Priming a New Identity: Self-Monitoring Moderates the Effects of Nonself Primes on Self-Judgments and Behavior

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When a construct is primed, people often act in construct-consistent ways. Several accounts for this effect have been offered, including ideomotor theory and a social functional perspective. The authors tested an additional perspective, the Active-Self account, whereby primes can temporarily alter self-perceptions. In Study 1, non-African American participants reported feeling more aggressive on an implicit measure following an African American prime. In Study 2, participants reported feeling luckier on an implicit measure following a number 7 (vs. 13) prime. In both studies, these effects were obtained only for low self-monitors, who are more likely to change self-conceptions in response to diagnostic self-information and to use their internal states in guiding behavior. Study 3 showed that low self-monitors also show larger behavioral effects of primes.

Keywords: priming, the self, self-monitoring, stereotype activation

The activation of stereotypes and other social constructs has been shown to affect the behavior of people who are not members of the targeted group (for reviews, see Dijksterhuis & Bargh, 2001; Wheeler & Petty, 2001). In most cases, the behavior observed is consistent with the activated stereotype. One of the better known examples of this is a study by Bargh, Chen, and Burrows (1996), in which young college students were primed with the elderly stereotype by unscrambling sentences containing words consistent with the stereotype (e.g., wrinkle). Upon leaving the lab, participants were secretly timed as they walked down the hall. Individuals primed with the stereotype took more time to walk down the hall (i.e., they walked slower) than did control participants. College students also displayed impaired performance on a memory task when primed with the stereotype (Dijksterhuis, Aarts, Bargh, & van Knippenberg, 2000). In other studies, White participants performed worse on a math test (Wheeler, Jarvis, & Petty, 2001) or exhibited more aggressive facial expressions (Bargh et al., 1996) following the activation of an African American prime, and college students performed relatively well or poorly on Trivial Pursuit questions following the activation of the stereotypes of professor or soccer hooligan, respectively (Dijksterhuis & van Knippenberg, 1998).

Although stereotype priming has been the most common method used in prime-to-behavior studies, other means of activating traits have also been used. For example, Kay, Wheeler, Bargh, and Ross (2004) used business objects as primes and found results comparable to those that would be expected from trait or stereotype priming. For example, in one experiment, the questionnaires used to play an ultimatum game either were removed from an executive leather briefcase and completed with a business-style pen or were removed from a backpack and completed with wooden pencils. Participants engaged in more competitive play in the business condition than in the control condition. Comparable results were found with traditional priming paradigms (i.e., exposure to pictures of business objects prior to playing the game). Hence, similar effects may be obtained with a variety of different means of activating trait constructs. For the sake of brevity, we will refer to primes capable of activating trait constructs as "social construct primes."

Although the finding that primes can influence overt behavior is now well established, researchers have yet to agree on a single mechanism by which these effects occur. We review two influential perspectives, ideomotor activation and the social functional account, before providing an alternative mechanism by which prime-to-behavior effects can occur—the Active-Self account.

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Ideomotor Activation

The effect of social construct activation on behavior has generally been explained by using the theory of ideomotor action. Ideomotor theory proposes that in the absence of inhibitory forces (Macrae & Johnston, 1998), merely thinking about a behavior is sufficient to produce that behavior (Carpenter, 1874; James, 1890/1950). Support for this notion comes from research on the perception–behavior link, which holds that the cognitive and neural substrates for performing a behavior overlap with those used in perceiving that behavior (Prinz, 1990). Numerous human and animal studies have shown that the same areas of the brain—and in some cases, the same neurons—are active during both perception (actual or imagined) and production of a specific behavior (e.g., Decety, Jeannerod, Germain, & Pastene, 1991; Iacoboni et al., 1999; Kohler et al., 2002; Rizzolatti & Arbib, 1998). In social psychology, researchers have argued that behavioral mimicry effects (in which participants mimic the nonverbal behavior of a confederate without doing so deliberately) are the simplest instantiations of the ideomotor phenomenon (Chartrand & Bargh, 1999; Dijksterhuis & Bargh, 2001).

In the case of prime-to-behavior effects, however, there is no direct perception or imagination of behavior. Instead, the activation of a social construct has been hypothesized to activate related traits and ultimately the behavioral representations that are implied by those traits. Once activated, these behavioral representations then affect behavior by either producing the behavior in question or, more likely, by modifying ongoing behavior in a manner consistent with the activated stereotype (Dijksterhuis & Bargh, 2001). For example, the activation of "elderly" may activate the trait "slow," which then activates a behavioral representation of "slow walking," which can then affect walking speed (Bargh et al., 1996). It is relatively straightforward how this mechanism can account for such simple motor behaviors as walking slowly, but it is less clear how it can affect behaviors with no obvious motor component. For example, what motor representations cause a person to answer fewer or more Trivial Pursuit questions correctly following a soccer hooligan or professor prime (Dijksterhuis & van Knippenberg, 1998) or to exhibit impaired memory performance following an elderly prime (Dijksterhuis, Aarts, et al., 2000)?

Social Functional Perspective

Several researchers have speculated about the evolutionary significance of the perception–behavior link. In the domain of nonconscious mimicry, for example, Chartrand, Maddux, and Lakin (2004) proposed that the tendency to mimic others has evolved to facilitate social interactions. These authors proposed that mimicry may have played a survival role in the early evolution of our species and developed to serve a social function because of its ability to facilitate and indicate liking (Chartrand et al., 2004; Lakin, Jefferis, Cheng, & Chartrand, 2003). For example, mimicry of others has been shown to increase when a goal for affiliation is active (Lakin & Chartrand, 2003), and being mimicked by another person can increase one's liking of that person (Chartrand & Bargh, 1999).

Recently, Kawakami, Dovidio, and Dijksterhuis (2003) extended this social functional perspective for mimicry behavior (Chartrand et al., 2004) to the activation of stereotypes. They proposed that other instantiations of the perception–behavior link might also serve a social-adjustive function, even when a social situation and direct perception of behaviors are not involved. On the basis of a large body of research demonstrating a relationship between attraction and attitudinal similarity (Byrne, 1961; Newcomb, 1961) that indicated that behavior and self-disclosure indicative of attitudinal similarity could serve to increase liking, Kawakami et al. (2003) argued that assimilative attitudinal reports could be another socially adaptive outcome of subtle stereotype activation. That is, the activation of a stereotype should produce stereotype-consistent attitudes as well as behavior because people "may . . . 'socially tune' their attitudes to make them more consistent with their social environment (Lowery, Hardin, & Sinclair, 2001)" (Kawakami et al., 2003, p. 318). Results of four studies showed that stereotype priming can temporarily produce attitudes consistent with those presumably held by the stereotype targets (Kawakami et al., 2003). For example, following an elderly stereotype prime, participants endorsed more conservative attitudes, and following a skinhead prime, participants endorsed more racist attitudes, compared with control participants.

This perspective offers a key advance over ideomotor theory. That is, the social functional approach allows for changes in the expression of attitudes, judgments, and behaviors with no obvious motor component. This is because the social functional account holds that activating social constructs causes people to want to fit in with their social environment. Any expressed opinions, judgments, and behaviors that would help the person fit in could therefore be modified.

The Active-Self Account

In this article, we examine the utility of a third possible mechanism for understanding the impact of nonself social construct primes on one's own judgments and actions. This view, first articulated by Wheeler and Petty (2001), suggests that the activation of a nonself stereotype could potentially bias a person's self-representations in a prime-consistent manner, and behavior then follows from the activated self. This could occur if the activated prime content were somehow linked to, or included in, a person's self-concept. A number of existing studies offer preliminary support for this notion.

In one pair of studies (Wheeler et al., 2001), White college students wrote an essay about a day in the life of another student. This essay served as the priming manipulation, as one group of participants was assigned to write their essays about Tyrone Walker, whom most assumed to be African American, whereas others were assigned to write their essays about Erik Walker, whom most assumed to be White. Consistent with the African American stereotype of academic underperformance, participants who wrote their essays about Tyrone performed worse on a subsequent Graduate Record Examination math test compared with control participants. It is interesting to note, though, that this effect was driven by people who spontaneously wrote their essays from the first-person perspective. These individuals' essays were written as if they were Tyrone Walker and they engaged in a number of stereotypic acts. Thus, individuals who wrote their essays from the first-person perspective may have spontaneously linked the acti-

vated trait concepts to their own self-construals, thereby making stereotype-consistent behavior more likely.

