

Gender Differences in Automatic In-Group Bias: Why Do Women Like Women More Than Men Like Men?

Laurie A. Rudman
Rutgers University

Stephanie A. Goodwin
Purdue University

Four experiments confirmed that women's automatic in-group bias is remarkably stronger than men's and investigated explanations for this sex difference, derived from potential sources of implicit attitudes (L. A. Rudman, 2004). In Experiment 1, only women (not men) showed cognitive balance among in-group bias, identity, and self-esteem (A. G. Greenwald et al., 2002), revealing that men lack a mechanism that bolsters automatic own group preference. Experiments 2 and 3 found pro-female bias to the extent that participants automatically favored their mothers over their fathers or associated male gender with violence, suggesting that maternal bonding and male intimidation influence gender attitudes. Experiment 4 showed that for sexually experienced men, the more positive their attitude was toward sex, the more they implicitly favored women. In concert, the findings help to explain sex differences in automatic in-group bias and underscore the uniqueness of gender for intergroup relations theorists.

Around the world and throughout history, men have enjoyed higher status than women. They continue to possess enormous advantages in terms of political power and economic resources as well as a greater endowment of perceived competence, rationality, and physical strength. As a result, men and women alike automatically associate male gender with power (Rudman, Greenwald, & McGhee, 2001), evaluate male authority figures more favorably than female counterparts (Rudman & Kilianski, 2000), and more readily misattribute status to unknown men than to unknown women (Banaji & Greenwald, 1995). On the home front, only women are expected to surrender their family name when they wed; couples value male more than female progeny; and children are more likely to be named after their fathers than their mothers, irrespective of their sex (Jost, Pelham, & Carvallo, 2002).

In short, men are culturally valued more than women. For this reason, one might expect men to show stronger automatic in-group bias (i.e., own gender preference) than women. Indeed, considerable evidence suggests that people who belong to the most socially

valued groups strongly and automatically favor their own group. For example, Whites, Christians, and Stanford University students showed more automatic in-group bias compared with Blacks (Nosek, Banaji, & Greenwald, 2002a), Jews (Rudman, Greenwald, & McGhee, 2001), and California state college students (Jost et al., 2002), respectively. In addition, Rudman, Feinberg, and Fairchild (2002) directly measured status perceptions and found they predicted automatic (but not reported) in-group bias. For example, Jews who perceived that Christians were higher in status than Jews tended to associate Christians with positive attributes and Jews with negative attributes. The same pattern emerged for Asians compared with Whites, poor people compared with rich, and heavyweight people compared with slim. Finally, high-status group members routinely showed stronger in-group bias than did low-status group members, irrespective of the basis for their status (e.g., religious, ethnic, economic, or physical attractiveness), but only at the implicit level. These findings cohere with system-justification theory (SJT; Jost & Banaji, 1994), which argues that dominants should show stronger in-group bias than minorities at the nonconscious level. This is because only minorities are subject to the tendency to devalue one's group as a means of justifying the status quo. In essence, minorities may implicitly adopt society's negative view of their group even when it conflicts with their conscious beliefs, whereas dominants are less likely to experience this evaluative conflict (Jost, Burgess, & Mosso, 2001).

However, gender groups are a proven exception to this rule, because men are less likely than women to show automatic in-group bias (i.e., own gender preference). Whereas women strongly prefer female gender when response latency techniques are used, men typically show neutral gender attitudes (i.e., nonsignificant

Laurie A. Rudman, Department of Psychology, Rutgers, The State University of New Jersey; Stephanie A. Goodwin, Department of Psychological Sciences, Purdue University.

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Correspondence concerning this article should be addressed to Laurie A. Rudman, Department of Psychology, Rutgers University, Tillett Hall, 53 Avenue E, Piscataway, NJ 08854-8040. E-mail: rudman@rci.rutgers.edu

preference for either gender; Nosek & Banaji, 2002; Richeson & Ambady, 2001). This sex difference in automatic in-group bias is provocative because it contradicts numerous SJT-derived findings regarding other groups who differ with respect to cultural status. Apparently, men and women resist using societal evaluations to inform their own group attitudes—but why?

The Uniqueness of Gender Relations

For many reasons, gender represents a special case for intergroup relations theorists. In contrast to other groups, men and women are in closer contact throughout their lives, which may lead to complex and often ambivalent evaluations of the opposite gender (Fiske & Stevens, 1993). In addition, men are dependent on women for biological reproduction, domestic labor, and child raising, which gives women substantial dyadic power over men (Glick & Fiske, 1996). Of course, women are also dependent on men (e.g., for protection, economic stability, and social status). Further, heterosexual romantic relationships are based on love and physical intimacy, which can result in implicit idealization of the opposite sex (Rudman & Heppen, 2003). Thus, there are many factors that might be expected to inhibit out-group devaluation for men and women alike.

However, this analysis suggests that women (as well as men) should possess automatic gender attitudes that are relatively free of bias, when in fact, women strongly prefer women (i.e., are implicitly sexist). Moreover, we cannot assume that men's absence of implicit sexism (*vis-à-vis* evaluation) signals that they are more egalitarian than women. For example, compared with women, men are more likely to associate female gender with negative traits (e.g., incompetence, weakness, and coldness; Richeson & Ambady, 2001; Rudman, Greenwald, & McGhee, 2001) and subordinate rather than leadership roles (Rudman & Kilianski, 2000). These findings add mystery to the phenomenon of men's weaker in-group bias. If men readily associate women with negative traits and low-status roles, why would they not also evaluate women unfavorably?

Explanations for Sex Differences in Automatic Gender Attitudes

The present research examined five possible explanations for sex differences in implicit gender attitudes. Each is proposed as an answer to the question, "Why do women automatically like women more than men automatically like men?" Our hypotheses took into account potential sources for implicit evaluations. Implicit and explicit attitudes may be distinguishable, in part, because they stem from different causes. For example, compared with controlled responses, automatic biases may be more influenced by cultural status, cognitive balance, and emotional conditioning (Rudman, 2004). Because a prominent source for implicit intergroup attitudes—the cultural status of one's group—cannot explain pro-female bias for women (or men's absence of in-group bias), we sought to uncover potential countervailing influences that collectively might account for the special case of automatic gender attitudes.

Cognitive Balance

Consistent with balance theory (Heider, 1958), implicit in-group bias is often predicted by a confluence of self-esteem and in-group

identity (an observation that led to the unified theory; Greenwald et al., 2002). Using the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) to assess self-esteem, identity, and in-group bias, Greenwald et al. (2002) found a pattern that can be described as "If I am good and I am X, then X is good" (where X represents any social identity).¹ For example, Whites showed pro-White bias to the extent that they liked themselves and identified as White. Across five experiments, self-reports showed no evidence of cognitive balance, suggesting that this mechanism influences implicit but not explicit associations.

