comparison standards, however, the salient attributes of the exemplar may be activated, and these attributes can bias interpretation of the target (or the self). This typically results in an assimilation effect (e.g., Macrae & Johnston, 1998).

These types of effects have been demonstrated in a number of studies. For instance, animal primes (e.g., cheetah) lead to contrastive perceptions and behavior (e.g., greater slowness) when animals are perceived to belong to the same category as humans (Aarts & Dijksterhuis, 2002; Stapel & Koomen, 1997). This presumably occurs because once perceived as belonging to the same category, the animals become a relevant comparison standard. When the animals are perceived to belong to a different category, and hence are an irrelevant comparison standard, the salient characteristics of the prime (e.g., the speed of cheetahs) bias self-perceptions in an assimilative direction.

These effects generally depend further on the explicitness of the comparison. When the presentation of exemplars is incidental or subliminal, comparisons and contrast can occur automatically because individuals do not realize the irrelevance of the target (Gilbert, Giesler, & Morris, 1995). For example, Stapel and Suls (2004) showed that exemplars tend to lead to contrast in both automatic and deliberative self-perceptions and in behavior when they are presented incidentally (i.e., when participants are not instructed to compare themselves with the target), but exemplars tend to lead to assimilation when participants are instructed to compare themselves with the target along the relevant dimension. Again, however, the result of explicit comparisons can depend on whether the explicit comparison standard is perceived to be relevant and, if relevant, how similar the comparison target is. For example, when led to believe that an extreme comparison target (e.g., Einstein) is potentially diagnostic, contrast can result, relative to when that same comparison target is perceived to be irrelevant (LeBouef & Estes, 2004). Also, as noted above, relevant exemplars can still lead to assimilation if they are moderate enough to lead to activation of exemplar-consistent active self-content. Similarly, effects of incidental comparisons can depend on the extremity of the exemplar. Although contrast tends to result from incidental social comparisons, these effects are more likely to occur for extreme (rather than moderate) comparison targets (Mussweiler, Ruter, & Epstude, 2004a).

Wheeler and Petty (2001) speculated that stereotypes, although not as concrete as exemplars, also could lead to contrast effects on behavior when the stereotype is sufficiently extreme and when comparisons between the self and stereotype occurred, and this prediction has been supported. A number of features can increase the likelihood of self and stereotype comparison. Subtle activation of the self as distinct from others in combination with explicit thought about a highly discrepant comparison target can create contrast by activating a "differentiation mind-set," such that differences between the self and the prime are emphasized (Stapel & Koomen, 2001a). In contrast to the self-relational processing that leads to increased assimilation effects (e.g., perspective taking), this type of processing emphasizes finding discrepancies between the self and the primed target and, hence, should elicit contrast (see also Mussweiler, 2003). Research has supported this idea.

In one experiment (Schubert & Häfner, 2003), participants were instructed to think explicitly about the characteristics of a prototypical out-group member (i.e., professor or a hussy) while staring at a fixation point.

The fixation point was periodically replaced with sub-liminally presented "self" (e.g., me) or "other" (e.g., he) priming strings. The authors argued that subtle activation of the self, concurrent with conscious thought about a social category, would lead to the production of social comparative thoughts and, hence, contrast in self-perceptions and behavior. Results supported their hypotheses. Individuals who were primed with self-related words rated themselves as more intelligent in the hussy condition than in the professor condition (consistent with contrast in self-perceptions), whereas in the no self-activation condition, the opposite trend occurred (i.e., assimilation).

Performance on a multiple-choice quiz paralleled these self-ratings. The activation of the personal self as distinct from the prime led to perceptions of dissimilarity from the prime and contrast in behavior. Hence, whereas stereotypes alone typically are not sufficiently distinct to generate comparison and contrast (Dijksterhuis et al., 1998), activation of the self as separate from the stereotype can increase distinctiveness and promote comparison-based contrast. This study therefore suggests that the same primes can activate either assimilative or contrastive self-information depending on the type of self-related processing that occurs, and that resulting changes in the self can lead to behavior in kind.