Additional support can be found in a study by Hull, Slone, Meteyer, and Matthews (2002). They replicated Bargh et al.'s (1996, Study 2) elderly-prime walking-speed study and also included a measure of private self-consciousness (Fenigstein, Scheier, & Buss, 1975). Hull and colleagues' earlier work showed that people high in private self-consciousness are more likely to process information in a self-relevant manner (Hull & Levy, 1979; Hull, Van Treuren, Ashford, Propsom, & Andrus, 1988). The results of this study revealed greater stereotype activation effects among participants high in private self-consciousness. Thus, this finding is consistent with the idea that priming effects are magnified when participants create self-stereotype linkages during the priming phase of the experiment.

These two sets of studies suggest that linkages of the prime content to the self increase the behavioral effects of a prime. One possible reason for this is that the self-prime linkages may be associated with a change in self-perceptions (implicitly or explicitly) following a prime. Preliminary evidence for a change in self-perceptions comes from some research by Dijksterhuis et al. (1998, Study 1). In one experiment, participants were primed with an intelligence-relevant stereotype (e.g., professor) or an intelligence-relevant exemplar (e.g., Einstein). Following stereotype activation, participants completed a Trivial Pursuit task as a measure of intelligence-relevant behavior. Participants' performance assimilated to that of a category prime (i.e., they answered more questions correctly following a professor prime) but contrasted away from that of an exemplar prime (i.e., they answered fewer questions correctly following an Einstein prime). Of greater relevance, in another study (Dijksterhuis et al., 1998, Study 3) participants completed a lexical-decision task following the priming manipulation in place of the test. The target words used in this task were neutral or related either to intelligence or to stupidity. Immediately preceding each target to be judged, participants were subliminally primed with one of two sets of words: self-related words (e.g., "I" or "me") or neutral words (e.g., "it"). Results indicated that participants in the professor-prime condition responded more quickly to intelligence-related words, regardless of the self-relevance of the preceding word. A rather different pattern was shown for the Einstein prime condition. Participants in the Einstein prime condition responded more quickly to intelligence-related words but also responded more quickly to stupidity-related words when they were preceded by a self-relevant prime. Although no behavioral measures were included in this study, a comparison with the Study 1 results indicates that the feature uniquely tied to the self (i.e., stupidity in the case of the Einstein prime) corresponds to the pattern of behavior observed. This activation pattern is consistent with a prime-induced bias in the self-concept that directs behavior.

On the basis of this literature, there is reason to postulate that either conscious or nonconscious changes in currently accessible self-representations could occur following a prime. We refer to this perspective as the active-self account (Wheeler, DeMarree, & Petty, 2005). There are several means by which self-representations could change following a social construct prime, but two possibilities seem particularly likely (Wheeler et al., 2005). The first possibility is that the activation of a social construct could selectively activate prime-relevant content already contained within the chronic self-concept, thereby making the Active Self-concept temporarily more construct consistent than it would otherwise be. This selective increase in the accessibility of prime-relevant aspects of the self could then guide behavior (see also Markman & McMullen, 2003; Mussweiler, 2003). Another possibility is that the activated social construct-relevant content could be misattributed to the self, creating an expanded self-concept that would include aspects of the activated social construct (or its opposite) that are not part of the chronic self-concept. Stated simply, people could confuse accessible mental contents with their own characteristics and traits (for a related argument, see Markman & McMullen, 2003), much as primed content is sometimes misattributed to the characteristics of an impression-formation target (Higgins, Rholes, & Jones, 1977). Again, this expanded, prime-consistent self-concept could then guide behavior. In most of the research conducted to date, in which assimilation has been the dominant finding, this activated self-content has likely been consistent with the social construct. There are also cases, such as when the prime invokes a comparison with an extreme exemplar, in which the activated content could include prime-inconsistent information (e.g., Dijksterhuis et al., 1998; Schubert & Häfner, 2003).

This line of theorizing offers an alternative mechanism by which nonself stereotypes can impact judgments and behavior. For example, consider the study described earlier in which participants reported stereotype-consistent attitudes following a stereotype prime (Kawakami et al., 2003). Participants in that study may have reported attitudes consistent with the primed stereotype, not because of a motivation to fit into their social environment as proposed by the social functional account, but rather because their attitudes had actually changed in a stereotype-consistent manner, at least temporarily. These individuals could have incorporated stereotype-consistent content (e.g., stereotype-relevant attitudes) into their active self-concept. The social functional perspective does not prohibit a change in the self-concept, but it predicts that this change, if it occurs, would occur in the service of fitting in with others. In contrast, the Active-Self model does not have such a requirement. In fact, our account proposes that the change is not in the service of fitting in with others, but rather in the service of being oneself. Put in functional terms, the Active-Self account would be more consistent with a self-expressive function (e.g., Abelson & Prentice, 1989) than with a social-adjustive function. The social functional perspective also presumably limits itself to assimilative responses (i.e., acting consistent with activated content in order to fit in), whereas the Active-Self perspective allows assimilation or contrast to occur, depending on which prime-relevant elements (consistent or inconsistent) are most active and incorporated into the self-concept.

The social functional and Active-Self perspectives map onto a distinction that has been made in the social influence literature between normative and informational influence, respectively (Cialdini & Trost, 1998; Deutsch & Gerard, 1955). In normative social influence (e.g., Asch, 1956), a person conforms for the sake of gaining or maintaining positive regard from others. Informational influence (e.g., Sherif, 1935), on the other hand, is "influence to accept information obtained from another as evidence about reality" (Deutsch & Gerard, 1955, p. 629). Normative influence occurs in situations in which fitting in is important, whereas informational influence occurs in situations in which the correct

response is unknown or ambiguous. This final point is a critical one for our analysis, as we will use the individual difference variable of self-monitoring (Snyder, 1974, 1979) to identify people for whom fitting in is important across situations and who should thus be more likely to show behavioral effects of social construct primes according to the social functional perspective. As we explain further below, according to the social functional perspective, individuals high in self-monitoring should be more susceptible to prime-to-behavior effects, but according to the Active-Self view, it is low self-monitors who should be more susceptible.

Self-Monitoring

The self-monitoring construct (Snyder, 1974) was developed to describe differences in the extent to which people monitor and control their behavior and the public image they present (Snyder, 1979). High self-monitors are social chameleons who modify their behavior to best fit into their current social environment. They are attentive to social cues and are capable of controlling their interpersonal behavior to achieve their desired public image (see Gangestad & Snyder, 2000). It has been hypothesized that "the attitudes and behavior of high self-monitors may be especially likely to serve the social-adjustive function" (Lavine & Snyder, 2000, p. 101), and considerable research supports this view (e.g., see De Bono & Harnish, 1988; Petty, Wheeler, & Bizer, 2000). High self-monitors are also more susceptible to normative social influence than are lows (Cialdini & Trost, 1998; Snyder & Monson, 1975). If assimilation to primed constructs stems from a desire to fit into the social context as the social functional view posits, then greater assimilation to a primed social construct—whether in attitudes, judgments, or behaviors—would be expected among high than low self-monitors.

Low self-monitors, on the other hand, are not as affected by social demands and instead look inward and rely more heavily on their own attitudes, traits, and beliefs to guide their actions. Their behavior reflects who they think they really are, in that they demonstrate consistency between their attitudes and behavior (Snyder & Swann, 1976; Snyder & Tanke, 1976; Zanna, Olson, & Fazio, 1980), between their inner states and self-presentation (Ickes, Layden, & Barnes, 1978), and between their personality characteristics and behavior (Lippa, 1978). Snyder and Campbell (1982) nicely summarized these tendencies when they wrote, "To live one's life according to the principled theory of self . . . would require low-self-monitoring individuals to pay serious attention to their own internal states, dispositions, and personal characteristics in order to guide their social behavior" (p. 191). Because low self-monitors are more likely to act like themselves, greater assimilation to a primed social construct among low self-monitors would be expected to the extent that the primed material is incorporated into their currently active self-concept.

In addition, there is evidence that low self-monitors exhibit greater change in their behavior and self-perceptions in response to perceived dispositionally diagnostic information than do high self-monitors. For example, low self-monitors exhibit more attitude change after a freely chosen counterattitudinal behavior than do high self-monitors (Snyder & Tanke, 1976), and they show greater changes in impression formation behavior following false feedback about their own dispositional characteristics (Fiske & von Hendy, 1992).