More central to our concerns, Greenwald et al. (2002) also found that women preferred women to the extent that they liked themselves and were female identified. Greenwald et al. termed this phenomenon a balanced gender *identity*, although attitudes and self-esteem were similarly balanced (see Footnote 1). Men's gender identities were not examined, but it was assumed they would echo women. This is because men and women alike showed balance in IAT research involving ethnicity, ageism, gender stereotypes (see also Rudman, Greenwald, & McGhee, 2001), and academic attitudes (math vs. the arts; see also Nosek, Banaji, & Greenwald, 2002b). Nonetheless, we suspected that sex differences in balanced gender identities might be revealed precisely because men possess robust implicit self-esteem and masculine identity (e.g., Greenwald et al., 2002; Greenwald & Farnham, 2000), but surprisingly weak in-group bias (Nosek & Banaji, 2002; Richeson & Ambady, 2001). According to the unified theory, people high on self-evaluation and own group identity ought to, on average, favor their group. Men do not favor their gender group, so their gender identities are likely not balanced. In short, the unified theory would predict no sex differences in balanced gender identities, but past results have suggested otherwise.

Therefore, our first hypothesis was that cognitive balance would only influence women's (not men's) implicit gender attitudes. If so, an important caveat to the unified theory would be observed. More important, sex differences in balanced gender identities would help to explain men's weaker in-group bias. Women's (typically high) self-esteem and gender identity promotes own group preference because their implicit cognitions are balanced. If this is not true for men, men will lack a psychological mechanism that bolsters automatic in-group bias. That is, an absence of balance would indicate that men's (typically high) implicit self-esteem and gender identity is rendered moot *vis-à-vis* their gender attitudes. The expected result would be stronger automatic in-group bias for women than men.

Gender Stereotypes

Our second hypothesis relied on a possible similar source for automatic and controlled gender attitudes. People of both sexes report greater liking for women than men, due, in part, to viewing women as more communal (the "women are wonderful" effect;

¹ This description is suitable when predicting in-group bias, but it is arbitrary from the standpoint of the unified theory and could just as easily have been stated as "If I am good and X is good, then I am X," or "If X is good and I am X, then I am good." Indeed, the signature of the unified theory is that all three models are observed. That is, the theory is supported when the constructs of self-evaluation, group identity, and group evaluation are evenly balanced at the automatic level.

Eagly & Mladinic, 1994; see also Eagly & Mladinic, 1989; Eagly, Mladinic, & Otto, 1994). If this effect has an implicit analogy, then women may be preferred to the extent they are associated with communal stereotypic traits (e.g., warmth). Is it the case that automatic gender attitudes and stereotypes are linked? In the only investigation we are aware of, Rudman and Kilianski (2000) measured gender attitudes using evaluative priming (Fazio, Jackson, Dunton, & Williams, 1995) and the communality–agency stereotype using the IAT, and found a first-order correlation (controlling for gender) of $r(66) = .27, p < .05$. That is, people who associated female gender with communality and male gender with agency also automatically evaluated women favorably. However, because the priming task confounded gender with a high- and low-status manipulation, and because the task may measure perceptually based (rather than category-based) evaluation (Livingston & Brewer, 2002), Rudman and Kilianski did not provide clear support for an implicit link between attitudes and stereotypes.

Developmental Events

The remaining hypotheses were derived from the possibility that emotional conditioning influences automatic attitudes (Rudman, 2004). It has been theorized that implicit attitudes may be informed by past experiences (Greenwald & Banaji, 1995), including developmental events (Wilson, Lindsey, & Schooler, 2000), more than explicit attitudes. Our third hypothesis stems from the fact that people are generally raised in a manner that leads to initially stronger maternal (vs. paternal) bonding. Consistent with this view, infants are more likely to mirror their mothers' facial expressions compared with their fathers' and female strangers' (e.g., Kahana-Kalman & Walker-Andrews, 2001; Montague & Walker-Andrews, 2002). Because mothers remain the dominant caregivers, early maternal experiences might spill over into gender attitudes. If so, implicit evaluations of the woman with whom people interact first (and often) might extend to women in general. In essence, pro-maternal evaluations might promote pro-female evaluations for men and women alike, particularly at the automatic level. The result would be sex differences in implicit in-group bias because maternal gender matches own gender only for women (not men).

Male Threat Perceptions

Our fourth hypothesis stems from evidence that implicit attitudes may be more sensitive to threat perceptions compared with self-reports. For example, implicit (but not explicit) anti-Black prejudice covaried with amygdala activation in Whites exposed to photos of unfamiliar Blacks (Phelps et al., 2000). Because the amygdala is associated with fear conditioning, the inference is that implicit biases are linked to emotional learning. Similarly, Rudman, Ashmore, and Gary (2001) found reduced anti-Black implicit and explicit prejudice in Whites who volunteered for diversity education. It is noteworthy that reductions in implicit (but not explicit) biases were predicted by Whites' reduced fear of Blacks. In tandem, these findings suggest that people may automatically prefer women because they are less threatening than men. As a group, men are more likely than women to commit murder, assault, and other violent crimes (for a review, see Myers, 2002). Consequently, men are perceived as more violent and aggressive than women (e.g., Cicone & Ruble, 1978), and both genders possess an

automatic association between male gender and negative potency (e.g., violence, destruction, rage; Rudman, Greenwald, & McGhee, 2001, Experiment 2). Thus, it is conceivable that implicit male threat beliefs might inhibit automatic pro-male evaluation, for men and women alike. By contrast, explicit gender attitudes might not be as sensitive to emotional conditioning and, therefore, male threat associations (Phelps et al., 2000; Rudman, Ashmore, & Gary, 2001).

The Influence of Sexuality

Our fifth hypothesis focused on emotional conditioning through sexual gratification. Compared with women, men report greater liking for and interest in sex (Baumeister, 2000; Baumeister, Catanese, & Vohs, 2001; Oliver & Hyde, 1993). If men associate sex with women (e.g., through heterosexual encounters), then the more they like sex, the more they should like women. Although automatic attitudes toward sex have yet to be investigated, there is some evidence that men's implicit idealization of women has a sexual component. Specifically, Rudman and Heppen (2003) found that men showed strong evidence of implicit romantic fantasies when they associated female partners with roles pertaining to sex (e.g., sex kitten, sex goddess), but no evidence when partner associations consisted of fairy-tale roles (e.g., Cinderella, Sleeping Beauty). These findings tentatively point to the possibility that men's gender attitudes may be linked to sexual gratification. Because women's fantasies consisted of associating male partners with chivalry and heroism (e.g., Prince Charming, White Knight), women's sexualized fantasies were not examined. Nonetheless, women should show the same linkage between liking for the opposite gender and liking for sex. That is, sex differences in in-group bias are likely not due to a difference in the proposed correlation. Instead, men's greater enthusiasm for sex may lead them to favor the opposite gender more (i.e., show weaker in-group bias) compared with women.