Other studies have examined how the comparison between group-level self-identities can increase the likelihood of contrast. For instance, in one experiment (Spears et al., 2004), psychology students completed a questionnaire designed to make their identities as psychology students salient and then completed a picture-coloring task to provide a baseline measure of neatness. They next unscrambled a series of sentences—ostensibly diary entries from either psychology or economics students—that included synonyms of neatness. Last, participants repeated the coloring task. Results indicated that the psychology students who unscrambled the neatness sentences associated with economics students became messier following the prime. The authors attributed these results to a comparison contrast in which out-group traits are made salient and an intergroup comparison (and contrast) follows.

In further support, manipulations of the salience of an intergroup context have affected the likelihood of comparison and contrast. For example, in one study (Spears et al., 2004, Study 2), participants were primed with the stereotype of busy businesspeople using an essay task. When no intergroup context was made salient, assimilation emerged, such that there was a tendency for people primed with businesspeople to work more quickly on a task than did control participants. When participants completed a measure of identification with their university, thus activating a specific self-identity that is discrepant from the primed category, contrast emerged,

such that participants primed with businesspeople waited longer in a subsequent portion of the experiment (showing patience) than did control participants (Spears et al., 2004). Parallel results have been found using a minimal group paradigm (Schubert & Häfner, 2003, Study 1).

Attitudes toward the primed group also can determine whether assimilation or contrast occurs. For example, in one experiment (Cesario, Plaks, & Higgins, 2006), participants primed with the elderly stereotype walked more slowly, but only if they had positive attitudes toward the elderly. Participants who had negative attitudes toward the elderly actually walked more quickly. Similar to the social–functional account of prime-to-behavior effects, the authors interpreted these results as indicating a "preparation to interact" (presumably, those who dislike the elderly interact with them by walking more quickly to get away). However, an alternative interpretation, consistent with the Active-Self account, is that those who dislike an out-group perceive it to be more distinct and different from oneself, thereby increasing the likelihood of contrast in the self and in behavior. Indeed, just as research has shown that similarity leads to attraction (Byrne, 1961), so too has research shown that liked others are perceived to be more similar to oneself than disliked others (Morry, 2005).

Explicit instructions to process primes in different ways also can affect whether contrast or assimilation occurs. For example, in one experiment (Haddock, Macrae, & Fleck, 2002), participants viewed pictures of supermodels and were told to focus either on their similarities to each other or their differences from each other (or, in a control trial, to simply describe a set of flowers). The different instruction sets were used to generate a similarity or dissimilarity mind-set. After each set of pictures, participants completed a set of Trivial Pursuit questions. Results indicated that participants answered most questions correctly after describing the differences between the supermodels (i.e., a contrast effect) and answered the fewest questions correctly after describing the similarities between the supermodels (i.e., an assimilation effect). Hence, the results of this study, in which processing style was instructed, parallel those in which different processing styles have been shown to spontaneously occur as the result of features of the priming stimulus and target (e.g., Mussweiler et al., 2004b).

Taken together, these studies illustrate that the likelihood of contrast depends on activation of the self as a distinct entity, features of the prime (e.g., its concreteness or extremity), and features of the situation that promote processing the prime in different ways, such as using it as a comparison point or interpretation frame for the self (Stapel et al., 1997) or testing for similarity versus difference with respect to the self (Mussweiler, 2003). What all of these studies hold in common is that

behavioral contrast occurred because the primes made one type of content generally accessible but opposite content became accessible in the active self-concept. Contrast effects are not easily predicted without reference to the self. That is, without understanding that the primes led to prime-incongruent changes in the active self-concept, there is little basis for expecting behavior opposite to the characteristics or content of the prime. These types of changes in the active self-concept and their automatic effects on behavior are at the heart of the Active-Self account.

Primes Can Activate Idiosyncratic Self-Concept Associations Not Related to Prime Characteristics

Thus far, our review has discussed features of primed constructs, self-concept representation, and information processing that can influence the extent and direction of prime-to-behavior effects. These effects have all corresponded to a single continuum. At one end of the continuum is assimilation, which corresponds to behavior consistent with the characteristics of the primed construct. For example, assimilation to the professor stereotype would include behaviors typical of professors, such as acting intelligently. At the other end of the continuum is contrast, which corresponds to behavior inconsistent with the characteristics of the primed construct. For example, contrast from the professor stereotype would include behaviors that are the opposite of those typical of professors, such as acting unintelligently.