Paralleling these findings is the evidence that low self-monitors may be more responsive to priming manipulations if subtle activation of traits is perceived to convey information about their self-characteristics or subjective feelings. Because individuals are unlikely to have perfectly accurate knowledge about the self, the traits made accessible by a prime could be used as cues about one's self-characteristics and subjective states (Markman & McMullen, 2003; Mussweiler, 2003; Stapel & Koomen, 2001). Much as perceptions of an impression formation target are biased by the accessibility of applicable traits (Higgins et al., 1977), one's active self-concept may also be biased by construct accessibility, because the construct accessibility is misattributed to some aspect of the self. Primed constructs could be perceived to be self-relevant because the subtle activation of social constructs may appear to originate from the self (e.g., Mussweiler & Neumann, 2000). If a subtly activated social construct were to be perceived as diagnostic self-information, it would exert larger effects among low self-monitors just as does more explicit feedback that is perceived to be dispositionally diagnostic (Fiske & von Hendy, 1992). Because the self-concepts of high self-monitors are affected by social and not dispositional feedback (Fiske & von Hendy, 1992), high self-monitors would be expected to exhibit less self-change in response to a priming manipulation, unless the prime was perceived to convey social information, rather than information about the self.

Additionally, as noted above, if low self-monitors are more likely than high self-monitors to use primed constructs to alter their self-concept in a prime-relevant manner, then it is likely that low self-monitors would also show larger behavioral effects of a prime because their behavior is more tied to their internal states (Ickes et al., 1978; Lippa, 1978; Snyder & Swann, 1976), but only if the primes biased the active self-concept. Hence, each of these potential mechanisms (differential self-change and differential self-behavior consistency) would be sufficient to lead to greater prime-induced behavioral change among low self-monitors than among high self-monitors.

It may seem counterintuitive that low self-monitors, who habitually rely on self-knowledge, would exhibit greater self-change in response to these types of manipulations than would high self-monitors. However, as Fiske and von Hendy (1992) have pointed out, "[low self-monitors] may or may not be accurate and stable in their self-perceptions, but they will rely on whatever self-perception they *believe to be accurate at the time*" (p. 579, emphasis added). In discussing their findings, Fiske and Hendy further noted that

> low self-monitors are not necessarily accurate about their own inner states and abilities; they are merely more likely to base their behavior on their perceived inner characteristics. This is an important distinction. Just because one is attuned to one's inner states (low self-monitors) or to the social world (high self-monitors), this does not mean one is more accurate in that regard. Our data suggest that low self-monitors may be susceptible to false feedback about their personalities. (p. 589)

In the current research, we examined how high and low self-monitors react to various primes in order to provide information about the likely mechanism behind at least some prime-to-behavior effects. Notably, each of the three perspectives on social construct prime-to-behavior effects we have discussed predicts a different pattern of results across levels of self-monitoring. The

ideomotor action model, which does not posit any change in the self, predicts no moderation of priming effects by self-monitoring. The social functional perspective predicts the greatest amount of assimilation among high self-monitors, who are motivated to fit into their social environments, because this account holds that primes implicitly communicate social demands. The Active-Self model predicts larger effects among low self-monitors, who may be more likely to change their self-conceptions on the basis of primed material and who are more concerned with acting on their internal states, because this account holds that primes can operate not by communicating social demands, but instead by influencing the active self-concept.

Study 1

In Study 1, we examined whether a primed stereotype would alter momentary self-perceptions. Critically, we examined for the first time whether (and in which direction) self-monitoring would moderate such changes in the active self-concept. We primed participants with the African American stereotype and used an implicit measure of felt aggression as our dependent variable. Past research on stereotype-to-behavior effects that used the African American stereotype found an increase in aggressive responses following the activation of the stereotype (Bargh et al., 1996). For example, Bargh et al. (1996) found that participants who were subliminally primed with pictures of African American faces displayed more aggressive facial expressions following a frustrating event than did control participants. For Experiment 1, we created an implicit measure of aggression that could be administered easily in a computer lab. In designing this measure, we assumed that participants who had been primed with the African American stereotype would feel more aggressive and thus would choose more stimuli that are aggression relevant when they were told to use their own feelings in an ambiguous perception task. The logic behind this measure is similar to that used to develop an implicit measure of mood (Hass, Katz, Rizzo, Bailey, & Moore, 1992).

As noted above, if the prime is confused as being diagnostic self-content, the reports of low self-monitors should be more affected by the prime than would the reports of high self-monitors. On the other hand, if the prime is seen as conveying social information, the reports of high self-monitors should be more affected by the prime than would the reports of low self-monitors, because of the motivations of high self-monitors to fit in with social demands. Ideomotor theory would not predict any changes in the self-concept. Because the underlying ideomotor processes are postulated to occur in an unmediated and automatic fashion, even in animals without any self-awareness, there should be no biasing of the self-concept among either high or low self-monitors, except potentially through self-perception processes that could follow behavior. Because there were no behaviors in this study prior to the implicit self measure, ideomotor theory would predict no self-concept change.

Method

Participants

One hundred thirty-two Ohio State University undergraduates who participated in partial fulfillment of a course requirement were randomly assigned to one of the experimental conditions.[1] Because the effects of self- and nonself-stereotypes have sometimes been shown to differ (Shih, Ambady, Richeson, Fujita, & Gray, 2002) 14 African American participants and 6 participants who did not indicate their race were deleted from the analyses. In addition, because of a computer error, the aggression data from 1 participant were not available, leaving a total of 111 participants in the final sample (60 female, 51 male). Sessions were conducted in a computer lab with divided workstations, and each session included 2 to 8 participants.

Participants were informed that the study examined language and that they would complete a short writing task with pen and paper, which would be followed by additional verbal tasks on the computer. The instructions indicated that the computer would assign participants an essay topic.

Stereotype Prime

For the African American prime, participants were instructed to write "an essay about a day in the life of an Ohio State University student, Tyrone Walker." Control participants wrote their essays about a presumably White student, Erik Walker. Participants were given 6 min to complete their essay. This stereotype priming manipulation has been used successfully in prior research (Wheeler et al., 2001).

Self-Monitoring

All participants completed the 18-item Self-Monitoring Scale (Gangestad & Snyder, 1985; Snyder, 1974; Snyder & Gangestad, 1986), which assesses the degree to which people are motivated and able to modify their self-presentations to suit a given situation. Participants were asked to indicate whether each statement was or was not characteristic of them. Items were coded so that one point was allotted for each answer consistent with high self-monitoring. The score was computed by adding the number of such responses.[2]

Dependent Measure

Our dependent variable was an implicit aggression measure modified from an existing implicit mood measure (Hass et al., 1992; Koole, Smeets, van Knippenberg, & Dijksterhuis, 1999). Participants were told that the task was a measure of subconscious language perception and that a word would be flashed on the screen so quickly that they could not consciously perceive it. They were then told,

> Your subconscious will be able to perceive the presented word. Therefore, if you select (by guessing, if necessary) a word that feels similar in meaning to the feeling you experience while the word is being flashed, your subconscious will guide your decisions. Thus, go with your feelings.

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[1] As a pilot for future research, we included an additional manipulation of anticipating an interaction for 37 of the first 50 participants. Because preliminary analyses revealed that this manipulation was unsuccessful, it was dropped.

[2] There is some controversy in the literature on the Self-Monitoring Scale. Some of this debate concerns whether self-monitoring should be treated as a continuous or a discrete variable (see Gangestad & Snyder, 1985; Miller & Thayer, 1989) or which version of the Self-Monitoring Scale should be used. We chose to adopt Miller and Thayer's (1989) recommendation to use the 18-item Self-Monitoring Scale and to treat it as a continuous variable. Analyses using Gangestad and Snyder's (1985) recommended split (10.5 on the 18-item scale) as well as those using the full 25-item scale produced the same pattern of results in all studies. In addition, there is some debate as to whether the scale should use a true–false response format or a more traditional Likert-type scale (see Gangestad & Snyder, 1991; Miller & Thayer, 1989). We used the original true–false response format in these studies (Snyder, 1974).