Overview of Research

Experiments 1–4 examined potential predictors of automatic gender attitudes. In line with past research, we expected women to show stronger in-group bias than men (Nosek & Banaji, 2002; Richeson & Ambady, 2001). Our primary objective was to assess support for five possible explanations for this phenomenon (sex differences in balanced gender identities, gender stereotypes, developmental events, male threat perceptions, and attitudes toward sex). The overarching aim was to discover whether other sources of implicit attitudes, including cognitive balance and emotional conditioning, might override cultural status when predicting automatic gender attitudes.

To that end, we examined factors likely to orient (a) only women toward own gender (cognitive balance; Experiment 1); (b) both genders toward women (gender stereotypes, maternal evaluations and male threat associations; Experiments 2 and 3); and (c) men toward women (sexual gratification; Experiment 4) as a means of understanding sex differences in automatic in-group bias. The goal was to illuminate a variety of influences on implicit attitudes that in concert might effectively counter the SJT-derived prediction that men (a high-status group) ought to possess stronger automatic in-group bias than women (a low-status group). In so

doing, we sought to underscore the uniqueness of gender for intergroup relations theorists as well as to provide reasons why prominent theories of implicit intergroup bias, including SJT (Jost & Banaji, 1994) and the unified model (Greenwald et al., 2002)—which are well supported using a variety of other groups—either fail to apply or might asymmetrically apply to women, respectively, when the domain is gender attitudes.

Pretesting Attributes for the Attitude IATs

Each experiment used the IAT to assess implicit constructs because past research has supported its construct validity (for reviews, see Banaji, 2001; Greenwald & Nosek, 2001) and its flexibility (e.g., Greenwald et al., 2002; Rudman, Greenwald, Mellott, & Schwartz, 1999). Flexibility was essential, given the wide range of constructs assessed. However, a problem with past gender attitude research is the use of traditional IAT stimuli to represent pleasant and unpleasant constructs (Greenwald et al., 1998). Because many of these constructs are gender linked (e.g., love, warmth, smile, war, brutal, assault), the attitude measure is confounded with sex stereotypes. To avoid this problem, we pretested the stimuli used in the present research ($N = 204$; 123 women). On a scale ranging from 1 (*very feminine*) to 7 (*very masculine*), we selected only attributes that were judged, on average, to be gender neutral (i.e., within the range of 3.78 to 4.23). If men continued to show less automatic in-group bias than women with this measure, we could be more confident that semantic associations are not responsible for sex differences in automatic gender attitudes.

Experiment 1

Experiment 1 assessed implicit gender attitudes, self-esteem, and gender identity. Consistent with past research, no sex differences were expected for self-esteem and gender identity, but women's in-group bias should be stronger than men's. In replication of Greenwald et al. (2002), women should show automatic female preference to the extent that they possess high self-esteem and feminine identity (i.e., balanced gender identities). If men's gender identities are imbalanced, then male preference should not be predicted by a confluence of their self-esteem and masculine identity. If sex differences in balanced gender identities are revealed, sources other than cognitive balance will be indicated for men's gender attitudes. In short, both genders should possess the tools that promote in-group bias when cognitions are balanced (i.e., high self-esteem and gender identity), but countervailing factors may inhibit men from using them to their own group advantage.

Method

Participants

Volunteers ($N = 84$; 43 men, 41 women) participated in exchange for partial fulfillment of an Introductory Psychology course requirement. Of these, 52 (62%) were European American, 11 (13%) were Asian American, 6 (7%) were Latino, and 15 (18%) reported another ethnic identification.

Implicit Materials

Following Greenwald et al. (2002), participants completed three IATs. The gender attitude IAT uses synonyms for *male* and *female* as the target

categories (e.g., *woman, lady, girl, gal, man, sir, boy, guy*). The pleasant attributes are *good, happy, vacation, gift, sunshine, paradise, holiday, and heaven*. The unpleasant attributes are *bad, awful, disease, trouble, pain, failure, poison, and disaster*. The self-esteem IAT uses these pleasant and unpleasant attributes with the target categories *me* and *not me* (e.g., *I, me, my, mine, it, they, them, theirs*). The gender identity IAT also uses the target categories *me* and *not me*, but the attributes are *male* and *female* synonyms (used as target categories in the gender attitude IAT). High scores indicate more positive evaluation of in-group compared with out-group members (gender attitude IAT), self compared with others (self-esteem IAT), and greater association of self with own gender compared with the opposite gender (gender identity IAT). Tasks were counterbalanced so that participants completed the in-group + pleasant, me + pleasant, and me + in-group blocks either first or second.²

Procedure

Participants were escorted to a private cubicle where they completed the gender attitude, self-esteem, and gender identity IATs (in that order). They then completed explicit counterparts to these measures. As in past research, there was no evidence for a balanced identity using self-reports (Greenwald et al., 2002). Therefore, these findings are not discussed.

Results and Discussion

Gender Differences

High scores on the gender attitude, self-esteem, and gender identity IATs reflect preference for own gender, self (compared with others), and identification with own gender, respectively. Planned contrasts showed that women scored higher than men on the gender attitude IAT, $t(82) = 5.26, p < .001$ ($M_s = 176$ and 64 , $SD_s = 109$ and 117 , respectively), resulting in a strong in-group bias effect for women and a moderate one for men ($d_s = 1.55$ and 0.55 , respectively). In a surprising departure from past research, women also scored higher than men on the gender identity IAT, $t(82) = 2.49, p < .001$ ($M_s = 218$ and 143 , $SD_s = 146$ and 139 , respectively). Nonetheless, both men and women showed strong effect sizes on this measure ($d_s = 1.02$ and 1.53 , respectively). Finally, there were no sex differences on the self-esteem IAT, $t(82) < 1.60, ns$ ($M_s = 167$ and 212 , $SD_s = 121$ and 135 , $d_s = 1.65$ and 1.30 , for women and men, respectively). Thus, men and women strongly identified with their gender and showed robust self-esteem, but women showed dramatically more in-group bias than did men. Because we used a measure that untangled evaluation from gender stereotypes, this sex difference was not likely due to semantic associations.

Balanced Gender Identity Analyses

Variables were standardized and submitted to a series of regressions (Greenwald et al., 2002), separately for women and

² In each experiment, we took advantage of recent improvements in the IAT's scoring methods (Greenwald, Nosek, & Banaji, 2003). Instead of computing IAT effects from a limited set of trials, we averaged them from all trials, a procedure that diminishes unwanted task counterbalancing effects (i.e., the counterbalancing of blocks within the IAT can influence the effect size, but is less likely to do so when the new scoring procedure is used).

