

---

# Men's Sex-Dominance Inhibition: Do Men Automatically Refrain From Sexually Dominant Behavior?

**Amy K. Kiefer**

*University of California, San Francisco*

**Diana T. Sanchez**

*Rutgers University*

---

*Men receive conflicting messages about their sexual roles in heterosexual relationships. Men are socialized to initiate and direct sexual activities with women; yet societal norms also proscribe the sexual domination and coercion of women. The authors test these competing hypotheses by assessing whether men inhibit the link between sex and dominance. In Studies 1a and b, using a subliminal priming procedure embedded in a lexical decision task, the authors demonstrate that men automatically suppress the concept of dominance following exposure to subliminal sex primes relative to neutral primes. In Studies 2 and 3, the authors show that men who are less likely to perceive sexual assertiveness as necessary, to refrain from dominant sexual behavior, and who do not invest in masculine gender ideals are more likely to inhibit dominant thoughts following sex primes. Implications for theories of automatic cognitive networks and gender-based sexual roles are discussed.*

**Keywords:** *implicit associations; sexual behavior; gender differences; passivity; dominance*

Gender roles create distinct norms and ranges of acceptable behaviors for men and women, arguably restricting men and women to a limited portion of the human experience (Prentice & Carranza, 2002; Sanchez, Crocker, & Boike, 2005). Gender roles and norms have been shown to affect men's and women's behavior in the classroom and workplace as well as in their sexual relationships (Impett & Peplau, 2003; Kiefer, Sanchez, Kalinka, & Ybarra, 2006; Rohlinger, 2002; Sanchez, Kiefer, & Ybarra, 2006).

Many theorists contend that gender roles prescribe that heterosexual men should be sexually agentic and dominant and that women should be sexually passive and submissive (e.g., Schwartz & Rutter, 2000; Sprecher & McKinney, 1993). Men are socialized to be the experts, initiators, and directors of sexual activity (Baumeister, Catanese, & Vohs, 2001; Blumstein & Schwartz, 1983; Grauerholz & Serpe, 1985; Schwartz & Rutter, 2000; Sprecher & McKinney, 1993). These gender-based sexual roles are evident in popular media. Magazines, television shows, and movies frequently depict male sexual dominance over women and female sexual submission to men (Baker, 2005; Jeffreys, 1990; Jhally, 1995; Kilbourne, 2000a, 2000b).

In several studies (e.g., Kiefer et al., 2006; Sanchez et al., 2006), researchers have shown that women internalize their traditional gender-based role of sexual passivity and submissiveness at a nonconscious level. Women tend to nonconsciously associate sex with passivity (i.e., showed facilitated responses to sex-primed, passivity-related words

---

**Authors' Note:** Amy K. Kiefer and Diana T. Sanchez made equal contributions to this article. Order of authors was determined by a coin toss. Amy Kiefer was supported by a National Institute of Mental Health postdoctoral fellowship during the preparation of this article. We wish to thank Lee Jussim, Tracy L. Stewart, Lora E. Park, Norbert Schwarz, Jesse Chandler, and Oscar Ybarra for their comments on previous versions of the article. Correspondence should be addressed to Amy Kiefer, Health Psychology Program, University of California, San Francisco, CA 94143-0848; e-mail: amy.kiefer@gmail.com.

*PSPB*, Vol. 33 No. 12, December 2007 1617-1631

DOI: 10.1177/0146167207305856

© 2007 by the Society for Personality and Social Psychology, Inc.

compared to neutral-primed, submission-related words), and the strength of this association predicts women's engagement in passive sexual behavior (Kiefer et al., 2006; Sanchez et al., 2006).

In contrast to the gender role-consistent associations found among women, Sanchez and colleagues (2006; Study 3) failed to find sex-dominance or sex-passive associations among men. In fact, men showed significantly slower responses to sex-primed dominance words relative to neutral-primed dominance words; that is, they evidenced sex-dominance inhibition (Sanchez et al., 2006; Study 3). This finding was in a small study of 26 men. Nevertheless, this finding raises the intriguing possibility that men may not have learned their alleged gender-based role of sexual dominance. Instead, men may have learned to inhibit dominant responses to conform to societal norms that dictate respect for women's sexual wishes. If correct, this explanation implies that men should on average demonstrate slowed responses to dominance targets following sex primes. This proposition runs counter to prevailing theories of male sexual socialization (Baumeister et al., 2001; Blumstein & Schwartz, 1983; Grauerholz & Serpe, 1985; Schwartz & Rutter, 2000; Sprecher & McKinney, 1993) and has the potential to stimulate new theorizing and research on male sexual attitudes and behavior. The following studies were designed to test (a) whether the sex-dominance inhibition effect is reliable and not a methodological artifact and (b) whether gender role attitudes associated with sexual dominance and assertiveness predict the extent of men's sex-dominance inhibition. If men show automatic sex-dominance inhibition because they are motivated to avoid sexual dominance and assertiveness, then men whose personal experiences involve sexual dominance and whose attitudes correspond to a directive and dominating image of male sexuality should exhibit less automatic suppression of dominance.

Although inconsistent with prevailing notions of male sexual roles, the proposition that the majority of men automatically inhibit thoughts of dominance when in sexual contexts is consistent with research demonstrating that relatively few men engage in sexual harassment or aggression. Men's tendency to report acts of sexual coercion has decreased over the past decade: In a recent study, 80% to 96% of men report that they have never engaged in sexually coercive behavior (e.g., McConaghy & Zamir, 1995; O'Sullivan, Byers, & Finkelman, 1998). With the recent protection of women's rights and concerns about women's ability to sexually consent (e.g., the abolition of the marital rape exemption and the redefinition of sexual consent to preclude consent under the influence of alcohol or other substances; see Dank & Refinetti, 2000), men may be motivated to adhere to noncoercive sexual norms.

### *Power-Sex Associations*

Studies have investigated men's cognitive associations of sex with power with mixed results. Using a subliminal priming procedure embedded in a word pronunciation task, Bargh, Raymond, Pryor, and Strack (1995) investigated men's automatic sex-to-power and power-to-sex associations. They found that men whose scores fell in the upper quartile of sexual aggression (as assessed by the Attractiveness of Sexual Aggression scale) showed non-conscious power-to-sex, but not sex-to-power, associations, whereas men whose scores fell in the upper quartile of the Likelihood to Sexually Harass scale showed both automatic power-to-sex and automatic sex-to-power associations. The men who scored in the lowest quartile of either scale showed neither automatic power-to-sex nor automatic sex-to-power associations.

In contrast, Zurbriggen (2000), using a reaction time task involving supraliminally presented pairs of words related to sex and power, found that both men and women showed bidirectional associations between sex and power. Furthermore, sex-to-power but not power-to-sex associations were correlated with participants' self-reported engagement in sexually coercive behavior. These findings conflict with those of Bargh and colleagues (1995), who did not find evidence of a sex-to-power link for all of their participants nor, more specifically, among sexually aggressive men. Both Bargh and colleague's (1995) and Zurbriggen's findings are inconsistent with those of Mussweiler and Förster (2000), who found that both men and women show sex-to-aggression but not aggression-to-sex associations. However, because these studies use different priming methodologies (e.g., Bargh et al., 1995, used a subliminal priming task with word pronunciation; Mussweiler & Förster, 2000, used a subliminal priming task with keyboard responses; and Zurbriggen, 2000, used a supraliminal priming procedure with word pairs), it is difficult to compare their results. Furthermore, it is unclear how aggression should relate to power in sexual contexts. Depending on the circumstances, aggression could be an expression of, or reaction to, possessing power or an expression of, or reaction to, powerlessness. To date, the small number of studies that have examined sex-power associations have failed to provide a clear, consistent picture of men's automatic sex-power associations.

To address some of this confusion, the present research extends past research on men's sex-power associations in several ways. Past research on men's sex-to-power associations has treated power as a unidimensional construct, whereas we examine power as a bidimensional construct. Power has different effects on behavior depending on who possesses and who lacks power (Fiske, 1993). By analyzing separately the behaviors

and feelings associated with the possession of power (dominance displays; Ellyson & Dovidio, 1985) and the behaviors and feelings associated with the lack of power (submissive displays; e.g., Keltner, 1995), we assess whether men automatically associate the concept of sex with the possession of power or with the lack of power. Moreover, we test for moderation by gender role-based sexual attitudes and behaviors. If men inhibit thoughts of dominance in sexual contexts because they avoid sexually dominating their partners, then gender-related roles (e.g., investment in traditional gender norms) and beliefs about the need for sexual assertiveness should predict sex-dominance inhibition.

### *Spreading Inhibition*

To study automatic phenomena such as men's theorized sex-dominance inhibition, the studies used subliminal priming, that is, the activation of specific concepts through the presentation of related stimuli. Priming relies on the theory of contiguous activation (Hebb, 1948; Meyer & Schvaneveldt, 1971), which proposes that cognitive associations between environmental stimuli and perceptions and responses are forged by their repeated co-occurrence in an individual's environment. To the extent that knowledge structures have been repeatedly juxtaposed, the activation of one structure will automatically activate related semantic and behavioral knowledge, a phenomenon known as *spreading activation* (Collins & Loftus, 1975; Meyer & Schvaneveldt, 1971).