The trials began with an asterisk serving as an orienting stimulus for 2,000–5,000 ms, followed by the subliminal presentation (17 ms) of the target word. These words were actually nonword letter strings (e.g., "aggrimely") that resembled the target words in appearance (e.g., aggressive, aggregate, agriculture, and agreement). A mask of number signs (#s) then covered the word for 75 ms, and then the four response options were presented and remained on the screen until the participants made their selection. Half of the trials were target trials, in which one of the four response options was an aggression-relevant word (e.g., aggressive, beat, angry). The position of the aggression-relevant word was rotated, and the order of the trials was randomized for each participant. We used aggression-related words because aggression and hostility are common elements of the African American stereotype (Devine, 1989; Sagar & Schofield, 1980). By having participants choose a word that "feels similar in meaning to the feeling [they] experience," we hoped to detect any changes in self-perception of their own aggressive feelings as a result of the activation of the stereotype and the extent to which they used those self-perceptions in judgment. Following the aggression task, the Self-Monitoring Scale was administered on the computer. Finally, participants completed an open-ended suspicion probe and were debriefed.

Results

Analyses in all three studies followed the regression procedures outlined by Aiken and West (1991). Accordingly, self-monitoring scores were mean centered by subtracting the mean of self-monitoring from all observations to reduce multicollinearity concerns (Aiken & West, 1991). Initial analyses were conducted with this mean-centered variable, and the cross-product of self-monitoring with condition provided the interaction term for the model. If a significant interaction was found, it was decomposed by using a simple slopes analysis. Self-monitoring was recentered at one standard deviation above and below the mean, and the interaction term was recomputed with this recentered factor. The full model was then rerun, and the simple effect of prime for high and low self-monitors was observed as the prime main effect in this recentered model (for complete details of these procedures, see Aiken & West, 1991).

Scores on the implicit aggression measure were computed by summing the number of aggression-relevant words selected. Aggression scores were then submitted to a Prime × Self-Monitoring multiple regression analysis. A significant effect of prime emerged ($B = 0.65$), $t(108) = 2.10$, $p = .04$, such that participants who wrote their essays about Tyrone selected more aggression-relevant words than did those who wrote about Erik. It is important to note that this was qualified by the predicted Prime × Self-Monitoring interaction ($B = -0.19$), $t(107) = -2.15$, $p = .03$ (see Figure 1). Decomposition of this interaction one standard deviation above and below the mean (Aiken & West, 1991) indicated that there was a significant effect of prime among low self-monitors ($B = -1.37$), $t(107) = 3.01$, $p = .003$, but not among high self-monitors ($B = -0.02$, *ns*). That is, low self-monitors primed with the African American stereotype displayed more felt aggression on the implicit measure than did those receiving the control prime.

Discussion

This study demonstrated that assimilation to an activated stereotype occurs more for low self-monitors than for high self-monitors. Low self-monitors primed with the African American stereotype chose more aggression-relevant words to describe their current feelings than did control prime participants. This effect was not observed among high self-monitors. This study shows for the first time that self-monitoring can moderate the effects of a stereotype prime on self-perceptions. The effects observed lend support to the Active-Self notion, which holds that primes can alter self-perceptions and do so for those who are most attuned to the self—those low in self-monitoring. These results are more difficult to explain from the ideomotor perspective and from the perspective that prime-to-behavior effects are due to a motivation to fit into the social environment (Kawakami et al., 2003). The ideomotor perspective would not predict changes in the self-concept for either high or low self-monitors. The social-adjustive perspective would predict that high self-monitors, who are more likely to adjust their behavior to fit into their social environment, should show a greater effect of the prime, whereas in this study, they showed no effect of the prime.

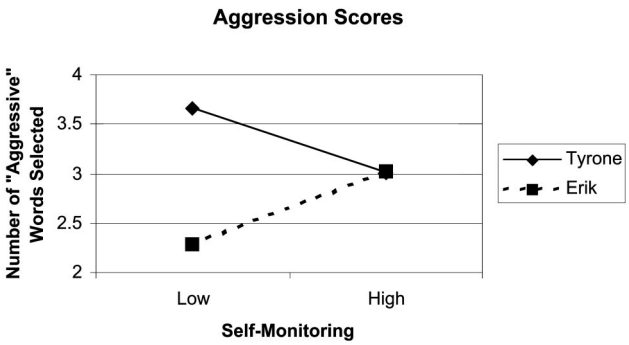

Figure 1. Aggression scores as a function of prime and self-monitoring (plotted at one standard deviation above and below the mean).

There are some potential alternative explanations for our findings on the implicit aggression measure, however. First, it could be that low self-monitors might have a stronger or more easily accessible stereotype of African Americans stored in memory. Thus, one might argue that perhaps our dependent measure did not assess self-perceptions but instead functioned as an implicit stereotyping measure.[3] Although possible, we think that this alternative is unlikely because past research suggests that high self-monitors, because of their greater reliance on behavioral scripts and prototype information, have more elaborate and accessible information regarding social groups (Schwalbe, 1991; Snyder, 1979; Snyder & Cantor, 1980). Thus, if this alternative account of our data was true, high self-monitors should exhibit larger stereotype activation effects. Additionally, high self-monitors are more likely to apply stereotypes as well. For example, high self-monitors experience more negative affect when an interviewer's face does not match an occupational stereotype (Larkin & Pines, 1994), and they are more likely to apply stereotypes (of affluence) when judging other people (Christopher & Schlenker, 2000). In sum, the literature suggests that high self-monitors have more elaborate stereotype representations and more frequent stereotype application than do those low in self-monitoring, and this alternative therefore seems to be an unlikely account for our results. However, to further reduce the likelihood of this concern, Study 2 uses a similar

[3] We thank an anonymous reviewer for raising this alternative.

methodology, but instead of a stereotype prime, it uses the common association of the number 7 with good luck and the number 13 with bad luck that should be comparable for nearly all people.

An additional alternative explanation concerns the possibility that high self-monitors may be better than low self-monitors at bias correction processes. Although no participants reported any suspicion that the priming manipulation could have affected their responses on the implicit aggression task, it is possible that high self-monitors are more skilled at identifying and correcting for potential biasing influences than are low self-monitors. Theories of bias correction postulate that individuals must become aware of the potential biasing agent as well as have the motivation and ability to correct their judgments for the perceived bias (Petty & Wegener, 1993; Wilson & Brekke, 1994). Hence, Study 2 used a subliminal priming manipulation and innocuous priming stimuli that should have reduced the likelihood of any possible correction.

Study 2

To address the alternative explanations offered for Study 1, we conducted another study by using a similar dependent measure but a different priming procedure and a different primed construct. Specifically, in this study, we used the numbers 7 and 13 as primes and an implicit measure of luck as the outcome measure. We assumed that the associations between 7 and lucky and between 13 and unlucky were very common in society, and that these associations would be less likely to differ between high and low self-monitors and less likely to activate social desirability concerns or motivations to correct. Also, by using a subliminal prime, we further expected to reduce the likelihood that correction processes could operate.

Method

Participants

Sixty-seven Stanford University students and staff, who were compensated with $10 for their participation in the experiment, were randomly assigned to a condition. Because of computer error, complete data from 6 participants were not written to the hard drive, leaving 61 participants in the final sample (37 female, 24 male). Sessions were conducted in a computer lab with divided workstations with 2 to 8 participants per session. Participants were informed that the study examined how people make judgments about words and that there would be two unrelated word experiments during the session.

Prime

Primes were subliminally presented to participants during a lexical-decision task. The subliminal primes consisted only of numbers presented in the center of the screen: the number 7 in the lucky prime condition and the number 13 in the unlucky prime condition. The number was presented for 17 ms before presentation of a back mask (e.g., HENKOS) for 225 ms. Immediately following the back mask, a luck-unrelated word (e.g., "something") or nonword (e.g., "botchef") was presented until participants made a word or nonword judgment. There was a total of 97 trials (49 word trials and 48 nonword trials), with a 150-ms intertrial interval.

Self-Monitoring

As in Study 1, all participants completed the 18-item Self-Monitoring Scale (Gangestad & Snyder, 1985; Snyder, 1974; Snyder & Gangestad, 1986). The score was computed by adding the number of responses indicating high levels of self-monitoring.