Table 1
Balanced Identity Regression Analyses for Women and Men (Experiment 1)

Balanced identity model	Women (N = 41)					Men (N = 43)				
	Step	β	<i>t</i>	ΔR^2	<i>p</i>	Step	β	<i>t</i>	ΔR^2	<i>p</i>
Model 1 (gender attitude)										
Self-Esteem \times Gender Identity	1	.42	2.86**	.17	.007	1	.14	0.88	.02	.38
Self-Esteem \times Gender Identity	2	.41	2.30*			2	.13	0.76		
Self-Esteem	2	-.13	0.82			2	.11	0.54		
Gender Identity	2	.10	0.55	.02	.66	2	-.28	1.75	.07	.22
Model 2 (self-esteem)										
Gender Attitude \times Gender Identity	1	.42	2.70*	.16	.01	1	-.02	0.10	.00	.92
Gender Attitude \times Gender Identity	2	.73	2.85**			2	.05	0.30		
Gender Attitude	2	-.23	1.18			2	.07	0.45		
Gender Identity	2	-.11	0.51	.08	.12	2	.27	1.59	.06	.28
Model 3 (gender identity)										
Gender Attitude \times Self-Esteem	1	.49	3.51**	.24	.001	1	.03	0.20	.001	.84
Gender Attitude \times Self-Esteem	2	.41	2.21*			2	.07	0.46		
Gender Attitude	2	.12	0.80			2	-.27	1.77		
Self-Esteem	2	.08	0.43	.02	.70	2	-.26	1.64	.14	.06

Note. All constructs were measured using the Implicit Association Test. The criterion for each model is in parentheses. Standardized regression coefficients are shown. High scores on gender attitude, self-esteem, and gender identity reflect in-group bias, self-esteem, and identification with own gender, respectively. A balanced identity is observed when the interaction term is positive and when it alone contributes to significant variance in the criterion (Greenwald et al., 2002).

* $p < .05$. ** $p < .01$.

men.³ The analysis most central to the present research regressed gender attitude on self-esteem and gender identity and their interaction (Model 1). However, according to the unified theory, results should be similar for two other equations (see Footnote 1). These concern the regression of self-esteem on gender attitude, gender identity, and their interaction (Model 2), and the regression of gender identity on gender attitude, self-esteem, and their interaction (Model 3). In each case, the interaction term is entered in Step 1, and the main effects are entered in Step 2. This is because the unified theory argues that only the interaction term should significantly account for variance in each criterion. That is, after accounting for the interaction, main effects should not contribute substantial variance. Therefore, the hallmark of a balanced gender identity is that the change score for R^2 should only be significant for the interaction term (entered in Step 1). Moreover, when variables are skewed in a positive direction (as they are in the present analyses), the interaction coefficient should be positive in each step.

Table 1 shows the results of the analyses, separately for women (left side) and men (right side). As can be seen, women showed a perfectly balanced gender identity. The positive interaction terms were the sole predictors of the criterion in each model, replicating Greenwald et al. (2002). By contrast, men showed no evidence of a balanced gender identity. Men's interaction terms were uniformly weak, as were the main effects.

To illustrate the form of women's interaction results for Model 1, Figure 1 displays the regression lines predicting in-group bias from self-esteem for women scoring 2 standard deviations above and below the mean on the gender identity IAT. As can be seen, female-identified women implicitly favored their gender to the extent they possessed self-esteem. By contrast, women low on

female identity were less likely to favor women if they possessed self-esteem. Thus, gender identity moderated the relationship between gender attitude and self-esteem exactly as the unified theory predicts.

In sum, Experiment 1 confirmed our suspicion that men do not possess a balanced gender identity. On average, participants showed substantial implicit self-esteem and identified with their gender, but their confluence predicted in-group bias only for women. In essence, women can be characterized as "If I am good and I am female, females are good," whereas men can be characterized as "Even if I am good and I am male, men are not necessarily good." This sex difference in cognitive balance suggests that a mechanism that promotes female preference in women does not similarly contribute to male preference for men. As a result, Experiment 1 provides support for our first explanation for why women show stronger automatic in-group bias compared with men. However, it also suggests the need to determine factors that do predict gender attitudes for men, given that cognitive balance did not do so. Moreover, we sought to find additional factors (beyond cognitive balance) that would help to account for the fact that women show surprisingly strong automatic in-group bias, despite their relatively low cultural status.

³ The unified model is concerned with interaction terms, not bivariate relations (reported here for completeness' sake). Gender attitudes correlated marginally with gender identity for women, $r(39) = .27, p < .09$, and men, $r(41) = -.28, p < .08$, but in opposite directions. Gender attitudes were not related to self-esteem for women, $r(39) = .13, ns$, or for men, $r(41) = -.01, ns$. Self-esteem was weakly related to gender identity for women, $r(39) = .30, p < .06$, and for men, $r(41) = .24, p = .12$.

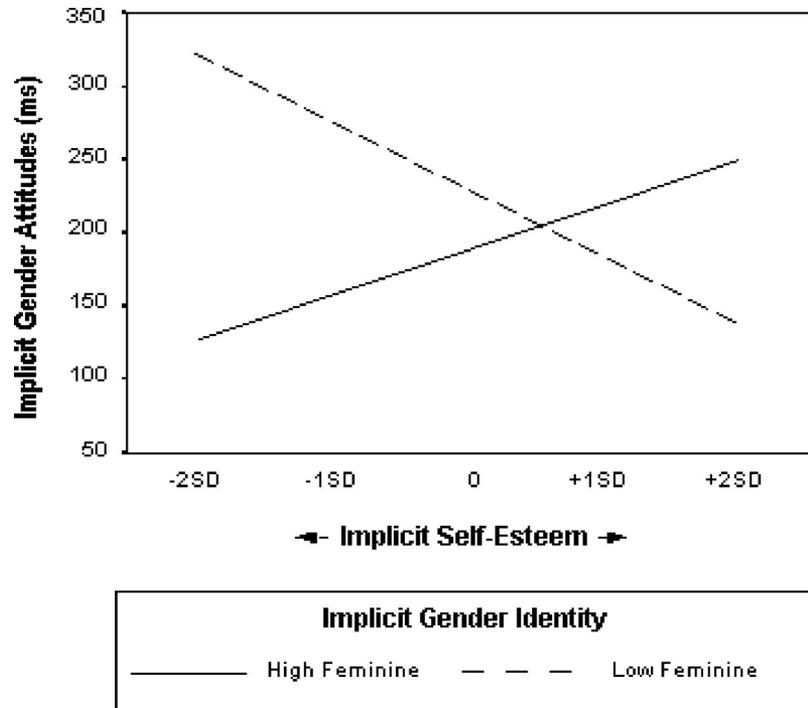


Figure 1. Regression lines predicting gender attitudes as a function of self-esteem and gender identity for Experiment 1's women ($N = 41$). All constructs were assessed with the Implicit Association Test (IAT). A high score on the gender attitude IAT indicates pro-female bias. Regression lines were estimated using a millisecond index and unstandardized regression coefficients. SD = standard deviation.