Exposure to a stimulus can also sometimes cause the reverse effect, a phenomenon known as *spreading inhibition*. Spreading inhibition is believed to occur when attention is directed toward ignoring a particular stimulus and its associated semantic knowledge (Moskowitz, Gollwitzer, Wasel, & Schaal, 1999). Inhibition is demonstrated by slowed responses to semantically related targets following primes (Neill, Valdes, & Terry, 1995), as occurs in negative priming (Tipper, 1985). Negative priming results from an initial preconscious processing followed by subsequent suppression of the stimulus and related knowledge structures (Neill et al., 1995).

Evidence suggests that individuals can learn to chronically inhibit semantic content and behavioral responses to stimuli provided that these responses have been deliberately ignored or suppressed in the past (Lepore & Brown, 1997; Mikulincer, Gillath, & Shaver, 2002; Moskowitz et al., 1999; Shih, Bonam, Sanchez, & Peck, 2007). Such inhibitory links may develop from goal-directed inhibition of one structure following the activation of another structure.

According to Bargh's (1990) auto-motive model, goals that are frequently and persistently pursued may

be automatically activated in the context in which they have previously been pursued, sometimes without conscious awareness (see Bargh & Chartrand, 1999, for a review). Thus, if an individual has the goal of ignoring or inhibiting a particular response or semantic knowledge, this goal may become automatized, that is, affect information processing and behavior without conscious intention or even awareness (see Glaser & Kihlstrom, 2005, for a review). For example, subliminally primed goals inhibit incompatible alternative goals (Shah, Friedman, & Kruglanski, 2002); after a goal has been attained, its accessibility falls below baseline (e.g., Förster, Liberman, & Higgins, 2005).

Motivated suppression can also become automated. For example, Moskowitz and colleagues (1999) used a negative priming procedure to show that individuals with chronic egalitarian goals have slower responses to gender stereotypic target words following gender primes than following neutral primes. Similarly, Lepore and Brown (1997) found that low prejudiced individuals automatically suppress African American stereotypes.

### *Research Overview*

We propose that in response to societal norms proscribing overly dominant or coercive sexual behavior, men learn to suppress thoughts of dominance in sexual contexts. To test this hypothesis, we conducted four priming studies that assessed cognitive sex-dominance associations.

Because of the sensitivity of automatic associations to the testing context (e.g., Blair, Ma, & Lenton, 2001) and because of conflicting findings in past research on cognitive sex associations, we attempted to replicate our findings across four studies. These studies used two different subliminal priming speeds (55 ms in Studies 1a and 2 and 23 ms in Studies 1b and 3) and two different sets of target stimuli.

To assess the implications of the sex-dominance inhibition effect for men's sexual behavior, we tested whether men's gender-related attitudes and their self-reported sexual behaviors moderated the sex-dominance inhibition effect. The underlying rationale for this hypothesis is that conflicting social norms govern men's sexual behavior in the United States. Men are told to be respectful of women's sexual wishes and to avoid sexual coercion while simultaneously being besieged by images of male sexual dominance (Baumeister et al., 2001; Blumstein & Schwartz, 1983; Grauerholz & Serpe, 1985; Schwartz & Rutter, 2000; Sprecher & McKinney, 1993). Because both norms are prevalent in modern American culture, men's sexual and gender attitudes, as well as personal sexual experiences, may have an impact on whether sex-dominance associations are inhibited at an automatic level.

The following studies test a few specific attitudes and personal sexual experiences that might weaken men's tendency to inhibit dominant sexual behavior. We test whether men's perception that they need to persuade their partners to have sex, that is, perceived need for sexual assertiveness (Studies 2 and 3); their investment in stereotypical gender norms that likely promote a dominant ideal of masculinity (Study 3); and their self-reported sexual dominance and assertiveness (Study 3) predict stronger automatic associations of sex with dominance and thus reduced sex-dominance inhibition. In summary, we predicted that men who perceive the need to be sexually dominant and assertive (i.e., believe that they need to convince their partners to have sex or believe that dominance embodies masculinity) would be less likely to inhibit thoughts of dominance after sex primes.

## STUDY 1A

Study 1a was conducted to replicate the preliminary finding of the sex-dominance inhibition effect (Sanchez et al., 2006; Study 3), using a larger sample.

### Participants

Sixty-seven male, European American, University of Michigan undergraduates were recruited from the introductory psychology subject pool to participate in the experimental session for credit toward fulfillment of a course requirement. Their average age was 18.7 years.

### Materials

*Lexical decision task.* To assess participants' sex-submission associations, we developed five sets of stimulus words that were used as primes and targets in a lexical decision task: neutral words, sex-related words, submission-related words, dominance-related words, and nonwords. During a pretest, a separate set of participants ( $N = 20$ ) rated how highly associated each word was with sex using a 5-point scale anchored at 0 (*not at all associated with sex*) and 4 (*highly associated with sex*). These words were also rated on their associations with submissiveness and dominance using a bipolar scale anchored at  $-4$  (*strongly associated with submission*) and 4 (*strongly associated with dominance*).

Following Sanchez et al. (2006), sex primes were selected to be strongly associated with sex but weakly associated with submission, whereas submissive (or dominant) target words were selected to be strongly associated with submission (or dominance) but weakly associated with sex, to ensure that the task tested associations between distinct concepts. We selected six sex

prime words that were strongly associated with sex ( $M = 2.73$ ,  $SD = 0.88$ ) but relatively unassociated with submission or dominance ( $M = -0.16$ ,  $SD = 0.34$ ): *sex*, *climax*, *oral*, *naked*, *caress*, and *bed*. We selected six submissive target words that were weakly associated with sex ( $M = 0.33$ ,  $SD = 0.20$ ) but associated with submission ( $M = -2.09$ ,  $SD = 1.24$ ): *comply*, *submit*, *slave*, *yield*, *concede*, and *weaken*. We selected six dominant target words that were weakly associated with sex ( $M = 0.57$ ,  $SD = 0.42$ ) but associated with dominance ( $M = 2.25$ ,  $SD = 0.55$ ): *coerce*, *assert*, *power*, *fierce*, *strong*, and *challenge*. Neutral words were taken from Bargh et al. (1995) and were those used in previous work (Kiefer et al. 2006; Sanchez et al. 2006): *oven*, *brick*, *chalk*, *clock*, *table*, and *house*.

### Procedure

The procedure was modeled after that used by Bargh and colleagues (1995). Up to 10 participants took part in each experimental session. Participants were greeted by a female experimenter and seated at computer terminals separated by barriers. Participants completed a lexical decision task administered with E-prime software while seated approximately 70 cm from their computer screens. Participants were instructed to classify letter strings as constituting actual words or as nonsense using different keys on the keyboard. Participants were told that the test was of their verbal abilities and that they should try to respond to each word as quickly as possible without sacrificing accuracy.

At the beginning of each trial, a fixation point was presented in the middle of the computer screen. A sex or neutral word prime was next presented foveally for 55 ms, an exposure too brief for conscious processing (Perdue, Dovidio, Gurtman, & Tyler, 1990; Perdue & Gurtman, 1990).<sup>1</sup> After a mask presented for 10 ms, a target word was presented in the center of the computer screen and remained in view until a designated response key was pressed. The task contained a total of 66 trials—10 practice and 56 actual—which were presented in two different randomized orders. Each order contained 6 presentations of each critical prime-target pair (sex-submission, neutral-dominance, sex-dominance, neutral-dominance) and 8 presentations of each noncritical prime-target pair (sex-neutral, neutral-neutral, sex-nonword, neutral-nonword).

Following the lexical decision task, participants completed demographic questions and a suspicion probe and were asked about their awareness of the presence of primes during the lexical decision task and the purpose of the study. Participants were then thoroughly debriefed, thanked, and given course credit for their participation.

## Results

**Preliminary analyses.** No participants reported awareness of the primes during the lexical decision task or the purpose of the study. No participants had error rates above 30% ( $M = 6.22\%$ ,  $SD = 4.62\%$ ). The response time data were truncated at 300 ms ( $M = 0.14\%$ ,  $SD = .05\%$ ) and 3,000 ms ( $M = 0.6\%$ ,  $SD = 1.2\%$ ) and log transformed.<sup>2</sup>

**Cognitive sex associations.** We conducted a 2 (prime type: sex, neutral)  $\times$  3 (target type: dominance, neutral, submissive) repeated measures ANOVA on men's cognitive sex associations. The ANOVA revealed a significant main effect of prime,  $F(1, 66) = 5.48$ ,  $MSE = .012$ ,  $p = .02$ , and target,  $F(1, 65) = 30.87$ ,  $MSE = .125$ ,  $p < .001$ . These main effects were qualified by the predicted significant interaction of prime by target,  $F(1, 65) = 4.68$ ,  $MSE = .013$ ,  $p = .01$ .