Dependent Measure

Our dependent variable was an implicit luckiness measure similar to the aggression measure used in Study 1. Instructions and procedures were identical to those in Experiment 1, with the exception that the target words were related to luck and distracter words were similar in appearance to the luck words. For example, in this experiment, one nonword presented subliminally was "bufky," and the set of response options included "lucky," "lofty," "ducky," and "softy." As in Study 1, half of the 28 trials were target trials, the position of the luck-related word was rotated, and order of trials was randomized between participants. By having participants choose a word that "feels similar in meaning to the feeling [they] experience," we hoped to detect any changes in self-perception of their own feelings of luckiness as a result of the number prime and the extent to which they used those self-perceptions in judgment. Following the luckiness task, the Self-Monitoring Scale was administered on the computer. Finally, participants completed an open-ended, funneled suspicion probe and were debriefed.

Results

Scores on the implicit luckiness measure were computed by summing the number of luck-relevant words selected, and self-monitoring scores were centered at the mean (Aiken & West, 1991) prior to analyses. Luckiness scores were then submitted to a Prime (7 vs. 13) × Self-Monitoring multiple regression analysis. This analysis revealed the presence of an outlier (univariate $z = 3.09$, $p = .002$) who selected luck-related words on 12 of 14 possible trials. This outlier was poorly predicted by the regression analysis (standardized residual = 3.11, $p = .002$; Studentized deleted residual = 3.62, $p = .0006$). Regression analyses were therefore run both with and without the outlier included in the analysis (Cohen, Cohen, West, & Aiken, 2003; McClelland, 2000). When the outlier was included, neither the prime main effect ($B = 0.47$), $t(58) = 0.94$, $p = .35$, nor the Prime × Self-Monitoring interaction ($B = -0.22$), $t(57) = -1.50$, $p = .14$, attained conventional levels of significance. When this one outlier was discarded, the predicted Prime × Self-Monitoring interaction emerged ($B = -0.316$), $t(56) = -2.31$, $p = .025$ (see Figure 2). Decomposition of this interaction at one standard deviation above and below the mean of the self-monitoring distribution (Aiken & West, 1991) indicated that the main effect of priming was signif-

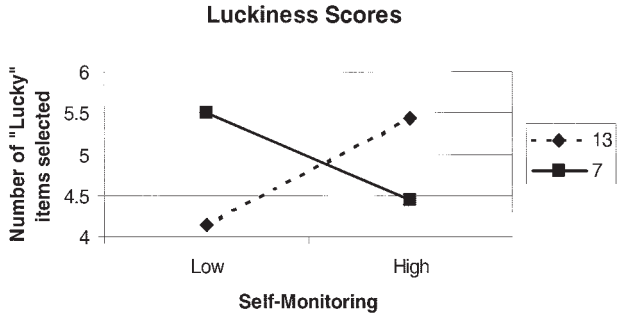

Figure 2. Luckiness scores as a function of prime and self-monitoring (plotted at one standard deviation above and below the mean).

icant for low self-monitors ($B = 1.36$), $t(56) = 2.07$, $p = .04$, but not for high self-monitors ($B = -0.98$), $t(56) = -1.39$, $p = .17$.

Discussion

This study again demonstrated that assimilation of self-perceptions to an activated construct occurs more for low self-monitors than for high self-monitors. Low self-monitors primed with the number 7 chose more luck-relevant words to describe their current feelings than did participants primed with the number 13. This effect was not observed among high self-monitors. This study replicates and extends the basic findings of Study 1.

This study rules out several alternative explanations that were possible concerning the first study. Because this study used a subliminal prime, conscious correction among high self-monitors seems unlikely, because one must be aware of a bias in order to consciously correct for it (Petty & Wegener, 1993; Wilson & Brekke, 1994). Although automatic correction is possible (Wegener & Petty, 1997), this is likely to occur only with highly practiced corrections, such as in situations in which bias regularly occurs and is unwanted (e.g., see Maddux, Barden, Brewer, & Petty, 2005). Habitual correction for the influence of lucky and unlucky numbers seems unlikely. In addition, the association between numbers and luck seems less likely to differ among high and low self-monitors because this association is unrelated to social contexts or to the self.

Study 2 again provided results more consistent with the active-self predictions than with those of ideomotor theory or social functional theory. Additionally, Study 2 extends the priming literature by showing that priming stimuli with social associations (i.e., symbols) can lead to self-concept change much as do other types of social stimuli. Hence, this study shows that stimuli with social meaning cannot only influence behavior and judgments (Kay et al., 2004) but also change momentary self-conceptions.

There is a potential alternative explanation for our findings on the implicit aggression and luck measures, however. Research has shown that accessible constructs, such as stereotypes, are easily processed and are likely to attract attention (Higgins, 1996; Macrae, Milne, & Bodenhausen, 1994; Macrae, Stangor, & Milne, 1994). Low self-monitors, who are guided by their internal states, may have selected more prime-consistent items on the basis of mere accessibility alone and not because they actually felt more aggressive, despite our instructions to respond with their own feelings. High self-monitors, whose attention was focused outward, may have shown a null effect because they did not notice any difference in accessibility. This may be unlikely, as pointed out in the discussion of Study 1, because if these constructs were simply more accessible and not linked to the self, then one would expect high self-monitors, not lows, to show larger priming effects because of their increased reliance on stored social constructs. Nevertheless, Study 3 was conducted to test and rule out the accessibility alternative.

Study 3

Both of our studies thus far have used a measure atypical of the prime-to-behavior literature in that most research has examined some overt behavior or task performance that results from priming. Indeed, only the study on attitudes mentioned earlier by Kawakami et al. (2003) comes close to our focus on self-change that can result from a prime. Nevertheless, the results of our studies were consistent with the idea that activated stereotypes can modify self-perceptions. Notably, this change in self-perception was evident only among those individuals who were low in self-monitoring—individuals who are vigilant in accessing and acting on self-knowledge. It is still possible, however, that self-monitoring moderates the effects of stereotype activation on self-perceptions but not on overt action or task performance. Thus, we conducted a third study to determine whether the self-monitoring effect would obtain on a more behavioral outcome measure. In addition, Study 3 used two different stereotypes to ensure that our findings generalized beyond the constructs activated in Studies 1 and 2. In this study, we chose to use the professor and supermodel stereotypes, which have opposing implications for information processing (Dijksterhuis et al., 1998; Dijksterhuis & van Knippenberg, 1998). As noted earlier, past research has used tests such as those based on Trivial Pursuit questions to assess information-processing behavior. We instead chose to use an argument-quality manipulation within a persuasion paradigm to assess information-processing activity (Petty & Cacioppo, 1986). This has the benefit of generalizing the stereotype activation effect to another task.[4]

In contemporary persuasion research, the strength of arguments in a message is often manipulated between participants in order to gauge the extent of message processing (e.g., Petty & Cacioppo, 1979). Some participants receive strong arguments that have been pretested to elicit primarily favorable thoughts about the focal product or issue when thinking is high, whereas other participants receive weak and specious arguments that elicit primarily unfavorable thoughts. Because all arguments lead to the same conclusion (e.g., "You should buy product X"), the attitudes of people who are not paying much attention to them (e.g., because they are distracted) may not differ between the strong and weak conditions. However, the attitudes of people who are carefully scrutinizing the

[4] Although we acknowledge that this study does not involve overt motor behavior, much of the research on behavioral priming effects, including a considerable amount of research on ideomotor theory, has used dependent variables that are more mental than motor oriented. For example, dependent measures in the automatic behavior literature have included test performance (Dijksterhuis et al., 1998; Dijksterhuis & van Knippenberg, 1998; Haddock, Macrae, & Fleck, 2002; Schubert & Häfner, 2003; Shih et al., 2002; Shih, Pittinsky, & Ambady, 1999; Wheeler et al., 2001), decisions in ultimatum and social dilemma games (Kay et al., 2004; Smeesters et al., 2003), forgetting (Dijksterhuis, Aarts, et al., 2000; Dijksterhuis, Bargh, & Miedema, 2000), and attitude reports (Kawakami et al., 2003). Hence, although one could argue that information processing is not behavioral, it is hardly atypical of the types of dependent measures used in this literature, including those for which ideomotor and social functional accounts have been invoked. Indeed, the large number of nonmotor behavior studies in this literature is noteworthy, given that ideomotor theory is, as the name implies, a theory about motor behaviors. It is possible that simple motor behaviors and more complex behaviors like information processing could each have a different mediating mechanism, and so it could be that the Active-Self and ideomotor accounts are each applicable for a different range of dependent variables, but at this point, such a claim is highly speculative. What is important from our perspective is that both the ideomotor and social functional accounts have been applied to the kind of mental behavior we examined in Study 3 (see Dijksterhuis & Bargh, 2001; Kawakami et al., 2003).

message (e.g., because personal relevance is high) will be more influenced by the argument-quality manipulation (i.e., more favorable attitudes following strong arguments than following weak ones). In our priming paradigm, behaving like a professor would involve careful thought about the arguments (just as it would involve performing well on a Trivial Pursuit game; see Dijksterhuis & van Knippenberg, 1998), whereas acting like the stereotype of a supermodel would involve less thought. If low self-monitors act like the primed concepts, we would expect their attitudes to be influenced by argument quality more when primed with professor than with supermodel. The behavior of high self-monitors should not be as influenced by the primes.