Experiment 2

Experiment 2 examined two reasons why men and women alike might automatically lean toward pro-female evaluation. First, if implicit gender attitudes reflect people's early experiences with a maternal caregiver, then a preference for mother over father might extend to a preference for female gender (Greenwald & Banaji, 1995; Wilson et al., 2000). In essence, people may be emotionally conditioned to implicitly favor women as a result of maternal nurturing. To bolster our interpretation of the causal direction of this relationship, we included an explicit caregiver index with the expectation that people raised primarily by their mothers would also show stronger automatic pro-female bias. If emotional conditioning influences automatic attitudes more than self-reports, explicit gender attitudes should not be influenced by maternal preference. Second, we examined whether people who automatically associated female gender with communality (and male gender with agency) would implicitly prefer women, in an extension of past research (Eagly & Mladinic, 1994). We used the power-warmth stereotype IAT because past research has yielded robust effect sizes for men and women alike (e.g., Rudman, Greenwald, & McGhee, 2001a). If gender stereotypes provide a source for both implicit and explicit gender attitudes, then the predicted relationship should be similar for the IAT and self-reports.

Method

Participants

One hundred fifteen (47 men, 68 women) volunteers participated in exchange for partial fulfillment of an Introductory Psychology course

requirement. Of these, 63 (55%) were European American, 28 (24%) were Asian American, 10 (9%) were Latino, and 14 (12%) reported another ethnic identification.

Implicit Materials

Participants completed three IATs. The gender attitude IAT measures associations between men and women (represented by male and female names; e.g., Linda, David) and the pleasant or unpleasant attributes used in Experiment 1. The parent attitude IAT measures associations between mother and father (represented by synonyms; e.g., *mom*, *dad*, *mother*, *father*) and the gender attitude IAT's evaluative attributes. The gender stereotype IAT measures associations between the gender attitude IAT's male and female names and warmth and power. The warmth attributes are *warmth*, *nurture*, *nice*, *love*, *caring*, *gentle*, *kind*, and *warm*. The power attributes are *power*, *strong*, *confident*, *dominant*, *potent*, *command*, *assert*, and *powerful*. IAT blocks were counterbalanced such that participants either completed the female + pleasant, mother + pleasant, and female + warmth blocks first or second.

IAT effect scores were computed such that positive scores indicated more positive evaluation of in-group compared with out-group members (gender attitude IAT), mother compared with father (parent attitude IAT), and greater association of warmth with female gender and power with male gender (gender stereotype IAT).

Explicit Materials

Gender and parent attitude indexes. On four thermometers, participants reported their feelings toward the target groups (men, women, mother, father) on scales ranging from 1 (*very cold*) to 10 (*very warm*). To serve as IAT counterparts, two difference scores were computed, such that high scores reflected greater liking for in-group compared with out-group

members (the gender attitude index), and mother compared with father (the parent attitude index).

The caregiver index. Participants responded to two forced-choice items, "The primary caregiver when I was young was my (mother or father)" and "The parent who most actively raised me was my (mother or father)." The difference between responses was computed such that high scores indicated a maternal primary caregiver. The two difference scores were averaged to form the caregiver index, $r(113) = .68, p < .001$.

Gender stereotype index. Participants separately reported how much they associated women and men with the 14 warm and powerful attributes used in the gender stereotype IAT, on scales ranging from 1 (*not at all*) to 7 (*very much*). Reliability coefficients for the four separate indexes were adequate (all α s $> .84$). The difference between these ratings for the warmth and powerful attributes formed the female stereotype and male stereotype indexes, respectively. High scores indicate greater association of women than men with warmth and greater association of men than women with power, respectively.

Procedure

Participants were escorted to a private cubicle where they first completed the gender attitude, parent attitude, and gender stereotype IATs. The latter two were presented in counterbalanced order, a procedural variable that did not influence results. Participants then completed demographic items (age, gender, ethnicity) and the explicit measures in the order described above.

Results and Discussion

Gender Differences

IAT effects. Table 2 (top half) shows the results of the implicit measures, separately for men and women. As in Experiment 1, men showed less implicit in-group bias than women, $t(113) =$

4.61, $p < .001$. In addition, women scored higher than men on the parent attitude IAT, $t(113) = 4.10, p < .001$. By contrast, there were no sex differences for implicit gender stereotypes, $t(113) < 1.00, ns$.

Examining whether IAT effects were significantly different from zero revealed an absence of in-group bias for men, $t(46) = 1.58, ns$. Also, men's slight preference for their mothers on the parent attitude IAT proved to be nonsignificant, $t(46) = 1.36, ns$. By contrast, women showed strong preference for their own group and for their same-sexed parent, both $ts(67) > 9.50, ps < .001$. Finally, both men and women showed robust automatic gender stereotyping, both $ts > 4.50, ps < .001$, in line with past research (Rudman, Greenwald, & McGhee, 2001).

Explicit measures. Table 2 (bottom half) shows results of the explicit measures. As with the gender attitude IAT, men showed less in-group bias than did women, $t(113) = 5.58, p < .001$. As in the past, men reported liking women more than men (e.g., Eagly et al., 1994). By comparison, there were no reliable sex differences on the parent attitude or caregiver indexes, all $ts(113) > 1.70, ns$. On average, participants favored their mothers and reported a maternal primary caregiver. Finally (and in contrast to the IAT), men scored higher than women on both the female and male stereotype measures, both $ts(113) > 2.65, ps < .05$.

Does Maternal Evaluation Predict Pro-Female Attitudes?

As a first step, we recoded gender attitude scores for men so that high scores would reflect pro-female evaluation. As a result, positive correlations were expected among the gender and parent attitude measures. Table 3 shows the results. Due to the sex differences found on several of our measures, we computed first-order correlations, controlling for participant sex.