Although this continuum encompasses the majority of prime-to-behavior effects in the literature, some effects do not fall along this dimension. This is because primed constructs can sometimes activate not only characteristics that are consistent or inconsistent with the salient attributes of the primed construct but also characteristics that are completely idiosyncratic, such as when a prime activates aspects of the self as it relates to the primed construct. This type of mental representation has been called a "relationship schema" (Baldwin, 1992). Research on relationship schemas is grounded in work showing the highly interpersonal nature of the self-concept (see Baldwin, 1992, for a review). Based on such research, it has been proposed that the active self-concept can shift in response to simply thinking about important others. However, rather than shifting to include (or exclude) those salient characteristics that the other possesses, the active self-concept in this case shifts to be consistent with one's self-beliefs, motivations, and feelings when with that person. Also called the "self-when-with-other" (Ogilvie & Ashmore, 1991), this construct has been defined as "a mental representation that includes the set of personal qualities (traits, feelings, and the like) that an individual believes characterizes his or her self when with a particular other person" (p. 290). In

addition to these explicit self-beliefs, the important other also may activate more procedurally oriented components that are outside of conscious awareness (Baldwin, 1992). According to Postulate 5 of the Active-Self account, it is important to recognize that although many primes will activate the same constructs in most people, primes activate idiosyncratic self-relevant content, it is the idiosyncratic content included within the active self that will guide behavior. One well-studied example of this is when a personally meaningful prime, such as a relationship partner, activates aspects of the self idiosyncratically associated with the partner and generates behavior that follows in kind.

Research supports the idea that both the self and behavior shift in response to relationship primes. People display a variety of emotional, motivational, and behavioral shifts in response to the activation of significant others (see Andersen & Chen, 2002, and Baldwin, 1992, for reviews). Of interest, people who merely resemble a significant other also can activate the relational schema associated with the significant other, a phenomenon known as transference (Andersen, Reznik, & Manzella, 1996; Hinkley & Andersen, 1996). For example, when transference occurs, exposure to someone who resembles a significant other can shift the active self-concept to be more similar to that when with the relationship partner (Hinkley & Andersen, 1996).

These effects could depend further on self-monitoring. One might expect that low self-monitors would adopt a significant other's goal for them only to the extent that they also shared the goal, whereas high self-monitors might assimilate to another's goal for them regardless of their personal endorsement of that goal. Initial results are consistent with this idea. For example, in one experiment, Morrison et al. (in press) recruited high and low self-monitors whose roommates had the goal for them of keeping their living space clean. In the experiment, participants were primed with their roommates, and how clean and orderly they left the experimental room was measured. Results indicated that the high self-monitors primed with their roommates kept the space cleaner regardless of the extent to which they personally had the goal of keeping their living space clean. Low self-monitors, on the other hand, were affected only to the extent to which they also shared that goal—those who did not personally hold the goal were unaffected by the roommate prime.

Last, effects of significant other primes depend on the extent to which the prime recipient views the other as highly controlling (Chartrand, Dalton, & Fitzsimons, in press). Specifically, when primed with highly controlling significant others, prime recipients tend to react against the goal of the significant other and pursue goals in opposition to the significant other's wishes. Parallel effects were found for dispositional reactance.

These types of primes can lead to behavior that corresponds not to the defining characteristics of the primed exemplar but rather to those that correspond to the activated aspects of the self-concept (the self-when-with-other). For example, people achieve more on various tasks when primed with (noncontrolling) significant others (e.g., parents) with whom they associate achievement goals (Fitzsimons & Bargh, 2003; Shah, 2003). Similarly, people donate more to charities after exposure to images of people in need (Jonas & Sassenberg, 2006). These effects occur not because parents are themselves particularly high or low in achievement or because people in need are particularly likely or unlikely to be helpful but rather because achievement and helping-oriented aspects of the self-concept are made accessible by the primed individuals. These types of findings do not follow clearly from a perception–behavior link perspective (the behavior is not consistent with the characteristics of the perceived target) but are consistent with the idea that primes can activate prime-relevant aspects of the self-concept, which then guide behavior.