To interpret the interaction, we compared response latencies of sex-primed submissive words to the neutral-primed submissive words (e.g., *bed-comply* vs. *chalk-comply*) in a repeated measures ANOVA. We present untransformed means for readability. Responses to the sex-primed submissive words ( $M = 728.08$  ms,  $SD = 225.68$ ) did not differ from their responses to neutral-primed submissive words ( $M = 717.59$  ms,  $SD = 198.38$ ),  $F(1, 67) = 0.67$ ,  $MSE = .001$ ,  $p = .42$ , *ns*. Thus, sex primes did not affect men's responses to submissive target words. Similarly, a repeated measures ANOVA showed that responses to sex-primed neutral words ( $M = 696.15$  ms,  $SD = 261.30$ ) were not significantly different from responses to neutral-primed neutral words ( $M = 696.82$  ms,  $SD = 185.33$ ),  $F(1, 66) = 0.38$ ,  $MSE = .002$ ,  $p = .54$ , *ns*. In contrast, a repeated measures ANOVA showed that responses to dominance words primed with sex ( $M = 841.43$  ms,  $SD = 289.01$ ) were significantly slower than responses to dominance words primed with neutral words ( $M = 781.92$  ms,  $SD = 271.33$ ),  $F(1, 67) = 15.63$ ,  $MSE = .037$ ,  $p < .001$ . Thus, replicating Sanchez and colleagues (2006), sex primes slowed men's responses to dominant target words.

**Individual difference scores.** To assess the correlation between men's sex-submission and sex-dominance associations, we created individual difference scores indexing the extent to which sex primes facilitated or inhibited responses to submissive target words (sex-submission association scores) and responses to dominant target words (sex-dominance association scores). The sex-submission (sex-dominance) score was calculated as the mean response latency for sex-primed submissive (dominant) target words subtracted from the mean response latency for neutral-primed submissive (dominant) target

words. Thus, higher scores indicate greater facilitation. The sex-submission and sex-dominance facilitation scores were not significantly correlated,  $r(68) = -.049$ ,  $p = .69$ , *ns*. Men's sex-submission facilitation score ( $M = -10.46$  ms,  $SD = 174.31$ ) was not significantly different from zero,  $t(68) = -0.82$ ,  $p = .42$ , *ns*; whereas men's dominance facilitation score ( $M = -59.50$  ms,  $SD = 188.53$ ) was significantly less than zero,  $t(68) = -3.95$ ,  $p < .001$ .

## Discussion

Study 1a replicated the findings of Sanchez and colleagues (2006; Study 3), using a larger sample of men. Men showed inhibited responses to dominance-related concepts following sex primes compared to neutral primes. Thus, in response to sex-related stimuli, men appeared to inhibit dominance-related knowledge.

Although the findings in Study 1a replicate those of Sanchez and colleagues (2006), some concerns about whether the extent to which the sex-dominance effect is automatic remain. First, the priming speed used in this study, 55 ms, is on the boundary of foveal priming speeds considered to be subliminal (Bargh & Chartrand, 2000). Although this is a legitimate concern, we are reassured by the fact that none of the participants in Study 1a reported awareness of the primes. Nevertheless, because the presentations of the stimuli in these studies varied with the refresh rate of the computer screens, set at either 60 or 85.5 hertz, it is possible that this effect was driven by some participants' conscious awareness of the primes.<sup>3</sup>

A second concern is that the priming and target stimuli used in this study were identical to those used by Sanchez and colleagues (2006; Study 3). The observed priming effect may therefore have been driven by phonetic similarity between the primes and targets rather than by their semantic content. For example, being primed with the word *chalk* might, through phonetic similarity, facilitate responses to semantically unrelated words such as *cheese* or *chastity*. To address these concerns in Study 1b, we conducted a separate replication using a different set of target stimuli and a priming speed of 22 ms, which is within the recommended range (15-33 ms) for foveally presented subliminal word primes (Bargh & Chartrand, 2000).

## STUDY 1B

### Participants

Twenty-four male University of Michigan undergraduates (20 Caucasians, 2 Asians or Asian Americans,

1 Latino, and 1 person of mixed racial background) were recruited from the introductory psychology subject pool to participate in the experimental session for course credit. Participants' average age was 19.50.

### Materials

*Lexical decision task.* The lexical decision task used the same procedure as in Study 1 but with different dominance- and submission-related target stimuli. For submissive target words, we again selected six words that were weakly associated with sex ( $M = 0.08$ ,  $SD = 0.09$ ) but associated with submission ( $M = -2.55$ ,  $SD = 0.32$ ) in our original pretest: *fragile*, *dependent*, *surrender*, *weak*, *obey*, *passive*. For dominant target words, we selected words that were weakly associated with sex ( $M = 0.47$ ,  $SD = 0.13$ ) but associated with dominance ( $M = 2.64$ ;  $SD = 0.41$ ) in the original pretest: *insist*, *rule*, *strong*, *command*, *bold*, *master*.

### Procedure

Participants were told that the purpose of the study was to examine verbal ability and personality traits. The priming procedure was identical to that used in Study 1, except that primes were presented for 22 ms instead of 55 ms. Because these primes were presented on computer screens with either 60 hertz or 85.5 hertz refresh rates, actual presentation times ranged from 22 to 33 ms.<sup>4</sup> Following the priming procedure, participants completed demographic questions and a suspicion probe and were asked about their awareness of the presence of primes during the lexical decision task and the purpose of the study. Participants were then thoroughly debriefed, thanked, and given course credit for their participation.

### Results

*Preliminary analyses.* No participants reported awareness of the primes during the lexical decision task or of the purpose of the study. No participants had error rates greater than 30% ( $M = 3.53\%$ ,  $SD = 3.47\%$ ). As in Study 1a, response latencies less than 300 ms (0% of trials) or greater than 3,000 ms (less than 1% of trials) were again recorded as 300 ms and 3,000 ms, respectively, and log transformed.

*Cognitive sex associations.* To examine implicit sex associations, we conducted a 2 (prime type: sex, neutral)  $\times$  3 (target type: dominance, submissive, neutral) repeated measures ANOVA. We present untransformed means for readability. The ANOVA revealed no significant main effects for prime,  $F(1, 23) = 0.31$ ,  $MSE = .001$ ,  $p = .58$ , *ns*, or for target,  $F(1, 23) = 0.16$ ,  $MSE = .002$ ,  $p = .47$ , *ns*.

Although the predicted interaction was not significant,  $F(1, 23) = 1.85$ ,  $MSE = .006$ ,  $p = .17$ , *ns*, to test our primary hypothesis of sex-dominance inhibition we compared response latencies of sex-primed dominance words to neutral-primed dominance words in a repeated measures ANOVA. Replicating Study 1a, responses to the dominance words primed with sex words ( $M = 731.92$  ms,  $SD = 189.67$ ) were significantly slower than responses to dominance words primed with neutral words ( $M = 679.84$  ms,  $SD = 159.71$ ),  $F(1, 23) = 4.40$ ,  $MSE = .011$ ,  $p = .047$ . Thus, Study 1b replicated the sex-dominance inhibition effect using a different set of target stimuli and a faster priming speed.

In contrast, a repeated measures ANOVA comparing response latencies for sex-primed submissive words to the neutral-primed submissive words (e.g., *bed-comply* vs. *chalk-comply*) showed that responses to sex-primed submissive words ( $M = 688.81$  ms,  $SD = 179.52$ ) did not differ from responses to neutral-primed submissive words ( $M = 701.10$  ms,  $SD = 214.86$ ),  $F(1, 23) = 0.015$ ,  $MSE = .000$ ,  $p = .90$ , *ns*. Thus, sex primes did not affect men's responses to submissive target words. Similarly, the repeated measures ANOVA comparing response latencies for sex-primed neutral words to the neutral-primed neutral words showed that responses to sex-primed neutral words ( $M = 680.92$  ms,  $SD = 211.78$ ) did not differ from responses to neutral-primed neutral words ( $M = 696.64$  ms;  $SD = 244.35$ ),  $F(1, 23) = 0.49$ ,  $MSE = .002$ ,  $p = .49$ , *ns*. These findings replicate fully those of Study 1a with a faster priming speed and different stimuli.

*Individual difference facilitation scores.* Sex-submission and -dominance facilitation scores were computed as in Study 1a. Replicating Study 1a, these scores were not significantly correlated,  $r(24) = -.23$ ,  $p = .27$ , *ns*. Men's sex-submission facilitation score ( $M = 12.29$  ms,  $SD = 172.90$ ) was not significantly different from zero,  $t(24) = 0.124$ ,  $p = .90$ , *ns*, whereas men's dominance facilitation score ( $M = -52.07$  ms,  $SD = 162.34$ ) was significantly less than zero,  $t(24) = -2.10$ ,  $p = .047$ .

### Test of Valence Explanation for Studies 1a and 1b

One possible alternative explanation for these findings is that our dominance words were evaluatively negative, whereas our sex-prime words were evaluatively positive. Evaluative incongruence between primes and targets can lead to slowed reaction times compared to response times for evaluatively congruent primes and targets (Fazio, Sanbonmatsu, Powell, & Kardes, 1986). In addition, evaluatively extreme primes can slow reaction times to evaluatively congruent but less extreme targets (Glaser & Banaji, 1999). To rule out these alternative explanations

for our results, we tested for differences in positive versus negative ratings of dominance targets, submissive targets, neutral targets, and sex primes.