Table 2
Summary Statistics for Implicit and Explicit Measures (Experiment 2)

Measure	Men ($N = 47$)			Women ($N = 68$)		
	<i>M</i>	<i>SD</i>	<i>d</i>	<i>M</i>	<i>SD</i>	<i>d</i>
Implicit						
Gender attitude IAT ^a	39 _a	172	0.24	184 _b	159	1.11
Parent attitude IAT ^b	33 _a	167	0.23	143 _b	121	1.01
Gender stereotype IAT	100 _a	150	0.77	114 _a	113	0.88
Explicit						
Gender attitude index ^a	-1.49 _a	1.89	-0.70	0.75 _b	2.26	0.35
Parent attitude index ^b	1.51 _a	2.08	0.59	0.69 _a	2.82	0.27
Caregiver index ^c	1.17 _a	1.09	1.21	1.29 _a	0.88	1.33
Female stereotype	1.88 _a	1.16	1.69	1.32 _b	1.08	1.19
Male stereotype	1.82 _a	1.37	1.48	0.53 _b	1.13	0.42

Note. Means not sharing a subscript differ at the $p < .05$ level or smaller. High scores on explicit female and male stereotype measures reflect rating women as warmer than men or men as more powerful than women, respectively. A high score on the gender stereotype Implicit Association Test (IAT) reflects both of these stereotypic associations. IAT effects are reported in millisecond index. Effect sizes (Cohen's d) were computed using the pooled standard deviation term for each measure. By convention, small, medium, and large effect sizes correspond to .20, .50, and .80, respectively (Cohen, 1988).

^aHigh scores reflect in-group bias. ^bHigh scores reflect preference for mother over father. ^cHigh scores reflect a maternal primary caregiver.

Table 3
Correlations Among Implicit and Explicit Measures (Experiment 2)

Measure	Implicit measures			Explicit measures			
	Gender attitude ^a	Parent attitude ^b	Gender stereotype	Gender attitude ^a	Parent attitude ^a	Caregiver index ^c	Female stereotype
Parent attitude IAT	.42**	—					
Gender stereotype IAT	-.13	-.10	—				
Gender attitude index	.19*	.14	.07	—			
Parent attitude index	.11	.25*	.04	.17	—		
Caregiver index	.20*	.03	-.18	.04	.38**	—	
Female stereotype	-.06	-.01	.29*	.29**	.16	-.01	—
Male stereotype	.07	-.03	.21*	.19*	.06	-.10	.35*

Note. Correlations are first order, controlling for participant gender. High scores on explicit female and male stereotype measures reflect rating women as warmer than men or men as more powerful than women, respectively. A high score on the gender stereotype Implicit Association Test (IAT) reflects both of these stereotypic associations. Correlations were computed using transformed (logged) response latencies.

^a High scores reflect preference for female over male gender. ^b High scores reflect preference for mother over father. ^c High scores reflect a maternal primary caregiver.

* $p < .05$. ** $p < .01$.

As can be seen in Table 3, the relationship between the gender and parent attitude IATs was reliably positive.⁴ In addition, the positive relationship between the caregiver index and the gender attitude IAT was significant. Thus, people who implicitly favored their mothers or who reported being raised primarily by a maternal caregiver also automatically favored women. These findings are consistent with the hypothesis that early experiences with a maternal caregiver may bias implicit attitudes toward women in general.⁵

Among the explicit measures, the gender and parent attitude indexes were not significantly related. In fact, the IATs were more strongly related than were their self-reported counterparts ($z = 2.08$, $p < .05$). Thus, parental evaluations, presumably formed early in life, were more likely to influence automatic than self-reported gender attitudes. In addition, people raised primarily by their mothers reported liking their mothers more than their fathers (but not women more than men). Finally, there was some convergence among the implicit and explicit measures of gender attitude, parental attitude, and gender stereotypes.

Do Gender Stereotypes Predict Pro-Female Attitudes?

Past research has found that people favor women if they also perceive them as more communal than men (e.g., Eagly et al., 1994). As can be seen in Table 3, we replicated this effect using self-reports; the female stereotype index was related to the gender attitude index, as was the male stereotype index. Thus, people who viewed women as warmer (but also weaker) than men reported female preference. However, there was no support for an implicit analogy, because the relationship between automatic gender attitudes and stereotypes was weakly negative. Thus, people who associated women with warmth (and men with power) were not more likely to automatically favor them over men.

In sum, Experiment 2 confirmed that men possess less in-group bias compared with women and supports the hypothesis that emotional conditioning, through developmental events, may influence automatic gender attitudes in two ways. First, the expected positive link between parent and gender attitudes was observed, but only

using the IAT. Second, people who were raised primarily by their mothers also implicitly favored women. These findings are consistent with our suggestion that maternal attitudes (learned early in life) spill over into gender attitudes, but only at the automatic level. Finally, Experiment 2 showed no linkage between the gender stereotype and attitude IATs, although gender stereotypes were related to gender attitudes using self-reports (Eagly & Mladinic, 1994). Thus, implicit and explicit methods yielded pro-female bias that appeared to stem from different influences (maternal evaluations for the IAT, gender beliefs for self-reports).

Experiment 3

Experiment 3 tested the hypothesis that both genders may automatically prefer women because men are more threatening (i.e., associated with violence and aggression). We included explicit measures for comparison purposes. Because past research has suggested that emotional conditioning may influence implicit more than explicit attitudes (Phelps et al., 2000; Rudman, Ashmore, & Gary, 2001), the proposed linkage between male threat perceptions and gender attitude might best be observed when using the IAT. Finally, we included Experiment 2's power-warmth IAT to provide a second check on gender stereotypes as a predictor of automatic in-group bias.

Method

Participants

Volunteers ($N = 65$; 32 men, 33 women) participated in exchange for partial fulfillment of an Introductory Psychology course requirement. Of

⁴ For men, this relationship was $r(45) = .40$, $p < .01$; for women it was $r(66) = .43$, $p < .001$.

⁵ The observed relationship between gender and parental attitudes should be particularly strong for people raised primarily by their mothers. Because only 6 people (5%) reported being raised by their father, whereas 99 people (86%) reported being raised by their mother, there was insufficient power to examine this hypothesis.

these, 41 (63%) were European American, 15 (23%) were Asian American, and 9 (14%) reported another ethnic identification.

Implicit Materials

The gender attitude and gender stereotype IATs were adopted from Experiment 2. Experiment 3 added the gender threat IAT, which uses the same target constructs (male and female names), but requires categorizing these with both threatening (e.g., *violent, danger, hazardous*) and safe (e.g., *harmless, trustworthy, innocent*) attributes. Participants were randomly assigned to receive the pro-female task conditions (i.e., female + pleasant, female + safety, female + warmth) either first or second. High scores on the gender attitude IAT reflected stronger in-group bias. High scores on the gender stereotype and gender threat IATs reflected greater association of women with warmth and safety, respectively, compared with men.

Explicit Materials

The gender attitude index was adopted from Experiment 2 and scored to match its IAT counterpart. New to Experiment 3, the gender threat index asks participants how much they associate men and women (separately) with the gender-threat IAT stimuli on scales ranging from 1 (*not at all*) to 7 (*very much*). The reliabilities for threatening adjectives were acceptable (both $\alpha > .85$), but not for safe adjectives (both $\alpha < .55$). We therefore computed this index as the difference between associating men versus women with threat.