Features That Affect Usage of the (Changed) Self-Concept in Guiding Behavior Moderate Prime-to-Behavior Effects

The previous sections reviewed a variety of factors that determine the magnitude and direction of self-concept change following construct activation. Postulate 6 concerns the usage of the (changed) self-concept content in directing behavior. This postulate indicates that features that promote usage of the self-concept can affect the magnitude of prime-to-behavior effects. That is, although the mere activation of self-content can be sufficient to guide behavior when the behavior is spontaneously enacted, for more deliberative behaviors, the perceived validity of the self-content also can play a role. This prediction follows from research on attitudes that shows that the impact of activated mental content can depend on associated metacognitions, such that activated content can be used or not depending on online (Cohen & Reed, 2006; Gawronski & Bodenhausen, 2006; Petty, Briñol, & Tormala, 2002) or retrieved (Petty, 2006; Petty, Tormala, Briñol, & Jarvis, 2006) validity assessments. For example, thoughts that are perceived to be highly valid (i.e., held with high confidence) are more likely to guide evaluative judgments (Briñol & Petty, 2003; Petty et al., 2002), and attitudes that are perceived to be highly valid are more likely to be used in directing behavior than are attitudes held with low confidence (e.g., Rucker & Petty, 2004). This is because highly valid thoughts are viewed as accurate guides to judgment, and confidently held attitudes are viewed as accurate and sufficient inputs to action. Indeed, attitude–behavior correlations are considerably

stronger for attitudes held with certainty (e.g., Rucker & Petty, 2004; see Kraus, 1995, for a review).

In a similar fashion, people's behavior corresponds more strongly with their self-views when the self-views are perceived to be valid (e.g., are held with confidence; Pelham & Swann, 1994; Swann & Ely, 1984). If primes affect behavior by affecting self-views, then the magnitude of the priming effect should be moderated by the extent to which people rely on those self-views as guides to behavior, whether due to perceived validity or some other reason (e.g., the belief among low self-monitors that one should act like one really is). Research supporting this counterintuitive prediction was reviewed earlier in this article. One possible reason that low self-monitors show larger prime-to-behavior effects is that they are more likely to rely on their (prime-changed) self-concepts in directing their behavior.

Other research using manipulations that affect the usage of one's self-content have yielded similar results. For example, in one experiment (Briñol & Petty, 2003), participants wrote about their positive or negative attributes using either their dominant or nondominant hands. It was hypothesized that the shaky and unconfident-looking nondominant handwriting would lower participants' confidence in their written (positive or negative) thoughts and lower the influence of those thoughts on self-judgments. Results supported the hypothesis. Specifically, participants reported more positive self-evaluations after writing about their positive than negative attributes, but only when they wrote with their dominant hands.

Parallel results have been found using very subtle priming manipulations and inductions of confidence. In one study, for example, White participants were subliminally primed with the African American stereotype before completing an indirect measure of felt aggression and a measure of closeness to various social groups, including the target group of African Americans (DeMarree, Briñol, & Petty, 2005). Immediately after the prime, but before the dependent measures, participants either nodded or shook their heads, ostensibly for a study on "motor-eye coordination." Because nodding, relative to shaking, is associated with increased validity of accessible thoughts (Briñol & Petty, 2003), it was predicted that participants who nodded their heads would see their prime-induced self-relevant thoughts as more valid and would use them more when completing the dependent measures. This is exactly what was found. Participants who were nodding their heads demonstrated assimilation on both the measure of aggression and on ratings of closeness to African Americans (but not other social groups), whereas participants who were shaking their heads tended to do the opposite. Hence, the expansion of

the self to include stereotypical out-group traits led to increased feelings of closeness with the out-group to which the primed stereotype was directed, but only when the prime-induced self-content was seen as valid (i.e., when priming was followed by head nodding rather than shaking).

Although in the above examples confidence or validity was manipulated, it also may be possible for stored validity to exert an influence in prime-to-behavior effects. For example, if two individuals have the same degree of aggression-relevant self-concept content and are equal with respect to the chronic accessibility of this content, they might still differ in how confident they are of this content. That is, one person may be more confident in their past aggressive behaviors (e.g., because they were seen as unprovoked). If these two individuals are primed with an aggression-relevant prime (e.g., skinhead), then the stored validity associated with this aggressive self-content should moderate the impact that this now-accessible self-content will have on behavior.