Method

Overview

In this investigation, we primed half of the participants with the professor stereotype and half with the supermodel stereotype by using an essay paradigm much like that used in Study 1. Following the priming manipulation, participants viewed several advertisements, including the target ad for a watch, and reported their attitudes. As noted earlier, we included an argument-quality manipulation in the target ad to assess the extent of thinking in which participants engaged. The design of the study was a 2 (prime: professor vs. supermodel) × 2 (argument quality: strong vs. weak) × Self-Monitoring between-participants design.

Participants

Participants were 70 Stanford University students (29 male, 41 female) who received $10 in compensation for their participation. Sessions were conducted in a classroom with approximately 10–25 participants per session. All participants were told that the research involved two separate and unrelated tasks.

Independent Variables

Priming manipulation. To conceal the purpose of the stereotype activation task, we told participants that the purpose of the first task was to examine the "role of hemispheric dominance on creativity tasks." The instructions indicated that participants would be assigned to write a creative essay about an assigned topic with either their dominant hand or nondominant hand in order to examine the relationship between hemispheric brain activation and creativity. In fact, all participants were assigned to write with their dominant hands. Participants were instructed to write an essay about a day in the life of an individual, including his or her behaviors, lifestyle, and appearance attributes. Half of the participants were instructed to write about a professor, whereas the other half were instructed to write about a supermodel. All participants were told that they would have 5 min to complete their essays. Aside from the topic manipulation, all participants received identical instructions.

Message manipulation. Participants read two filler advertisements and then read the target advertisement, which was for a wristwatch for men and women. Half of the participants received strong arguments for the wristwatch, whereas the other half of the participants received weak arguments for the wristwatch. An example strong argument is, "The Chronotech is water resistant up to 350 feet and is suitable for swimming and diving." An example weak argument is, "The Chronotech is water resistant if not submerged and is suitable for wear in all climate conditions."

Self-Monitoring

As in Studies 1 and 2, self-monitoring was assessed with the 18-item scale (Gangestad & Snyder, 1985; Snyder, 1974).

Dependent Variables

Following the priming task, the experimenter indicated that participants would be moving on to Experiment 2. The experimenter told participants that they would be evaluating advertising copy for different products and services. At that time, booklets containing the target and filler ads, attitude measures, Self-Monitoring Scale, and suspicion checks were distributed.

Participants rated their attitudes toward the wristwatch on four 7-point semantic differential scales anchored by *bad* and *good, negative* and *positive, undesirable* and *desirable,* and *unfavorable* and *favorable*. Participants rated their attitudes toward the advertisement on these same scales as well as one item that simply asked how much they liked the ad on a scale from 1 (*not at all*) to 7 (*very much*). Last, participants rated the desirability of the watch's features and the likelihood that the watch actually possessed these features. Each item was anchored by a scale of 1 (*not at all*) to 7 (*very much*). These last two items were combined multiplicatively to form a Likelihood × Desirability index. This variable is based on research indicating that attitudes are a multiplicative function of the perceived desirability and likelihood of attributes and serves as an effective measure of belief-based attitudes (Fishbein & Ajzen, 1975). Scores on this index are higher when participants perceive the products' features to be very desirable and very likely.

Results

The three attitude measures were highly related ($\alpha = .88$), and each exhibited identical effects. These variables were therefore standardized and averaged.[5] Scores on the Self-Monitoring Scale were centered by subtracting the mean from each person's score (Aiken & West, 1991).

The attitude measure was subjected to a Prime × Argument Quality × Self-Monitoring multiple regression analysis. There was a main effect of argument quality ($B = 1.25$), $t(65) = 7.26$, $p < .0001$, such that strong arguments produced more positive attitudes than did weak arguments. The predicted three-way Prime × Argument Quality × Self-Monitoring interaction was the only other effect to emerge ($B = 0.30$), $t(61) = 3.06$, $p = .003$. As depicted in Figure 3A, among low self-monitors, there was a significant Prime × Argument Quality interaction ($B = -1.51$), $t(61) = -3.19$, $p = .002$, such that low self-monitors primed with the professor stereotype exhibited a larger argument-quality effect (consistent with a thoughtful professor) ($B = 2.32$), $t(61) = 6.10$, $p < .0001$, than did low self-monitors primed with the supermodel stereotype ($B = 0.82$), $t(61) = 2.91$, $p = .005$. Among high self-monitors, the Prime × Argument Quality interaction was not significant ($B = 0.49$), $t(61) = -1.07$, $p = .29$ (see Figure 3B).

Discussion

This study extends the findings of the first two experiments by demonstrating moderation by self-monitoring on participants' information-processing behavior rather than a measure of self-perception. Again, participants low in self-monitoring assimilated to the prime by thinking more about the advertisement following the professor prime compared with the supermodel prime, whereas high self-monitors did not demonstrate a significant effect of prime on behavior. The pattern among low self-monitors conceptually replicates previous research that has examined the effects of acti-

[5] One participant did not complete all attitude measures and was excluded from the analyses.

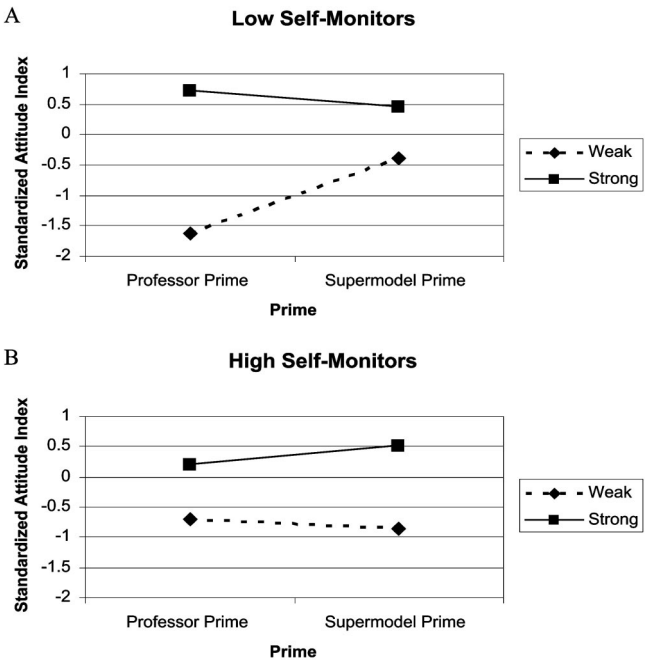

Figure 3. Attitudes toward product as a function of argument quality, prime, and low (A) and high (B) self-monitoring (plotted at one standard deviation above and below the mean).

vating these stereotypes on such intellectual tasks as a Trivial Pursuit game (Dijksterhuis et al., 1998; e.g., Dijksterhuis & van Knippenberg, 1998), but shows that such effects are moderated by self-monitoring.

In addition, this study helps to rule out the accessibility alternative discussed earlier, as simple accessibility of the primed constructs (professor or supermodel) cannot account for differences in information processing of an advertisement for a wristwatch. Recall that in the first study, the prime and the dependent variable contained related content, and as such, the accessibility of the prime alone may have caused the preferential selection of prime-consistent content, despite our instructions to rely on their feelings. Study 3 used a dependent measure that was unrelated to the content of the specific constructs primed and, as such, is not as amenable to a mere accessibility-based alternative.