Procedure

Volunteers completed the gender attitude, gender threat, and gender stereotype IATs (in that order). The gender attitude IAT preceded the others to avoid the possibility of unwanted context effects. The IATs always preceded the self-report measures of gender attitude and gender threat (administered in that order).

Results and Discussion

Gender Differences

IAT effects. Table 4 (top) shows the results of the implicit measures, separately for men and women. As in Experiments 1 and

2, women showed more implicit in-group bias than men, $t(63) = 3.95, p < .001$. In addition, women scored marginally higher than men on the gender threat IAT, $t(63) = 1.98, p = .05$. Replicating Experiment 2, there were no sex differences for implicit gender stereotypes, $t(63) < 1.00, ns$. With the exception of men's gender attitude IAT scores, all measures were significantly different from zero for both men and women, all $ts > 2.06, ps < .05$.

Explicit measures. Table 4 (bottom) shows results of the explicit measures. First, men reported a preference for women, whereas women reported a preference for men. However, as with the gender attitude IAT, men preferred the opposite gender more than women did (i.e., men showed less in-group bias), $t(63) = 2.99, p < .01$. Second, although both sexes reported male threat beliefs, men's were stronger than women's, $t(63) = 2.40, p < .05$. Finally, as in Experiment 2, men scored higher than women on both the female and male stereotype indexes, both $ts(63) > 2.03, ps < .05$. All measures were significantly different from zero for both men and women, all $ts > 2.17, ps < .05$.

Do Male Threat Perceptions Predict Gender Attitudes?

Our main hypothesis was that male threat perceptions would predict gender attitudes using the IAT. If emotional conditioning is less influential for controlled attitudes, self-reports might not echo this effect. As a first step, we recoded gender attitude scores for men so that high scores would reflect pro-female evaluation. Table 5 shows the correlations among Experiment 3's variables. Because of sex differences in some relationships, we present them separately for men (top) and women (bottom) in Table 5.

As can be seen, IAT results yielded the expected positive correlation between gender attitudes and male threat associations for both men and women. As anticipated, the corresponding explicit attitude-threat correlations were weak (in fact, they were weakly negative). This suggests that emotional learning is a stron-

Table 4
Summary Statistics for Implicit and Explicit Measures (Experiment 3)

Measure	Men (N = 32)			Women (N = 33)		
	M	SD	d	M	SD	d
Implicit						
Gender attitude IAT ^a	7 _a	205	0.03	189 _b	163	0.90
Gender threat IAT ^b	67 _a	183	0.43	141 _b	118	0.90
Gender stereotype IAT	146 _a	136	1.17	140 _a	124	1.13
Explicit						
Gender attitude index ^a	-2.25 _a	2.31	-0.81	-0.70 _b	1.85	-0.27
Gender threat index ^c	2.14 _a	1.57	1.45	1.30 _b	1.25	0.88
Female stereotype	2.05 _a	1.34	1.60	1.05 _b	1.02	0.81
Male stereotype	1.83 _a	1.54	1.35	1.16 _b	1.06	0.87

Note. Means not sharing a subscript differ at the $p < .05$ level or smaller. High scores on explicit female and male stereotype measures reflect rating women as warmer than men, or men as more powerful than women, respectively. A high score on the gender stereotype Implicit Association Test (IAT) reflects both of these stereotypic associations. IAT effects are reported in a millisecond index. Effect sizes (Cohen's d) were computed using the pooled standard deviation term for each measure. By convention, small, medium, and large effect sizes correspond to .20, .50, and .80, respectively (Cohen, 1988).

^aHigh scores reflect in-group bias. ^bHigh scores reflect association of male gender with threat (and female gender with safety). ^cHigh scores reflect association of male gender with threat.

Table 5
Correlations Among Implicit and Explicit Measures for Men and Women (Experiment 3)

Measure	Gender attitude IAT ^a	Gender threat IAT ^b	Gender stereotype IAT	Gender attitude index ^a
Men's correlations				
Gender threat IAT	.36*	—		
Gender stereotype IAT	.05	.45**	—	
Gender attitude index	.09	-.21	-.03	—
Gender threat index ^c	.13	.29	.14	-.20
Women's correlations				
Gender threat IAT	.43*	—		
Gender stereotype IAT	-.02	.29	—	
Gender attitude index	.13	.02	-.07	—
Gender threat index ^c	-.27	.17	.19	-.14

Note. A high score on the gender stereotype Implicit Association Test (IAT) reflects associating women with warmth and men with power. Correlations were computed using transformed (logged) response latencies. ^a High scores reflect preference for female gender. ^b High scores reflect association of male gender with threat (and female gender with safety). ^c High scores reflect association of male gender with threat. * $p < .05$. ** $p < .01$.

ger predictor of implicit than explicit gender attitudes. A test for differences between the implicit and explicit attitude–threat correlations for men and women bolstered this interpretation (both z s > 2.21 , $ps < .05$).

Replicating Experiment 2, Table 5 also shows that the association between the gender attitude and stereotype IATs was negligible for both genders. Finally, the gender threat and stereotype IATs positively covaried, although especially for men. That is, men who associated women with safety also linked them to warmth (or alternatively, men who associated men with power also linked them to threat). This finding was weaker but in the same direction for women. Because the stereotype and threat IATs both tap gendered associations, these linkages are not surprising.

In sum, Experiment 3's focal finding was the observation that male threat perceptions are linked to implicit pro-female evaluation, for men and women alike. These results support the hypothesis that women may be implicitly preferred, in part, because they are less intimidating than men. Because this relationship was not observed using self-reports, Experiment 3 extends Experiment 2's support for the hypothesis that emotional conditioning influences automatic more than controlled evaluations (see also Phelps et al., 2000; Rudman, Ashmore, & Gary, 2001).

Experiment 4

Sexual experiences may represent another opportunity for emotional conditioning. Experiment 4 examined whether (heterosexual) men and women might automatically prefer the opposite gender to the extent they liked sex. If men implicitly like sex more than women do, then this gender difference would help to explain men's weaker in-group bias. That is, if attitudes toward sex and gender groups are linked, men's greater enthusiasm for sex might promote greater liking for the opposite sex compared with women.

To test this hypothesis, we administered a sexual attitude IAT in addition to the gender attitude IAT. We also measured sexual experience because our hypothesis depended on an established association between sex and the opposite gender (i.e., through sexual encounters), and this was likely variable for our young adult participants. That is, the pattern for men could be characterized as "If I associate women with sex and I like sex, then I like women." For sexually inexperienced participants, there might not be a link between their gender and sexual attitudes. Thus, we expected sexual experience to moderate the proposed link between sexual and gender attitudes.