Variables such as confidence (e.g., from head nodding) can affect the validity of one's thoughts regarding the self and, hence, affect usage of the self-concept in guiding behavior. Other features can likewise affect self-concept usage. Low self-monitors rely on the concept more because they lack the ability or motivation to act inconsistently with who they believe they really are. Similarly, general features of situations could affect reliance on the self-concept as a guide to behavior. For example, impression management concerns can induce people to act inconsistently with their self-beliefs.

The general point is that not all prime-induced change in self-concept content will lead to behavior changes. Extent of behavior change should in many cases depend not only on self-concept change but also on use of the self-concept in directing behavior. As noted earlier, however, the use of metacognitive validity assessments in moderating use of the self-concept may not occur in all situations. Some research suggests that the use of validity assessments, whether stored or online, is more likely to occur under deliberative conditions (e.g., Gawronski & Bodenhausen, 2006; Tormala, Petty, & Briñol, 2002), and so Postulate 6 may apply primarily when individuals have the ability and motivation to deliberatively determine how to behave. This area of research is new and has not yet been fully explored in priming contexts but provides new directions for future research.

GENERAL DISCUSSION

The Active-Self account argues that the active self-concept plays an important role in prime-to-behavior effects. According to this account, primes can alter the active self-concept, which then guides behavior. This account provides an understanding of the reason for the influence of many moderators of prime-to-behavior effects. Research has uncovered moderators that increase, decrease, and reverse the effects of primed constructs on behavior, and these moderators do not operate simply by affecting construct accessibility. Rather, the influence of these moderators appears to be due to their influence on active self-concept change or use of the self-concept as a guide to behavior.

Our review of the relevant literature indicates that factors that increase assimilative changes in the self-concept (i.e., make the self-concept become more similar to the prime) increase the assimilative effects of primes on behavior. Factors that decrease assimilative changes in the self-concept decrease the assimilative effects of primes on behavior. Factors that lead to contrastive changes in the self-concept (i.e., make the self-concept less similar to the prime) lead to behavioral contrast. Furthermore, primes can induce behavior not related to the characteristics of the primed person (e.g., an exemplar's characteristics) but rather to those aspects of the self-concept idiosyncratically associated with the primed person. Finally, we noted that recent research has begun to examine not only the contents of the self-concept but factors affecting its use, such as the perceived validity of active self-concept contents.

Our review has indicated that the self-concept can play multiple roles in prime-to-behavior effects, and it is therefore critical to understand the effect that a given manipulation has on the processing of the prime information to understand its effects on the self and on behavior. Because self-activation can increase perspective taking (e.g., when it facilitates drawing linkages between the self and the prime content), increase the activation of competing behavioral schemata (e.g., when activated prior to reception of the prime), or increase difference or dissimilarity testing with the prime content (e.g., when contextual factors make group identity salient), an understanding of how self-activation affects processing is critical. As reviewed above, which of these effects occurs will depend on individual differences (e.g., private self-consciousness, self-monitoring, self-strength), processing mindsets (e.g., perspective taking, similarity or dissimilarity testing), contextual features (e.g., salience of an intergroup context), aspects of the prime (e.g., exemplar vs. stereotype, subtle vs. blatant activation), and so forth. What this diversity of effects highlights, however, are the powerful and multi-faceted effects of the self on prime-to-behavior effects, which have heretofore received relatively little attention in the literature. These effects are not easily explained without reference to the active self-concept.

Of course, it seems unlikely that all prime-to-behavior effects involve the active self-concept, and it is not our

intention to suggest so here. Although, as this review indicates, the Active-Self account can provide a convenient umbrella for understanding a wide variety of prime-to-behavior effects, many additional mechanisms are possible and are likely to operate under some circumstances (Wheeler & Petty, 2001). For example, primes can alter perceptions of the situation and of other individuals in addition to affecting the self-concept. Research has shown that perceptions of both situations (e.g., Kay & Ross, 2003; Kay, Wheeler, Bargh, & Ross, 2004) and other people (e.g., Smeesters et al., 2003; Smeesters, Wheeler, & Kay, 2006) can determine prime-induced behavioral change.