In exchange for course credit, 50 men ranked the valence of prime and target words on a scale from  $-3$  (*very negative*) to  $+3$  (*very positive*), with zero as the neutral point of the scale. We conducted repeated measures analyses comparing the valence of dominance targets ( $M_s = 0.72$  and  $0.56$ , respectively) relative to neutral targets ( $M = 0.54$ ) in Study 1a,  $F(1, 49) = 1.50$ ,  $p > .2$ , and Study 1b,  $F(1, 49) = 0.25$ ,  $p > .8$ . There were no significant differences in valence between neutral targets and dominance targets. Submissive targets ( $M_s = -0.85$  and  $-1.09$ , respectively) were rated as more negative than neutral targets in Study 1a,  $F(1, 49) = 66.33$ ,  $p < .001$ , and Study 1b,  $F(1, 49) = 85.09$ ,  $p < .001$ . Finally, we compared valence of targets to sex primes. On average, we found that sex primes were rated fairly positively ( $M = 1.09$ ). Sex primes were rated as more positive than dominance targets in Study 1a,  $F(1, 49) = 6.53$ ,  $p < .02$ , and Study 1b,  $F(1, 49) = 10.18$ ,  $p < .01$ , and than passive targets used in both studies,  $F_s > 229.84$  ( $1, 49$ ),  $p < .001$ . These results rule out the possibility that our results stem either from evaluative incongruence or from a marked difference in evaluative extremity, as dominance targets were in fact evaluatively congruent with sex primes, although less positive than sex primes. More important, the dominance targets were not rated differently than were neutral targets.

### Discussion

Study 1b increased our confidence in the reliability of the sex-dominance inhibition effect. Using a different set of target stimuli and a faster priming speed, we again found that men showed significant inhibition to dominance-related content following subliminal sex primes. What might this effect imply about men's sexual behavior?

Men's tendency to inhibit dominance-related knowledge in response to sex-related stimuli runs counter to theories related to gender roles regarding male sexual socialization. Many gender role theorists (e.g., Schwartz & Rutter, 2000; Sprecher & McKinney, 1993) argue that men are socialized to take on an assertive, dominant sexual role. According to this perspective, men should show facilitated responses to dominance-related concepts following sex-related primes.

Contrary to this prediction, our findings of sex-dominance inhibition suggest instead that men may automatically inhibit the link between sex and dominance. In other words, some men may refrain from dominance in their sexual relationships because of social norms to avoid being sexually dominant or coercive and from a desire to ensure that sex is consensual.

One potential moderator of the sex-dominance inhibition effect is beliefs about the need for sexual assertiveness. In sexual relationships, researchers note that partners often find themselves negotiating disparities in sexual desire in their relationship. When disparities in desire occur, one partner may willingly engage in undesired sexual activities (i.e., sexual compliance) while the other partner plays the role of coaxing the partner into sexual compliance (Impett & Peplau, 2003). Baumeister et al. (2001) have proposed that men's sexually dominant behavior (e.g., greater initiation of sexual activities, sexual coercion) is partially driven by men's having a stronger sexual drive than women. To bend another person to one's will is an act of dominance. Thus, to the extent that men perceive the process of obtaining sex as requiring coaxing their partners, they should be less likely to show the sex-dominance inhibition effect. We hypothesized that men who perceive sexual assertiveness as necessary would show less inhibition to dominance following sex primes than would other men.

## STUDY 2

### Participants

Forty-eight male (36 Caucasians, 2 African Americans, 4 Asians, 3 Latinos, 1 Native American, and 2 of mixed heritage) University of Michigan undergraduates were recruited from the introductory psychology subject pool to participate in the experimental session for course credit. Participants' average age was 18.53 years.

### Materials

*Lexical decision task.* We used the same lexical decision task and stimuli as in Study 1a.

*Perceived need for sexual assertiveness.* Participants were asked to indicate their agreement on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*) for the following four questions: "I often feel like I am more sexual than my sexual partners," "I often feel like I am convincing my partner to have sex or engage in sexual activities," "I often feel that my partner does not really want to have sex or engage in sexual activities with me," and "I often feel that I need to get my partner in the mood so that we can have sex." The scale was reliable (Cronbach's  $\alpha = .73$ ), with higher scores indicating greater perceived need for sexual assertiveness ( $M = 3.34$ ,  $SD = 1.17$ ).

### Procedure

The priming procedure, stimuli, and speed (55 ms) were identical to those used in Study 1a, with the exception that the prime-target pairs were presented in a predetermined randomized order, different from either order used in Study 1a. Following the priming task, participants completed demographic questions, the perceived need for sexual assertiveness scale, and a suspicion probe. Next, participants were asked about their awareness of the presence of primes during the lexical decision task and the purpose of the study. Finally, participants were thoroughly debriefed, thanked, and given course credit for their participation.

### Results

*Preliminary analyses.* No participants reported awareness of the primes during the lexical decision task or the purpose of the study. No participants had error rates ( $M = 3.37\%$ ,  $SD = 3.53\%$ ) greater than 30% on the lexical decision task. As in Studies 1a and 1b, response latencies less than 300 ms (0.04%) or greater than 3,000 ms (1.03%) were again recorded as 300 ms and 3,000 ms, respectively, and log transformed.<sup>5</sup>

*Cognitive sex associations.* To examine implicit sex associations, we conducted a 2 (prime type: sex, neutral)  $\times$  3 (target type: dominance, submissive, neutral) repeated measures ANOVA. We present untransformed means for readability. The ANOVA revealed significant main effects for prime,  $F(1, 46) = 15.09$ ,  $MSE = .019$ ,  $p < .001$ , and target,  $F(1, 45) = 23.56$ ,  $MSE = .084$ ,  $p < .001$ . There was a significant prime-by-target interaction,  $F(1, 45) = 18.29$ ,  $MSE = .037$ ,  $p < .001$ .

To explore this interaction, we compared response latencies of sex-primed dominance words to the neutral-primed dominance words in a repeated measures ANOVA. Replicating Studies 1a and 1b, responses to the dominance words primed with sex ( $M = 856.70$  ms,  $SD = 278.77$ ) were significantly slower than responses to dominance words primed with neutral words ( $M = 743.93$  ms,  $SD = 213.06$ ),  $F(1, 47) = 53.18$ ,  $MSE = .087$ ,  $p < .001$ . Thus, Study 2 replicated the sex-dominance inhibition effect found in Studies 1a and 1b. A repeated measures ANOVA showed that responses to sex-primed neutral words ( $M = 673.75$  ms,  $SD = 156.36$ ) did not differ from responses to neutral-primed neutral words ( $M = 690.34$  ms;  $SD = 167.84$ ),  $F(1, 46) = 1.85$ ,  $MSE = .002$ ,  $p = .18$ , *ns*, also replicating Studies 1a and 1b. Consistent with Studies 1a and 1b, the repeated measures ANOVA comparing response latencies for sex-primed submissive words to the neutral-primed submissive words (e.g., *bed-comply* vs. *chalk-comply*) showed that responses to sex-primed submissive words ( $M = 729.16$  ms,  $SD = 153.68$ )

were not significantly different than responses to neutral-primed submissive words ( $M = 735.65$  ms;  $SD = 200.24$ ),  $F(1, 47) = 0.14$ ,  $MSE = .000$ ,  $p = .91$ , *ns*. Thus, sex primes did not facilitate men's responses to submissive target words.

*Individual difference facilitation scores.* Sex-submission and sex-dominance scores were computed as in Studies 1a and 1b. Replicating the previous studies, these scores were not significantly correlated,  $r(48) = -.23$ ,  $p = .11$ , *ns*. Men's sex-submission facilitation score ( $M = 6.49$  ms,  $SD = 158.44$ ) was not significantly greater than zero,  $t(47) = 0.12$ ,  $p = .91$ , *ns*, whereas men's dominance facilitation score ( $M = -184.43$  ms,  $SD = 178.25$ ) was significantly less than zero,  $t(47) = -7.29$ ,  $p < .001$ . On average, men were slower to respond to sex-primed dominance words than to neutral-primed dominance words.

*Sex-dominance inhibition and perceived need for sexual assertiveness.* The perceived need for sexual assertiveness was entered into the repeated measures ANOVA as a continuous predictor of response latencies for sex-primed and neutral-primed dominant targets. This repeated measures ANOVA revealed a significant interaction of the need for sexual assertiveness and the effects of sex versus neutral primes on responses to dominance targets,  $F(1, 46) = 5.43$ ,  $p = .02$ . To interpret this interaction, we correlated men's sex-dominance scores with their perceived need for sexual assertiveness. Consistent with predictions, the more men perceived the need to be sexually assertive, the more facilitation to dominance words they showed when primed with sex,  $r(48) = .33$ ,  $p = .02$ .

In contrast, perceived need for sexual assertiveness did not correlate with sex-submission facilitation scores,  $r(48) = .12$ ,  $p = .40$ , *ns*. In sum, as predicted, men who perceived greater need for sexual assertiveness showed less inhibition of dominance-related concepts following sex primes.