General Discussion

The results from our three studies support the hypothesis that the activation of a nonself social construct (e.g., African American, lucky, professor) can modify judgments and behavior by influencing the active self-concept. In Study 1, low self-monitors, who are more likely to change their self-concept in response to diagnostic self-information and who are more likely to use their internal states in guiding decisions and behavior, exhibited a pattern of responses consistent with the primed African American stereotype, whereas high self-monitors did not. In an ambiguous perception task in which participants were asked to rely on their feelings in making their judgments, low self-monitors selected more aggression-relevant stimuli following an African American prime than did control prime participants. High self-monitors showed no effect of the prime.

In Study 2, we replicated the effect found in Study 1 by using a subliminal priming manipulation and the construct of luckiness as activated by priming the numbers 7 or 13. This study also used the ambiguous perception task wherein participants were asked to rely on their feelings, and as in Study 1, only low self-monitors demonstrated an impact of the prime such that those primed with 7 felt luckier than those primed with 13.

Study 3 allowed us to generalize these findings to additional stereotypes and to a task-performance measure. Low self-monitors thought more about an advertisement following a professor prime (consistent with the professor stereotype) than they did following a supermodel prime (consistent with the supermodel stereotype). There were no significant effects of prime among high self-monitors.

Mechanisms of Self- and Behavioral Change

Self-Monitoring

Self-monitoring processes. The self-monitoring literature has largely focused on high self-monitors and has emphasized low self-monitors considerably less (for exceptions, see, e.g., Arkin, Gabrenya, Appelman, & Cochran, 1979; De Bono & Harnish, 1988; Fiske & von Hendy, 1992; Petty & Wegener, 1998). Our data provide some additional insight into the cognitive processes of low self-monitors. In the introduction, we posited two potential reasons for why one might expect low self-monitors to exhibit prime-consistent self-concept and behavior. The first possibility was that because of their responsiveness to dispositionally relevant information (Fiske & von Hendy, 1992), low self-monitors might be more likely to modify their working self-concepts on the basis of the social construct prime. The second was that because of their use of their internal states in guiding behavior, low self-monitors should be more likely to act in accordance with any prime-induced change in the self.

Both processes are plausible contributors to behavioral priming effects, but our data really address only the former mechanism with the implicit self-concept measures used in Studies 1 and 2. That is, these measures indicated that there was a change in the accessible content of the self-concept among low but not high self-monitors following a prime. A change in self-concept content is consistent with the differential impact of potentially diagnostic dispositional information on the self. Furthermore, because the measures we used were implicit, they may be less susceptible to any differences in the extent to which high and low self-monitors rely on the self-concept in directing conscious judgments and behavior. These data thus provide additional support for the idea that low self-monitors may sometimes be susceptible to situational influence, but only to the extent that this influence is perceived as having implications for the self.

Parallels to other constructs. Our discussion of self-monitoring, and the predictions we make, may sound somewhat reminiscent of the private self-consciousness findings discussed earlier (Hull et al., 2002). Recall that Hull et al. found priming effects among participants high in private self-consciousness, but not among those low in private self-consciousness. Our predictions would be redundant if people high in private self-consciousness were also low in self-monitoring. Despite the surface similarity of these measures and their predictions, several studies have found

null or small positive correlations between the constructs (e.g., *r*s = .10 to .21; Lamphere & Leary, 1990; Penner & Wymer, 1983), whereas a negative correlation would be expected if low self-monitoring and high private self-consciousness were empirically equivalent. Additionally, factor analyses that have included measures of public- and private-self phenomena have found that private self-consciousness and self-monitoring load on separate factors (Lamphere & Leary, 1990; Penner & Wymer, 1983), further supporting their independence.

Not only are the constructs distinct ones empirically, but they also predict different, albeit complementary, prime-to-behavior processes. Specifically, Hull et al. (2002) argued that the self-consciousness effect is due to participants high in private self-consciousness engaging in self-relevant processing of the prime content. By processing the prime content in self-relevant ways, they argued, primes that are objectively inapplicable to the self can still exert an influence on behavior. This type of self-relevant processing may be one means by which primes could induce self-change and, hence, is complementary with the Active-Self framework (Wheeler et al., 2005).

Complementary to the process hypothesized by Hull et al. (2002), the private self-consciousness findings have another potential explanation that is not applicable to the self-monitoring predictions. Because self-relevant processing is deeper (e.g., Symons & Johnson, 1997), high private self-consciousness individuals could exhibit larger priming effects due to greater activation of the primed construct, rather than due to greater change in the self-concept. Hence, each of these constructs predicts independent processes, each of which could increase the magnitude of self- and behavioral change following a prime.

The major difference between Hull et al.'s (2002) theoretical framework and ours is that we predicted a change in the accessible content of the self-concept. The Active-Self framework can still account for their findings if, for example, processing the prime content in self-referent ways entails a similarity testing process, whereby commonalities between the self- and prime content are made more accessible (Mussweiler, 2003), or if perceivers imagine themselves in the primed role (Markman & McMullen, 2003), thereby making self-concept assimilation more likely. According to the Active-Self account, if this type of self-relational processing leads to greater activation of prime-consistent self-content, it could increase the assimilative effects of the primes.

The reasons that self-monitoring may moderate the effects, however, are distinct from those that Hull et al. (2002) suggested underlay private self-consciousness moderation. One reason we discussed is that low self-monitors may be more likely to change their self-representations in response to a prime, not because of deeper processing of the prime content, but rather because they may be more likely to misinterpret the accessible prime content as diagnostic information about their actual characteristics and beliefs. A second reason is that low self-monitors should be more likely to act like a member of a primed stereotype group if that stereotype is incorporated into their self-concept because low self-monitors are more likely to act on the basis of their perceived inner states. Neither of these processes has been postulated or demonstrated for individuals high in private self-consciousness.

In addition to the parallels with self-consciousness, self-monitoring may also seem similar to individualism–collectivism, in that both high self-monitors and collectivists are concerned with fitting in with their social environment, whereas individualists and low self-monitors may both seem more likely to act on the basis of their internal states. However, if these dimensions were the same, one might predict the opposite pattern of results, because a focus on the personal (vs. collective) self-concept has been shown to lead to contrast in self-perceptions following exposure to exemplars (e.g., Stapel & Koomen, 2001). Although there are numerous differences between the studies presented here and work on the collective self-concept, we examined the extent to which self-monitoring overlapped empirically with individualism and collectivism.

We included measures of self-monitoring and individualism–collectivism as ancillary measures in a data collection involving 423 total participants. The correlation between self-monitoring and individualism in these samples was .17 ($p < .001$); between self-monitoring and collectivism, the correlation was −.02 (*ns*). These correlations are small in magnitude and suggest that, if anything, high self-monitors are more likely to be high in individualism, not in collectivism. These patterns of correlations are inconsistent with the idea that self-monitoring is a proxy variable for collectivism.

Additionally, although we acknowledge the surface similarities between these constructs, the predictions made by individualism–collectivism and self-monitoring differ. Whereas low self-monitors have been shown to evince greater change in their self-beliefs in the face of information believed to be dispositionally diagnostic (e.g., Snyder & Tanke, 1976), we are not aware of any literature relating this tendency to individualism–collectivism. Whereas low self-monitors have been shown to evince greater self-behavior consistency, this pattern has not been shown for individualism–collectivism. Rather, both individualists and collectivists rely on their self-representations to guide behavior, but the types of self-representations (individual vs. collective) that drive their respective behavior differ. Our data do not address the question of whether the primed stereotype is linked to the individual or collective self-representation, but the possibility that it can be linked to either is one that future research should investigate.

Biased Activation Versus Expansion

What happens to the working self-concept of low self-monitors when a social construct is activated? We have offered two possibilities and will discuss these briefly here (see also Wheeler et al., 2005). One possibility is that social construct activation serves to make a biased portion of one's chronic self-concept accessible. Although the prime may not target one's group memberships, features of the social construct content could be contained in one's chronic self-representation. For example, most non-African American individuals can recall instances in which they felt lazy, unintelligent, or athletic, all of which are elements of the African American stereotype. Hence, the mental representation of the self and the prime are almost certain to share some features and therefore overlap to some extent. When the specific features of the self that are consistent with the primed construct (but typically nondominant) are activated, the participants' working self-concept will contain prime-consistent features (Markman & McMullen, 2003; Mussweiler, 2003). We call this potential mechanism the *biased activation model* (Wheeler et al., 2005).