Obviously, one determinant of whether primes would affect the self-concept or bias perceptions of others concerns the availability and salience of other individuals in the context—prime-induced behavioral change should be most likely to be mediated by perceptions of others when other individuals are present and relevant to the measured behavior. When individuals are present and potential perceptual targets, then the likelihood of biased perceptions of the individual can depend further on the ambiguity of their behavior (Higgins, 1996). Prime-induced biases in situational perceptions can likewise depend on the ambiguity of the situational context (Kay et al., 2004). Research shows that the relative ambiguity of persons and situations is one determinant of the target of the bias—perceptions of targets (whether situations or people) are more likely to be directly biased if they are relatively more ambiguous than other available targets (Kay, Wheeler, & Smeesters, in press). Similarly, as reported above, the self-concept is more likely to be affected by primes when it is ambiguous (e.g., when it contains structural inconsistencies; Morrison, DeMarree, Wheeler, & Petty, 2006) than when it is not. Thus, in many real-world contexts, primes could affect behavior though perceptions of multiple targets, and the likelihood of any given target directing behavioral change would depend on its ambiguity and applicability to the behavior of interest.

An additional factor that can affect the means of prime-induced behavioral change concerns the focus of the individual. For example, recent research has shown that biases in perceptions of others are more likely to guide behavior change when individuals have an other-focus (vs. self-focus; Smeesters et al., 2006), regardless of whether that focus is instigated by features of the situation or due to dispositional characteristics of the perceiver. Depending on the context, individuals with differing foci can exhibit identical behavior but via different processes. For example, a person in a prisoner's dilemma game could act competitively because he or she feels competitive, because he or she perceives the opponent to be competitive, or because he or she perceives the situation to be competitive. A key issue in determining the mechanism of prime-to-behavior effects, then, is to what the activated mental contents are attributed (e.g., others, situation, self, etc.). Because the self is always available, it often will serve as a convenient misattribution target, but as just articulated, this will depend on numerous characteristics of the person, the situation, and the prime.

Although many behaviors could be affected through many different mechanisms, including changes in the self-concept, some behaviors may be more likely to involve the self than others. For example, simple motor behaviors, such as those typically measured in mimicry studies (e.g., shaking one's foot) seem unlikely to have high levels of self-concept involvement and so may be more likely to be driven by ideomotor mechanisms, especially when the actions themselves are directly perceived (rather than indirectly primed). Nevertheless, even some simple motor behaviors may be indirectly driven by the self-concept. For example, although one's posture is not directly related to the self-concept, changes in the self-concept (e.g., feeling good or bad about oneself) could plausibly have postural consequences (e.g., more upright or hunched postures, respectively).

What Does the Active-Self Account Add Above Other Accounts?

In contrast to other models of automatic prime-to-behavior effects, such as the dominant ideomotor view, the Active-Self account emphasizes the importance of the active self-concept in determining the magnitude and direction of priming effects on behavior. Because this additional factor makes the Active-Self account less parsimonious than a strict ideomotor account, it is reasonable to consider what additional prediction is gained by its addition. If the active self-concept is a "sponge simply absorbing all primes" (Dijksterhuis, Chartrand, & Aarts, in press), then it would muddy the waters and decrease parsimony to little theoretical benefit. We argue that this is not the case.

Throughout this article, we have emphasized interaction patterns not suggested by prior accounts of prime-to-behavior effects. We do not simply propose that changes in the active self-concept accompany behavior changes. Rather, we have systematically outlined features that affect the magnitude and direction of self-concept change and showed that behavior change occurs correspondingly. We also have proposed that inducing self-concept change is not always sufficient for inducing behavior change but can require reliance on the self-concept as a guide to behavior. Not everyone shows equal self-concept change following primes, and they do not show equal behavioral change. The Active-Self account uses the active self-concept

to provide improved prediction regarding the individuals for whom, the conditions under which, and the direction in which prime-to-behavior effects occur.