### Discussion

Testifying to the robustness of the sex-dominance inhibition effect, Study 2 again showed that men on average had slower responses to sex-primed dominance words compared to neutral-primed dominance words. More important, Study 2 found that the more men believed they exceeded their partners in sexual desire, the less inhibition they showed. The more men reported that they perceived the process of obtaining sex as an imposition of their desires on their partners, the more they tended to automatically associate sex with dominance.

### STUDY 3

As shown in Study 2, men's perceptions of the need for sexual assertiveness were correlated with sex-dominance inhibition. This provides preliminary support for the idea that men whose personal experiences seem to fit with the societal image of male sexual dominance are less inclined to avoid sexual dominance and therefore show reduced automatic sex-dominance inhibition. These men may have also been exposed to the notion of being respectful of their sexual partner's wishes, but their associations of sex with the avoidance of dominance have been mitigated by personal experiences that seem to require sexual assertiveness.

From these findings, however, it remains unclear whether men who inhibit sex-dominance actually refrain from dominant sexual behavior. Study 2 only tested perceptions of the need for sexual assertiveness. These perceptions should lead to less avoidance of dominant and directive sexual behaviors. Furthermore, some men may engage in dominant behaviors regardless of whether or not they perceive them to be necessary. These men should show less automatic suppression of dominance following sex primes because their behavior should have forged a positive link between sex and dominance. To test these hypotheses, Study 3 assessed men's self-reported avoidance of sexual dominance. In addition, because Study 2 used a relatively slow priming speed for subliminal priming (i.e., 55 ms), Study 3 attempted to replicate Study 2 using the faster priming speed (i.e., 22 ms) used in Study 1b. Finally, we also examined whether greater investment in masculine gender ideals would predict less sex-dominance inhibition.

#### *Investment in Gender Ideals*

Investment in gender ideals, as conceived of by Wood, Christensen, Hebl, and Rothgerber (1997), refers to the belief that traditional gender ideals are important and central to one's personal definition of the self. Previous research has suggested that greater investment in traditional gender norms affects men's sexual behavior (e.g., Pleck, Sonenstein, & Ku, 1993; Shearer, Hosterman, Gillen, & Lefkowitz, 2005). Men who invest in traditional gender norms endorse sexual roles that confer greater power to men than to women (Kiefer & Sanchez, 2007; Shearer et al., 2005), especially role dictating male dominance and female submission in heterosexual sexual relationships (Sanchez et al., 2005). Men's endorsement of stereotypically masculine traits, stereotypical beliefs about women, and extreme aspects of masculinity have been linked to sexually coercive and aggressive behavior (e.g., Lackie & de Man, 1997; Malamuth, Sockloskie, Koss, & Tanaka, 1991). Hence, we hypothesized that men who invest in

gender ideals may be more likely to adopt a traditional view of sexual relationships (e.g., Kiefer & Sanchez, 2007) and to assume that dominance characterizes masculinity, beliefs which should result in less automatic sex-dominance inhibition.

In summary, Study 3 examined men's self-reports of dominant, assertive sexual behavior; their perceptions of the need for sexual assertiveness; their investment in gender ideals; and their tendency to automatically associate sex with dominance.

#### *Participants*

Male participants ( $N = 31$ ) included paid volunteers recruited via flyers and campus listservs and participants from a paid participant subject pool.

#### *Materials*

*Lexical decision task.* The lexical decision task used the same procedure, priming speed, and stimuli as in Study 1b.

*Perceived need for sexual assertiveness.* The measure of perceived need for sexual assertiveness was identical to that used in Study 2 ( $M = 3.88$ ,  $SD = 1.50$ ).

*Investment in gender ideals.* Investment in gender ideals was assessed using the 2-item scale developed by Wood and colleagues (1997). Participants were instructed to think of how society defines the ideal man, and they were asked two questions regarding how important it is to be similar to their gender's ideal; responses were anchored at 1 (*not at all*) and 7 (*a great deal*; Cronbach's  $\alpha = .98$ ). The items were "How important is it for you to be similar to the ideal man?" and "To what extent is being similar to the ideal man an important part of who you are?" ( $M = 5.37$ ,  $SD = 2.42$ ).

*Dominant sexual behavior.* To measure the extent to which men refrained from dominant behavior, participants rated the following statements on a scale anchored at 1 (*strongly disagree*) and 7 (*strongly agree*): "I tend to take on the more dominant role during sexual activity" and "I tend to take on a directive role during sexual activity." The average of these items (reverse scored) comprised our measure of dominant sexual behavior; thus, higher scores indicated greater avoidance of dominant sexual behavior. This measure was reliable (Cronbach's  $\alpha = .73$ ,  $M = 5.01$ ,  $SD = 1.07$ ).

#### *Procedure*

Following the priming task, participants completed the items regarding their sexual behavior, gender ideals,

and perceived disparities in sexual desire and then completed a suspicion probe. Finally, participants were thoroughly debriefed, thanked, and given payment (\$10) for their participation.

## Results

*Preliminary analyses.* No participants reported awareness of the primes during the lexical decision task or the purpose of the study. No participants had error rates ( $M = 3.79\%$ ,  $SD = 5.40\%$ ) greater than 25% on the lexical decision task. As in the previous three studies, response latencies less than 300 ms (0% of trials) or greater than 3,000 ms ( $M = .46\%$ ,  $SD = 1.21\%$ ) were recorded as 300 ms and 3,000 ms, respectively, and log transformed.<sup>6</sup>

*Cognitive sex associations.* To examine implicit sex associations, we conducted a 2 (prime type: sex, neutral)  $\times$  3 (target type: dominance, submissive, neutral) repeated measures ANOVA. We present untransformed means for readability. The ANOVA revealed no significant main effect for prime,  $F(1, 27) = 0.87$ ,  $MSE = .002$ ,  $p = .36$ , but a significant main effect for target,  $F(1, 27) = 13.12$ ,  $MSE = .036$ ,  $p < .001$ . The predicted prime-by-target interaction was significant,  $F(1, 27) = 5.32$ ,  $MSE = .011$ ,  $p = .01$ .

To test whether men again showed sex-dominance inhibition, we compared response latencies of sex-primed dominance words to the neutral-primed dominance words in a repeated measures ANOVA. Replicating the previous studies, responses to the dominance words primed with sex ( $M = 864.54$  ms,  $SD = 252.81$ ) were significantly slower than responses to dominance words primed with neutral words ( $M = 793.17$  ms,  $SD = 205.38$ ),  $F(1, 30) = 7.20$ ,  $MSE = .009$ ,  $p = .01$ . Thus, Study 3 replicated the sex-dominance inhibition effect found in Studies 1a, 1b, and 2. The repeated measures ANOVA on submissive targets also revealed that in contrast to the previous studies, responses to sex-primed submissive words ( $M = 804.48$  ms,  $SD = 240.17$ ) were slower than responses to neutral-primed submissive words ( $M = 754.29$  ms,  $SD = 205.34$ )  $F(1, 30) = 4.88$ ,  $MSE = .008$ ,  $p = .035$ . Finally, the repeated measures ANOVA on neutral target responses to sex-primed neutral words ( $M = 714.87$  ms,  $SD = 154.76$ ) did not differ from responses to neutral-primed neutral words ( $M = 778.36$  ms,  $SD = 219.75$ ),  $F(1, 27) = 2.86$ ,  $MSE = .009$ ,  $p = .10$ .

*Individual difference facilitation scores.* Sex-submission and sex-dominance facilitation scores were computed as described in Study 1. Replicating the three previous studies, these scores were not significantly correlated,  $r(31) = -.109$ ,  $p = .56$ , *ns*. Men's sex-submission facilitation score ( $M = -45.79$  ms,  $SD = 137.90$ ) was significantly less

than zero,  $t(31) = -2.21$ ,  $p = .04$ , as was men's sex-dominance facilitation score ( $M = -63.30$  ms;  $SD = 147.72$ ),  $t(31) = -2.68$ ,  $p = .01$ .

*Sex-dominance inhibition and perceived need for sexual assertiveness.* A repeated measures ANOVA revealed a significant interaction of perceptions of disparities in desire and the effects of sex versus neutral primes on responses to dominance targets,  $F(1, 29) = 4.51$ ,  $p < .05$ . Replicating Study 2, the more men perceived of disparities in desire between themselves and their partners, the more they associated sex with dominance, that is, the less sex-dominance inhibition they showed ( $r = .367$ ,  $p = .04$ ).

*Sex-dominance inhibition and investment in gender ideals.* A repeated measures ANOVA revealed a significant interaction of perceptions of disparities in desire and the effects of sex versus neutral primes on responses to dominance targets,  $F(1, 29) = 4.34$ ,  $p < .05$ . The more men invested in meeting gender ideals, the less sex-dominance inhibition they showed ( $r = .361$ ,  $p = .05$ ). (Please see Table 1 for correlations among all measures.)