Some support for the biased activation account can be found in research on the relational self (Andersen & Chen, 2002; Baldwin, 1992) and transference (e.g., Hinkley & Andersen, 1996). According to this research, individuals have self-concept components representing the self-with-relationship-partner for select important others (e.g., romantic partners, close friends). This self-with-partner aspect of the self-concept is accessible when one interacts with or thinks about the significant other. It is interesting to note that encounters with people who resemble a significant other can also 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, the working self-concept resembles the self when with the relationship partner (Hinkley & Andersen, 1996). This transference is very similar to the stereotype priming we have focused our discussion on thus far. A target similar to a significant other can be seen as a prime for that significant other. This prime then activates a biased subset of the perceiver's self-schema—the self-when-with-other component—that is then active and capable of driving the perceiver's thoughts and behavior.

Another possible mechanism that may account for the change in self-concept, the *expansion model* (Wheeler et al., 2005), involves the confusion of self and other (Aron, Aron, Tudor, & Nelson, 1991). By this account, social construct activation can sometimes create confusion regarding which accessible material corresponds to the self and which material does not. Hence, although "lazy" may not be an element of a person's chronic self-concept, links between the self and the construct lazy could be created because of this confusion of self and other. According to this model, the persistent content of a person's actual self-concept would not necessarily place a limitation on the effects of primes on behavior (see also Markman & McMullen, 2003). Virtually any accessible mental contents whose origins were unknown could be confused with the self.

Some potential support for the expansion model comes from the literature on source monitoring (Johnson, Hashtroudi, & Lindsay, 1993). Although this literature has generally focused on memory-related phenomena (e.g., Dodhia & Metcalfe, 1999; Mather, Johnson, & De Leonardis, 1999), recent research has also examined the effects of source monitoring on judgment (Mussweiler & Neumann, 2000). For example, Mussweiler and Neumann (2000) found that judgmental assimilation occurs when the source of accessibility can be (mis)attributed to the self, and contrast occurs when accessibility is attributed to an outside source. Although the effects of accessibility on judgments about others may not always be the same as the effects on one's behavior (Smeesters, Warlop, Van Avermaet, Corneille, & Yzerbyt, 2003), some research has found similar results in these domains. For example, a distinct (Stapel & Koomen, 2001) exemplar prime is likely to produce contrast in judgment about others (Stapel, Koomen, & van der Pligt, 1997), in perceptions of the self (Dijksterhuis et al., 1998), and in behavior (Dijksterhuis et al., 1998). Thus, misattribution of the source of construct accessibility to the self is one way in which primed content may cross the barrier into the working self-concept, even in the absence of preexisting prime-consistent self-content.

High self-monitors, because of their constant monitoring of the social environment, may be better source monitors, though this seems like an unlikely account for our data as Study 2 used a subliminal prime that should have been difficult to detect, even for someone skilled at source monitoring. Low self-monitors, in contrast, are used to searching internally for self-relevant aspects (e.g., attitudes, mood, motives) to guide their behavior. Thus, among low self-monitors, any internally activated construct might be interpreted quickly as stemming from the self and treated accordingly.

An additional possibility is that these mechanisms may work in concert to produce the self-change and behavioral effects observed. It may be the case, for example, that the extent or type of chronic self- and social construct overlap (biased activation model) determines the likelihood of expansion to include nonself prime content (expansion model) (for a more extensive discussion, see Wheeler et al., 2005).

Although the models are conceptually distinct, distinguishing between these two models empirically may prove to be difficult. In an idealized experimental world, it would be possible to find a group of people who do not have any representation of stereotype-relevant traits in their self-concept. If a prime still produced construct-consistent behavior, then the expansion model would be supported over the biased activation model. Manipulations that vary the likelihood that the source of accessibility would be misattributed to the self could also be used to explore the plausibility of the expansion model, and measuring the degree of self-prime overlap prior to priming may offer insight into the biased activation model.

Other Proposed Mechanisms

Ideomotor Action

These studies call into question the degree to which the direct and simple ideomotor activation model can account for all prime-to-behavior effects. The literature on this mechanism (Dijksterhuis & Bargh, 2001; James, 1890/1950) provides no reason to expect that primes would affect self-perceptions, unless such perceived change in the self were to result from self-perception-type inferences following behavior. Because Studies 1 and 2 had no behaviors prior to the self measure, this type of self-perception mechanism would not be at work. Additionally, the ideomotor effect does not predict that changes in behavior would be moderated by self-monitoring, unless the strength of activation differed across high and low self-monitors. As discussed earlier, prior research suggests that, if anything, high self-monitors likely have stronger activation, and so this also seems unlikely to account for our results.

Although ideomotor mechanisms seem unlikely to be the driver of our effects, it is important to keep in mind that behavior is multiply determined, and the effects of stereotype activation on behavior may be due to a number of mechanisms working in concert (Wheeler & Petty, 2001). Determining the conditions under which each mechanism exerts its greatest influence on behavior may be a useful direction for future research.

Social Function of the Perception–Behavior Link

What do these data mean for the social function that the perception–behavior link has been hypothesized to play (Chartrand et al., 2004; Kawakami et al., 2003; Lakin et al., 2003)? Outside of social psychology, the perception–behavior link has

been hypothesized to be the origin of a great deal of social behavior and, in particular, the acquisition of language (e.g., Kohler et al., 2002; Rizzolatti & Arbib, 1998). Within social psychology, mimicry research has offered the most support for this perspective (Chartrand & Bargh, 1999; Chartrand et al., 2004; Cheng & Chartrand, 2003; Dijksterhuis & Bargh, 2001; Lakin & Chartrand, 2003; Lakin et al., 2003). Mimicry represents the purest form of the perception–behavior link in that the perception is direct and is concurrent with the behavior.

In our paradigm, as in almost all studies we are aware of to date that have used social construct primes, the perception was indirect and was separated from the behavior by time and by task (for an exception, see Kay et al., 2004). This separation has two effects: First, it ensures that no actual behaviors are observed. Second, it essentially removes any direct social implications, because the context in which the construct is activated differs from that in which the behavior is measured. Hence, the primes do not communicate information about socially appropriate behavior and are, in fact, dissociated from the social context in which the dependent variable is assessed. Perhaps this is partly why, in our studies, high self-monitors did not engage in prime-consistent behavior. Indeed, consistent with the social-adjustive function of mimicry, high self-monitors are more likely to engage in nonconscious mimicry (Cheng & Chartrand, 2003).

Although our results are inconsistent with the social functional account predictions of behavioral priming effects, we do not dispute the possibility that mimicry may serve a social-adjustive function. In fact, this idea has been well established (Chartrand et al., 2004; Cheng & Chartrand, 2003; Lakin & Chartrand, 2003; Lakin et al., 2003). Instead, our data and the Active-Self perspective may offer limitations on the extent to which the social-adjustive function can be extrapolated to automatic behaviors that result from primes, rather than from direct observation of another person's actions. Further research in which both social context and prime are manipulated could shed light on whether, and under what conditions, social functional processes may operate in priming contexts.

It may be useful to note that different functional accounts can be offered other than the social-adjustive account discussed in this article. For example, a self-expressive functional account (see, e.g., Abelson & Prentice, 1989) is entirely consistent with our Active-Self view, because the expressive function account would also hold that prime-induced behavioral changes result from changes in the active self-concept that are expressed via behavior. Hence, this account would also predict that low self-monitors, who are likely to use the expressive function of attitudes, traits, and other internal states, should show the greatest change in responses following a prime, so long as the primes affected the self-concept. Because we have little evidence suggesting whether this process actually serves an expressive function or is a by-product of some other process, we refrain from making strong claims about whether the process is truly functional for low self-monitors.

Conclusion

Our three studies provide initial evidence that social construct priming effects can involve a temporary change in self-perceptions for those individuals who are attuned to their inner states (i.e., low self-monitors) and use them to guide their behavior. The consistent moderation by self-monitoring of the priming effects we obtained is not easily explained by previous accounts of prime-to-behavior effects. Further research is needed to explore the conditions under which the various mechanisms for behavioral priming effects are dominant. Future research should also explore the underlying mechanism of the changed self-perception effect. Such research will be informative both to the automaticity literature and the self and self-monitoring literatures.

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