For example, perspective taking increases the magnitude of assimilation effects, and these effects are not due to differential elaboration of, self-generation of, or vividness of the primed constructs. Individual differences, such as private self-consciousness and self-monitoring, moderate the strength of assimilation effects in ways inconsistent with previously offered accounts. Structural features of the self-concept can enhance or diminish the effects of primes despite participants' apparent equivalent processing of the prime. Across all of these effects, understanding how the primes affected the active self-concept improves prediction of prime-to-behavior effects beyond what would be known by a basic accessibility account.

Perhaps the strongest evidence for the usefulness of the active self-concept is provided by dissociations between primed content and behavioral output. As discussed above, for example, behavioral contrast can result from primes, but by definition, such contrast involves behavior discrepant from what is perceived. In prior research on ideomotor action (e.g., Dijksterhuis et al., 1998; Schubert & Häfner, 2003), it was shown that the primes activated contrasting self-content and that behavior was consistent with this contrasting self-content. The self is required to understand why prime-inconsistent behavioral representations would be activated in the first place.

Research has shown that the same primed content can lead to different behavioral effects in different people, depending on the types of self-associations that are activated. For example, competence primes can lead to either cooperative or competitive behavior depending on whether one is pro-social or pro-self (Utz, Ouwerkerk, & Van Lange, 2004). One interpretation of this finding is that the competence primes activated "competent selves" in participants but that definitions of a competent self differed across the pro-social and pro-self individuals. Although this effect could potentially be due in part to different linkages stored in memory between competence and its manifestations—some individuals may associate competence more with cooperation in memory than others (Wheeler & Berger, in press)—semantic linkage strength does not account for all such dissociations across individuals.

For example, research has shown that both men and women have strong and equivalent semantic linkages between sex and aggression stored in memory, that is, they both associate sex with aggression, yet only men act more aggressively following sex primes (Mussweiler & Förster, 2000). This is consistent with the possibility that the sex primes made aggression content equally accessible for men and women but differed in the extent to which it made aggressive self-content accessible. Specifically, the findings are consistent with the idea that the sex primes made the active self-concept more aggressive for men but not for women because men and women have differential associations between the self and aggression in sexual situations (i.e., as an aggressor vs. as a victim of aggression; Mussweiler & Förster, 2000). As Mussweiler and Förster noted, these findings point to a dissociation between the perceptual and behavioral systems, and they are another potential example of the importance of self (vs. general) associations in directing behavior.

Although all of the above effects most likely involve the activation of motivational and/or behavioral representations, the particular motivational and behavioral representations that are activated appear to depend not only on the perceptual stimulus but also on the active self-concept. Across these examples is evidence of the interplay between action and the active self-concept that is instigated by primed constructs. That is, consistent with prior research (Higgins, 1987, 1997; Kihlstrom & Cantor, 1984; Markus & Nurius, 1986; Ruvolo & Markus, 1992), the Active-Self account highlights that the active self-concept can serve as a determinant of which motivational and/or behavioral representations will ultimately drive behavior.

Relation to Social Comparison Processes

The Active-Self account shares surface similarities with research on social comparison. Although this research area is not traditionally associated with the automatic behavior literature, it does describe how the self-concept can be changed by exposure to social stimuli and so has been used as a basis for some predictions of the Active-Self account.

As discussed earlier, social comparison concerns the effects of social comparison standards (i.e., exemplars) on individuals' feelings, self-evaluations, and self-beliefs. Social comparison research shares similarities with the Active-Self account. Most notably, social comparison research has shown that comparison with an exemplar can influence self-representations (e.g., Mussweiler, 2003; Mussweiler & Strack, 2000). Although social comparison processes are one means of altering self-representations, other processes also are possible (e.g., misattribution of activated content to the self, activation of relational schemas). Thus, social comparison processes would provide an incomplete picture of prime-to-behavior effects yet fit within the overall umbrella of the Active-Self account.