*Sex-dominance inhibition and reports of sexually dominant behavior.* A repeated measures ANOVA revealed a significant interaction of self-reports of dominant sexual behavior and the effects of sex versus neutral primes on responses to dominance targets,  $F(1, 29) = 4.34$ ,  $p < .05$ . Sex-dominance inhibition predicted less personally dominant sexual behavior ( $r = .370$ ,  $p = .04$ ), suggesting that men's implicit sex associations related to their personal engagement in dominant sexual behavior.

## Discussion

Study 3 replicated the findings of Studies 1a, 1b, and 2. Men again showed significant slowing of their responses to dominance-related stimuli following sex primes relative to neutral primes. In addition, Study 3 replicated the findings of Study 2 showing that men's perceived need for sexual assertiveness predicted less sex-dominance inhibition. More important, Study 3 provided preliminary evidence that the more men disavow stereotypical masculine gender roles and report refraining from sexually dominant behavior, the more they inhibit dominance following sex primes. These findings have potential implications for the prevention of sexual coercion because they imply that a lack of sex-dominance inhibition may be a marker, and perhaps even a prerequisite, for sexually assertive or coercive behavior.

Unexpectedly, sex primes significantly inhibited men's responses to submissive and dominant targets in Study 3. This inconsistency in men's sex-submission

**TABLE 1:** Correlations Among the Variables in Study 3

Variables	1	2	3	4	5
Dominance facilitation	1.00				
Submission facilitation	-.11	1.00			
Perceived need for sexual assertiveness	.37**	.33*	1.00		
Investment in gender ideals	.36**	.16	.57***	1.00	
Dominant behavior	.37**	-.03	.18	.22	1.00

\* $p < .10$ . \*\* $p < .05$ . \*\*\* $p < .001$ .

scores suggests that men may vary considerably in the extent to which they associate sex with submission and therefore underscores the need for larger samples and for a greater emphasis on replication than are often found in the priming literature. To determine whether this unexpected and anomalous finding was reliable, we conducted a meta-analysis that combined men's response latencies across the studies that used the relatively fast priming speed, namely, Studies 1b and 3.

#### Meta-Analyses Across Studies 1b and 3

To further test that men's expression of sex-dominance inhibition was not a methodological artifact, we performed several additional analyses collapsing our results across Studies 1b and 3. We conducted these analyses in which the data from these studies were combined, because they both used a priming speed of 22 ms and employed relatively small samples.

First, we examined whether men's expression of sex-dominance inhibition was affected by the removal of error trials. We combined participants' reaction times in these studies and reanalyzed them with the error trials removed. Men's response times on the lexical decision task were again truncated at 3,000 ms and 300 ms and log transformed. Even with the removal of error trials, men's sex-dominance facilitation scores remained significantly below zero,  $t(54) = -2.13$ ,  $p = .04$ . To test whether excessively slow reaction times, that is, latencies above 3,000 ms, were creating the inhibition effect, we removed all participants who had excessively slow reaction times during any of the critical or filler trials ( $n = 15$ ). The remaining men ( $n = 40$ ) showed significant sex-dominance inhibition,  $t(39) = -2.66$ ,  $p = .01$ .

Second, we assessed the effects of being in a sexual relationship and having sexual experience on men's sex-dominance inhibition. Men's sex-dominance inhibition was not related to sexual experience,  $t(51) = 0.509$ ,  $p = .61$ , nor to currently being in a sexual relationship,  $t(52) = 0.63$ ,  $p = .53$ . As only a small number of participants had not previously experienced sexual intercourse ( $n = 5$ ), the null effects of sexual experience on sex-dominance inhibition in these studies should not be taken as an

indicator that this inhibition is unrelated to sexual experience. Last, the unexpected sex-submissive inhibition effect found in Study 3 was not reliable when the reaction time data were combined across Studies 3 and 1b,  $t(54) = -0.62$ ,  $p = .54$ .

These results suggest that the sex-submission inhibition effect shown in Study 3 was not reliable when men's response latencies were collapsed. This effect disappeared when the data were combined across Studies 1b and 3, which used the 22 ms priming speed. The results of this meta-analysis are consistent with the findings for Studies 1a and 2 that used a priming speed of 55 ms, in which sex primes did not affect responses times for submissive targets. On a broader level, our results affirm the importance of replication for priming studies, especially for studies that employ small samples.

## GENERAL DISCUSSION

Across four studies, using two different priming speeds and two distinct sets of target stimuli, we found that men tend to exhibit slower responses to dominance-related words when followed by subliminal sex primes than when followed by subliminal neutral primes. These findings did not appear to be the results of some methodological artifact, as they were consistent across several different presentation orders and persisted even when excessively slow latencies (i.e., above 3,000 ms) and error trial latencies were removed from the analyses. Thus, men showed a tendency to automatically inhibit the concept of dominance when primed with sex. These findings are significant both because they unambiguously demonstrate automatic inhibition and because they suggest that on average, men inhibit dominance in response to sexual stimuli. This is particularly important because this study demonstrates that when power has been conceptually dichotomized as the presence of power (dominance) and the absence of power (submission), men subliminally inhibit the sex-dominance association. In addition, our results suggest that specific gender-related factors may play a role in men's automatic associations with sex.

Although we have demonstrated that the link is automatic and appears to have the potential to be activated by subliminal primes, we have not demonstrated that the association is consciously inaccessible or that men are unaware of their attitudes toward sexual dominance. The inhibition effects found at 22 ms, a speed considered too fast for conscious processing or awareness (Bargh & Chartrand, 2000), do, however, suggest that sex-dominance inhibition can occur without conscious awareness. Future research should examine the extent to which men are conscious of these associations.

These preliminary findings potentially have implications for understanding male sexual attitudes and behavior. Men's automatic sex-dominance inhibition qualifies prominent gender role theories regarding male sexual socialization. According to many gender role theorists (e.g., Schwartz & Rutter, 2000; Sprecher & McKinney, 1993), men are socialized to adopt an assertive, agentic sexual role, to act as the teachers and initiators of sexual activities. From this perspective, men should associate sex with dominance and assertiveness at an implicit level. In contrast, our findings imply that many men may be socialized to suppress sexually dominant thoughts. In all four studies, subliminal priming with sex-related stimuli relative to neutral stimuli inhibited men's responses to dominance words.

We believe this pervasive, consistent tendency for men to inhibit dominance in response to sex priming suggests that many men may automatically avoid assertive, dominant sexual behavior. In support of this interpretation of men's automatic sex-dominance inhibition, we found that gender role attitudes and experiences consistent with a view of male sexuality as dominant and directive lessened the degree to which men exhibited sex-dominance inhibition. For example, sex-dominance inhibition correlated with less self-reported dominant sexual behavior. In addition, we found some evidence that personal sexual experiences affect sex-dominance inhibition. Men who perceived less need to be sexually assertive with their sexual partners showed a stronger sex-dominance inhibition effect.

Our results are also consistent with previous research on men's sexual behavior. For example, only a small percentage of men report engaging in sexually coercive or aggressive behavior (Abbey, Zawacki, Buck, Clinton, & McAuslan, 2001; Baumeister, Catanese, & Wallace, 2002; O'Sullivan et al., 1998). Over the past decade, men's tendency to report acts of sexual coercion has decreased, with only a minority (4%-20%) of men reporting engaging in sexually coercive behavior (e.g., McConaghy & Zamir, 1995; O'Sullivan et al., 1998). Moreover, in one sample of men, sexual arousal appeared to reduce their aggressiveness (Baron, 1974). For example, men previously exposed to mildly erotic

stimuli are less likely than other men to aggress against women who anger them (Baron, 1977). In studies that compared the arousal of sexually aggressive and nonaggressive men, sexually aggressive men displayed greater sexual arousal from a sexual scenario involving rape compared to a scenario involving consensual sex, whereas nonaggressive men displayed less arousal from the rape scenario compared to the scenario involving consensual sex (Bernat, Calhoun, & Adams, 1999). Thus, many men appear to shun sexual coercion and aggression. Our findings add to this body of research by suggesting that automatic inhibitory links between sex and dominance may partially explain why some men refrain from sexually dominating women. An exploration of how men come to automatically suppress dominance-related information in response to sexual stimuli merits future research, as understanding men's automatic inhibition may ultimately illuminate ways to reduce sexual coercion.

Chronic inhibitory links between dominance and sex could also result from the activation of interfering or opposing constructs. For example, activation of the category *female* might result in automatic activation of the category *male*, as primes can activate their semantic opposites (e.g., Stapel & Koomen, 2000). Because the majority of men also failed to show facilitated responses to submissive concepts following sex-related primes and because sex-submission association scores did not consistently correlate with sex-dominance association scores, we believe that men's sex-dominance inhibition results from habitual suppression, not from interference. Moreover, the relationships between sex-dominance inhibition and sexual attitudes suggest that the sex-dominance effect specifically concerns dominance, not some other construct. Nevertheless, research should assess whether other constructs not measured in these studies (e.g., love, affection, women, romance) interfered with the activation of dominance.

A second alternative explanation for the sex-dominance inhibition effect is that men are automatically correcting for the effects of sex stimuli on their perception. Glaser and Banaji (1999) have shown that individuals also have chronic goals to respond accurately, which may result in automatic overcorrection for the effects of extreme primes (Glaser, 2003). For two reasons, however, we believe that automatic correction (an automated motivation for accuracy) represents a less plausible explanation for these findings than automatic suppression (an automated motivation to suppress dominance). First, the sex primes that we used were selected to be moderately, rather than extremely, related to sex. Second, the effects of sex primes were specific to dominance words. If individuals were automatically correcting their responses in response to extreme primes, they should have shown

consistently slower responses to the submissive and neutral targets as well as to dominance targets.

A third possible explanation derives from a center-surround model of cognitive networks (Carr & Dagenbach, 1990; Wentura & Frings, 2005). According to this model, concepts strongly linked to a specific construct are facilitated by activation of the construct (e.g., INSECT-wasp). In contrast, concepts weakly related are inhibited by activation of the construct (e.g., INSECT-butterfly). From this perspective, sex-dominance inhibition might occur because dominance is weakly related to sex. We find this explanation unconvincing, however, in light of our findings that endorsement of gender disparities in desire and masculine gender ideals and self-reports of dominant sexual behavior all predicted less sex-dominance inhibition. Were men inhibiting dominance because they strongly associated sex with aggression or coercion, we would expect self-reported sexual dominance to predict greater sex-dominance inhibition.

If, as we have argued, men's sex-dominance inhibition does result from habitual suppression, this finding may have broad implications for the general ability to suppress undesired responses. Ironically, conscious suppression of stereotypes often results in a rebound effect (e.g., Macrae, Bodenhausen, Milne, & Jetten, 1994), whereby the stereotypes become more accessible compared to baseline following a suppression attempt. Automatic suppression, because it may consume fewer cognitive resources and possibly prevent awareness of failed attempts at suppression (a process implicated in rebound; see Förster & Liberman, 2001; Liberman & Förster, 2000) might have the potential to circumvent rebound effects. Thus, if individuals consistently suppress unwanted thoughts, they may eventually be able to avoid their activation altogether.

These findings also add to existing literature on cognitive networks. Cognitive networks have commonly been theorized as interconnected webs of associated concepts (Greenwald et al., 2002; Heider, 1958). Within these networks, activation of one particular concept spreads to other closely linked concepts, that is, spreading activation. Our findings add to a growing body of research that shows that activation of certain concepts can also lead to automatic suppression of certain trait concepts, that is, spreading inhibition. Previous research (e.g., Lepore & Brown, 1997; Moskowitz et al., 1999) has suggested that chronic goals to avoid sexism or prejudiced responses can lead to automatic suppression of stereotype-relevant material following stereotype-relevant primes. However, some researchers have questioned whether stereotype inhibition can occur with subliminally presented primes (e.g., Wasel & Gollwitzer, 2002). Our results add to a small body of existing research that suggests that inhibition can occur with subliminal as well as supraliminal priming.

These findings also raise important questions regarding disinhibition through distraction or alcohol use. For example, when disinhibited, will individuals who normally possess an inhibitory link between sex and dominance show less inhibition or instead show facilitation? Research suggests that nearly 50% of sexual assaults are committed by men under the influence of alcohol (e.g., Abbey et al., 2001). Because alcohol impairs cognition (e.g., Steele & Southwick, 1985), alcohol might similarly reduce people's ability to automatically suppress information. Future research should examine the development of automatic inhibition and the circumstances that may reduce automatic inhibition.

## NOTES

1. Actual prime presentation times in Study 1a ranged from 55 ms on the 85.5 hertz machines to 66 ms on the 60 hertz machines. There was an effect of refresh rates that approached significance on men's sex dominance: Men tended to show more sex-dominance inhibition when primes were presented at 55 ms ( $M = -0.0438$ ,  $SD = 0.0643$ ) than when primes were presented at 66 ms ( $M = -0.0113$ ,  $SD = 0.0738$ ) in Study 1a,  $t(60) = 1.83$ ,  $p = .06$ .

2. The sex-dominance inhibition effect persisted when reaction times for error trials were removed from our analyses,  $t(62) = -3.01$ ,  $p < .01$ , and when we removed all participants with any reaction times above 3,000 ms ( $n = 15$ ),  $t(48) = -3.77$ ,  $p < .001$ . The sex-dominance effect was not affected by the presentation order,  $t(68) = -1.04$ ,  $p > .3$ , *ns*.

3. Actual prime presentation times in Study 2 ranged from 55 ms on the 85.5 hertz machines to 66 ms on the 60 hertz machines. Men's sex-dominance inhibition scores did not vary between these two priming speeds in Study 2,  $t(44) = -1.69$ ,  $p = .10$ .

4. Actual prime presentation times in Studies 1b and 3 ranged from 23 ms on the 85.5 hertz machines to 33 ms on the 60 hertz machines. Men's sex-dominance inhibition scores did not vary between these two priming speeds,  $t(53) = -0.728$ ,  $p = .47$ . Results are similar for within-study analyses.

5. The sex-dominance inhibition effect persisted when reaction times for error trials were removed from our analyses,  $t(25) = -7.10$ ,  $p < .001$ , and when we removed all participants with any reaction times above 3,000 ms ( $n = 17$ ),  $t(17) = -7.14$ ,  $p < .001$ . In contrast, removal of the error data eradicated the sex-submission effect found in this study,  $t(25) = -0.73$ ,  $p = .47$ . Missing data for the error trials resulted in the loss of data from several participants for these additional analyses ( $n = 9$ ).

6. Prime-target pairs were presented in two different random orders. Sex-dominance inhibition scores were not affected by the order of the presentation across Studies 1b and 3,  $t(53) = -0.41$ ,  $p = .68$ . Results are similar for within-study analyses. Results are reported for data collapsed across order.

## REFERENCES

- Abbey, A., Zawacki, T., Buck, P. O., Clinton, A. M., & McAuslan, P. (2001). Alcohol and sexual assault. *Alcohol Research and Health*, 25, 43-51.
- Baker, C. N. (2005). Images of women's sexuality in advertisements: A content analysis of Black- and White-oriented women's and men's magazines. *Sex Roles*, 52, 13-27.
- Bargh, J. A. (1990). Goal ≠ intent: Goal-directed thought and behavior are often unintentional. *Psychological Inquiry*, 1, 248-251.
- Bargh, J. A., & Chartrand, T. L. (1999). The unbearable automaticity of being. *American Psychologist*, 54, 462-479.