The social comparison literature to date has primarily used exemplars as exposure stimuli, whereas the automatic behavior literature has primarily used stereotypes,

traits, or goals as exposure stimuli. From a social comparison perspective, comparison with a stereotype, trait, or goal would not necessarily be informative with respect to one's abilities or attributes because the constructs do not provide a concrete or distinct comparison standard against which one's own characteristics can be evaluated. In fact, many of the manipulations used in the automatic behavior literature (e.g., sentence-unscrambling tasks) are quite diffuse and so seem rather unlikely to provide a standard for social comparison per se. However, consistent with the Active-Self account, the various manipulations used in the prime-to-behavior literature do lead to changes in the active self-concept, regardless of whether they are exemplars (e.g., Kawakami, 2004; Mussweiler et al., 2004a; Stapel & Blanton, 2004), stereotypes (e.g., DeMarree et al., 2005; J. R. Steele & Ambady, 2006), traits (Wheeler, DeMarree, & Petty, 2004), evaluative words (Dijksterhuis, 2004; Riketta & Dauenheimer, 2003), or even numbers (e.g., the lucky number 7; DeMarree et al., 2005). Although some of these manipulations could produce social comparison processes, others do not. Hence, social comparison processes are just one possible means by which social stimuli can affect the self-concept.

Enhancing and Overriding Prime Effects

Although prime-to-behavior effects are generally considered to be automatic and outside of conscious influence, we believe that conscious processes can both enhance and override the effects of primes on behavior. Conscious processes can intervene at multiple stages, including construct activation, prebehavior, and postbehavior. Under some circumstances, for example, the mental contents that are activated by stereotypic targets could be dependent on people's conscious processing strategies, such as categorization of the primes (Gilbert & Hixon, 1991), although attempts to suppress stereotypes can exacerbate their activation (Macrae, Bodenhausen, Milne, & Jetten, 1994). As described earlier, once constructs are activated, conscious processes such as validity assessment can determine their usage in directing behavior, either enhancing or reducing the effect of the prime. In addition, the effects of such activation can be overridden through processes such as self-individuation (Ambady, Paik, Steele, Owen-Smith, & Mitchell, 2004) or through attempts to correct for such activation (Wegener & Petty, 1997). Even if primes lead to changes in behavior, the automatic effects on behavior can be overridden through modification attempts. For example, if individuals find themselves acting in undesired ways (e.g., stupidly), they may correct to alter their behavior, although in many domains (e.g., performance), attempts

to correct for influence can exacerbate the problem (e.g., Baumeister, 1984; C. M. Steele & Aronson, 1995). Hence, although prime-to-behavior effects often are thought of as occurring entirely outside awareness, it is possible that conscious processes could intervene at multiple stages to modify the effects of primes on behavior.

Conclusion

The Active-Self framework provides a new look at the operation of stereotype, trait, and exemplar prime-to-behavior effects. This framework provides a more complex and nuanced account of how primes can affect behavior and predicts and explains behavioral priming effects not suggested by previous formulations. The Active-Self account allows for improved prediction regarding the individuals in whom and the conditions under which such prime-to-behavior effects occur. In addition, the Active-Self account allows one to predict whether primes will result in assimilation, contrast, or some other behavior (i.e., depending on which aspect of the self is activated). Active-Self theory unites a diverse array of findings under a single conceptual umbrella and points the way to many unexplored avenues of research.

NOTES

1. Although this account has been proposed to explain assimilation effects in the service of social adjustment, other functional accounts are possible. For example, primes could affect behavior because of a self-expressive function, and this type of function would share similar predictions to the Active-Self account.

2. This distinction between a social functional account and the Active-Self (or self-expressive) account is similar to the one between normative and informational social influence. Normative social influence involves conforming to gain positive social regard from others (e.g., Asch, 1956), whereas informational social influence involves changing one's behavior because information is accepted as being true (e.g., Deutsch & Gerard, 1955). These processes map on conceptually to the potential mechanisms for high and low self-monitors, respectively (see DeMarree et al., 2005, for more detail).

3. This hypothesis presumes that all prime-relevant material is highly accessible. If only a subset of material was highly accessible, then the observed effects would depend on the congruency of the available self-content with the prime.

4. The Active-Self account does not provide a theory of assimilation/contrast effects. Rather, it relies on existing knowledge with respect to these effects and predicts that because prime-to-behavior outcomes are linked to self-change, whatever factors promote assimilation or contrast in the self-concept also should promote assimilation or contrast in behavior.

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