- Bargh, J. A., & Chartrand, T. L. (2000). A practical guide to priming and automaticity research. In H. Reis & C. Judd (Eds.), *Handbook of research methods in social psychology*. New York: Cambridge University Press.
- Bargh, J. A., Raymond, P., Pryor, J. B., & Strack, F. (1995). Attractiveness of the underling: An automatic power → sex association and its consequences for sexual harassment and aggression. *Journal of Personality and Social Psychology*, 68, 768-781.
- Baron, R. A. (1974). The aggression inhibiting force of heightened sexual arousal. *Journal of Personality and Social Psychology*, 30, 318-322.
- Baron, R. A. (1977). Sexual arousal and aggression by males: Effects of type of erotic stimuli and prior provocation. *Journal of Personality and Social Psychology*, 35, 79-87.
- Baumeister, R. F., Catanese, K. R., & Vohs, K. D. (2001). Is there a gender difference in strength of sex drive? Theoretical views, conceptual distinctions, and a review of relevant evidence. *Personality and Social Psychology Review*, 5, 242-273.
- Baumeister, R. F., Catanese, K. R., & Wallace, H. M. (2002). Conquest by force: A narcissistic reactance theory of rape and sexual coercion. *Review of General Psychology*, 6, 92-135.
- Bernat, J. A., Calhoun, K. S., & Adams, H. E. (1999). Sexually aggressive and nonaggressive men: Sexual arousal and judgments in response to acquaintance rape and consensual analogues. *Journal of Abnormal Psychology*, 108, 662-673.
- Blair, I. V., Ma, J. E., & Lenton, A. P. (2001). Imagining stereotypes away: The moderation of implicit stereotypes through mental imagery. *Journal of Personality and Social Psychology*, 81, 828-841.
- Blumstein, P., & Schwartz, P. (1983). *American couples: Money, work, and sex*. New York: Morrow.
- Carr, T. H., & Dagenbach, D. (1990). Semantic priming and repetition priming from masked words: Evidence for a center-surround attentional mechanism in perceptual recognition. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 16, 341-350.
- Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review*, 82, 407-428.
- Dank, B. M., & Refinetti, R. (2000). *The politics of sexuality*. New Brunswick, NJ: Transaction.
- Ellyson, S. L., & Dovidio, J. F. (1985). Power, dominance, and nonverbal behavior: Basic concepts and issues. In S. L. Ellyson & J. F. Dovidio (Eds.), *Power, dominance, and nonverbal behavior* (pp. 1-27). New York: Springer.
- Fazio, R. H., Sanbonmatsu, D. M., Powell, M. C., & Kardes, F. R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology*, 50, 229-238.
- Fiske, S. (1993). Controlling other people: The impact of power on stereotyping. *American Psychologist*, 48, 621-628.
- Förster, J., & Liberman, N. (2001). The role of attribution of motivation in producing postsuppressional rebound. *Journal of Personality and Social Psychology*, 81, 377-390.
- Förster, J., Liberman, N., & Higgins, E. T. (2005). Accessibility from active and fulfilled goals. *Journal of Experimental Social Psychology*, 41, 220-239.
- Glaser, J. (2003). Reverse priming: Implications for the (un)conditionality of automatic evaluation. In J. Musch & K. C. Klauer (Eds.), *The psychology of evaluation: Affective processes in cognition and emotion* (pp. 87-108). Mahwah, NJ: Lawrence Erlbaum.
- Glaser, J., & Banaji, M. R. (1999). When fair is foul and foul is fair: Reverse priming in automatic evaluation. *Journal of Personality and Social Psychology*, 77, 669-687.
- Glaser, J., & Kihlstrom, J. F. (2005). Compensatory automaticity: Unconscious volition is not an oxymoron. In R. R. Hassin, J. S. Uleman, & J. A. Bargh (Eds.), *The new unconscious* (pp. 171-195). New York: Oxford University Press.
- Grauerholz, E., & Serpe, R. T. (1985). Initiation and response: The dynamics of sexual interaction. *Sex Roles*, 12, 1041-1059.
- Greenwald, A. G., Banaji, M. R., Rudman, L. A., Farnham, S. D., Nosek, B. A., & Mellott, D. S. (2002). A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. *Psychological Review*, 109, 3-25.
- Hebb, D. O. (1948). Research planning in the Canadian Psychological Association: I. *Canadian Journal of Psychology*, 2, 13-14.
- Heider, F. (1958). *The psychology of interpersonal relations*. New York: John Wiley.
- Impett, E. A., & Peplau, L. A. (2003). Sexual compliance: Gender, motivational, and relationship perspectives. *Journal of Sex Research*, 40, 87-100.
- Jeffreys, S. (1990). *Anticlimax: A feminist perspective on the sexual revolution*. London: Women's Press.
- Jhally, S. (1995). *Video: Dreamworlds 2: Desire/sex/power in music video*. Northampton, MA: Media Education Foundation.
- Keltner, D. (1995). Signs of appeasement: Evidence for the distinct displays of embarrassment, amusement, and shame. *Journal of Personality and Social Psychology*, 68, 441-454.
- Kiefer, A. K., & Sanchez, D. T. (2007). Scripting sexual passivity: A gender role perspective. *Personal Relationships*, 14, 269-290.
- Kiefer, A. K., Sanchez, D. T., Kalinka, C. J., & Ybarra, O. (2006). How women's nonconscious association of sex with submission relates to their arousal and orgasm ability. *Sex Roles*, 55, 83-94.
- Kilbourne, J. (2000a). *Can't buy my love: How advertising changes the way we think and feel*. New York: Simon and Schuster.
- Kilbourne, J. (2000b). *Video: Killing Us Softly 3: Advertising's image of women*. Northampton, MA: Media Education Foundation.
- Lackie, L., & de Man, A. F. (1997). Correlates of sexual aggression among male university students. *Sex Roles*, 37, 451-457.
- Lepore, L., & Brown, R. (1997). Category and stereotype activation: Is prejudice inevitable? *Journal of Personality and Social Psychology*, 72, 275-287.
- Liberman, N., & Förster, J. (2000). Expression after suppression: A motivational explanation of postsuppressional rebound. *Journal of Personality and Social Psychology*, 79, 190-203.
- Macrae, C. N., Bodenhausen, G. V., Milne, A. B., & Jetten, J. (1994). Out of mind but back in sight: Stereotypes on the rebound. *Journal of Personality and Social Psychology*, 67, 808-817.
- Malamuth, N. M., Sockloskie, R., Koss, M. P., & Tanaka, J. S. (1991). The characteristics of aggressors against women: Testing a model using a national sample of college students. *Journal of Consulting and Clinical Psychology*, 59, 670-681.
- McConaghy, N., & Zamir, R. (1995). Sissiness, tomboyism, sex-role, sex identity and orientation. *Australian and New Zealand Journal of Psychiatry*, 29, 278-283.
- Meyer, D. E., & Schvaneveldt, R. W. (1971). Facilitation in recognizing pairs of words: Evidence of a dependence between retrieval operations. *Journal of Experimental Psychology*, 90, 227-234.
- Mikulincer, M., Gillath, O., & Shaver, P. R. (2002). Activation of the attachment system in adulthood: Threat-related primes increase the accessibility of mental representations of attachment figures. *Journal of Personality and Social Psychology*, 83, 881-895.
- Moskowitz, G. B., Gollwitzer, P. M., Wasel, W., & Schaal, B. (1999). Preconscious control of stereotype activation through chronic egalitarian goals. *Journal of Personality and Social Psychology*, 77, 167-184.
- Mussweiler, T., & Förster, J. (2000). The sex → aggression link: A perception-behavior dissociation. *Journal of Personality and Social Psychology*, 79, 507-520.
- Neill, W. T., Valdes, L. A., & Terry, K. M. (1995). Selective attention and the inhibitory control of cognition. In F. N. Dempster & C. J. Brainer (Eds.), *Interference and inhibition in cognition* (pp. 207-226). San Diego, CA: Academic Press.
- O'Sullivan, L. F., Byers, E. S., & Finkelman, L. (1998). A comparison of male and female college students' experiences of sexual coercion. *Psychology of Women Quarterly*, 22, 177-195.
- Perdue, C. W., Dovidio, J. F., Gurtman, M. B., & Tyler, R. B. (1990). Us and them: Social categorization and the process of intergroup bias. *Journal of Personality and Social Psychology*, 59, 475-486.
- Perdue, C. W., & Gurtman, M. B. (1990). Evidence for the automaticity of ageism. *Journal of Experimental Social Psychology*, 26, 199-216.
- Pleck, J. H., Sonenstein, F. L., & Ku, L. (1993). Young men's risk behaviors for HIV infection and sexually transmitted diseases, 1988 through 1991. *American Journal of Public Health*, 83, 1609-1615.
- Prentice, D. A., & Carranza, E. (2002). What women and men should be, shouldn't be, are allowed to be, and don't have to be: The contents of prescriptive gender stereotypes. *Psychology of Women Quarterly*, 26, 269-281.

- Rohlinger, D. A. (2002). Eroticizing men: Cultural influences on advertising and male objectification. *Sex Roles, 46*, 61-74.
- Sanchez, D. T., Crocker, J., & Boike, K. R. (2005). Doing gender in the bedroom: Investing in gender norms and the sexual experience. *Personality and Social Psychology Bulletin, 31*, 1445-1455.
- Sanchez, D. T., Kiefer, A., & Ybarra, O. (2006). Sexual submissiveness in women: Costs for autonomy. *Personality and Social Psychology Bulletin, 32*, 512-524.
- Schwartz, P., & Rutter, V. (2000). *The gender of sexuality* (2nd ed.). Thousand Oaks, CA: Pine Forge Press.
- Shah, J. Y., Friedman, R., & Kruglanski, A. W. (2002). Forgetting all else: On the antecedents and consequences of goal shielding. *Journal of Personality and Social Psychology, 83*, 1261-1280.
- Shearer, C. L., Hosterman, S. J., Gillen, M. M., & Lefkowitz, E. S. (2005). Are traditional gender role attitudes associated with risky sexual behavior and condom-related beliefs? *Sex Roles, 52*, 311-324.
- Shih, M. J., Bonam, C., Sanchez, D. T., & Peck, C. (2007). Beliefs in the social construction of race: Adaptive strategies for multiracials. *Cultural Diversity and Ethnic Minority Psychology, 13*, 125-133.
- Sprecher, S., & McKinney, K. (1993). *Sexuality*. Newbury Park, CA: Sage.
- Stapel, D. A., & Koomen, W. (2000). The impact of opposites: Implications of trait inferences and their antonyms for person judgment. *Journal of Experimental Social Psychology, 36*, 439-464.
- Steele, C. M., & Southwick, L. (1985). Alcohol and social behavior: The psychology of drunken excess. *Journal of Personality and Social Psychology, 48*, 18-34.
- Tipper, S. P. (1985). The negative priming effect: Inhibitory priming by ignored objects. *Quarterly Journal of Experimental Psychology, 37*, 571-590.
- Wasel, W., & Gollwitzer, P. M. (2002). Willful control of "automatic" stereotype activation: The role of subliminally vs. supra-lingually presented stimuli. *Social Cognition, 16*, 198-210.
- Wentura, D., & Frings, C. (2005). Repeated masked category primes interfere with related exemplars: New evidence for negative semantic priming. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 31*, 108-120.
- Wood, W., Christensen, P. N., Hebl, M. R., & Rothgerber, H. (1997). Conformity to sex-typed norms, affect, and the self-concept. *Journal of Personality and Social Psychology, 73*, 523-535.
- Zurbriggen, E. L. (2000). Social motives and cognitive power-sex associations: Predictors of aggressive sexual behaviors. *Journal of Personality and Social Psychology, 78*, 559-581.

Received October 31, 2006

Revision accepted April 13, 2007