Because the IAT is a relative attitude index, the choice of what to use as a contrast for sex in the IAT required careful consideration. Past research on smokers' attitudes showed that no smoking was the best contrast for smoking (Swanson, Rudman, & Greenwald, 2001). Smoking was represented with scenes that included an ashtray and a cigarette; no-smoking scenes excluded these stimuli. Similarly, Experiment 4 contrasted sex with no sex in the sexual attitude IAT. To do so, we relied on photos of heterosexual couples either engaged in sexual activity (e.g., kissing) or not. The decision to use couples for each contrast controlled for several confounds, including physical contact (asexual couples were shown touching or hugging) and love and romance. In addition, it was important that both men and women be represented in each contrast, to control for pro-female bias. Finally, although identical couples would have been ideal, this choice would have made distinguishing between sexual and asexual couples too difficult, given that both sets of photos portrayed (nongraphic) physical contact. Therefore, we used different couples for each contrast, matched on physical attractiveness (as judged by the authors, in concert with graduate student assistance).

Method

Participants

One hundred fifteen (58 men, 57 women) volunteers participated in exchange for partial fulfillment of an Introductory Psychology course requirement. Of these, 56 (49%) were European American, 29 (25%) were Asian American, 9 (8%) were Latino, 8 (7%) were African American, and 13 (11%) reported another ethnic identification. From the original sample ($N = 124$), 2 men were excluded for failing to follow instructions, and 7 participants were eliminated because they were not exclusively heterosexual (4 men, 3 women).

Implicit Materials

The gender attitude IAT was adopted from Experiments 2 and 3. Experiment 4 added the sexual attitude IAT, which uses the same pleasant and unpleasant attributes but requires participants to categorize these with sex or no sex. To represent sex, we chose photographs of five couples engaged in nongraphic sexual activity (e.g., kissing or passionately embracing). Two were outdoors (on a beach or leaning against a boulder), and three were in indeterminate locations (the focus was on their faces and upper torsos). Four of these couples were scantily clad (e.g., in swimsuits). To represent no sex, we chose photographs of five couples who were touching in a nonsexual way (e.g., hugging). Three couples were outdoors (e.g., in a meadow) and two were indoors (e.g., posed at a restaurant table). One couple was scantily clad (shown frolicking in swimsuits in the ocean). Participants were randomly assigned to receive the pro-sex and pro-female task conditions (i.e., sex + pleasant, female + pleasant) either first or

Table 6
Summary Statistics for Implicit and Explicit Measures (Experiment 4)

	Men (<i>N</i> = 58)			Women (<i>N</i> = 57)		
	<i>M</i>	<i>SD</i>	<i>d</i>	<i>M</i>	<i>SD</i>	<i>d</i>
Implicit						
Gender attitude IAT ^a	50 _a	148	0.31	247 _b	177	1.52
Sexual attitude IAT ^b	66 _a	197	0.33	-44 _b	203	-0.22
Explicit						
Gender attitude index ^a	-1.67 _a	3.63	-0.51	-0.05 _b	2.89	-0.02
Sexual attitude index ^b	3.21 _a	2.43	1.38	1.36 _b	2.21	0.59
Sexual experience ^c	3.28 _a	1.50	2.17	3.15 _a	1.51	2.09

Note. Means not sharing a subscript differ at the $p < .01$ level or smaller. Implicit Association Test (IAT) effects are reported in a millisecond index. Effect sizes (Cohen's d) were computed using the pooled standard deviation term for each measure. By convention, small, medium, and large effect sizes correspond to .20, .50, and .80, respectively (Cohen's 1988).

^a High scores reflect in-group bias. ^b High scores reflect preference for sex (compared with no sex). ^c High scores reflect greater sexual experience.

second. A high score on the sexual attitude IAT reflects greater liking for sex.

Explicit Materials

The gender attitude index was adopted from Experiments 2 and 3. Participants also reported their attitudes toward sex, kissing, and making love on 10-point thermometers (1 = *very cold*; 10 = *very warm*). They similarly rated their evaluation of celibacy, virginity, and chaste dating (without sex). The sex and no-sex items were averaged separately (both α s > .68), and the difference between the two measures formed the sexual attitude index, on which high scores reflect greater liking for sex.

Participants responded to two items to assess their sexual experience ("I consider myself to be sexually experienced" and "I have never had a sexual partner") on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). After recoding the second item, we averaged these to form the sexual experience index, $r(113) = .58, p < .001$.

Procedure

Participants were recruited for the "Automatic Attitudes" project, described generically (i.e., no mention was made of sex). They completed the gender and sexual attitude IATs in counterbalanced order (a procedural variable that did not influence results). To help participants distinguish sex from no sex, they studied the photographs of couples immediately before completing the sexual attitude IAT. This procedure was successful in affording accurate categorization of sex versus no sex (mean error rate = 4.47%, which was similar to the mean error rate for the gender attitude IAT, 4.39%). They then completed the gender and sexual attitude indexes, followed by the sexual experience measure. Finally, they reported their gender, race, and sexual orientation.

Results and Discussion

Gender Differences

High scores on the gender and sexual attitude measures reflect preference for own gender and sex, respectively. As can be seen in Table 6, men showed the typical pattern of weaker in-group bias compared with women on the gender attitude IAT, $t(113) = 7.41,$

$p < .001$. Men also showed more favorable evaluation of sex on the sexual attitude IAT, $t(113) = 2.96, p < .01$, in support of the measure's known groups validity (e.g., Baumeister et al., 2001). These sex differences were echoed by the explicit measures, both $ts(113) > 2.82, ps < .01$. Finally, there were no gender differences in reported sexual experience, $t(113) < 1.00, ns$.⁶

A check on the correspondence of our implicit and explicit sexual attitude measures yielded a modest positive correlation, $r(113) = .25, p < .01$ (when controlling for participant sex; $r = .17, p < .08$). The implicit and explicit gender attitude measures were negligibly related, whether or not we controlled for participant sex (both $rs < .08, ns$).

In sum, men showed weaker in-group bias and greater liking for sex compared with women, irrespective of the measures used. Our next set of analyses sought support for the hypothesized links between gender attitudes, sexual attitudes, and sexual experience.

Do Sexual Attitudes Predict Gender Attitudes?

As a first step, we recoded gender attitude scores for men so that high scores would reflect pro-female evaluation. As a result, positive correlations were expected among men's gender and sexual attitude measures, particularly for men high on sexual experience. By contrast, sexually experienced women might be expected to show negative links between their gender and sexual attitudes (i.e., they should prefer men to women if they like sex).

⁶ A series of analyses examined whether Experiment 4's measures differed from zero for men and women. First, and in contrast to Experiments 2 and 3, men's implicit in-group bias was reliable, $t(57) = 2.53, p < .05$. However, women's in-group bias was much stronger, $t(56) = 12.42, p < .001$. Second, men's automatic preference for sex was reliable, $t(57) = 2.20, p < .05$, whereas women weakly favored no sex, $t(56) = 1.80, p < .08$. Third, men reported significant preference for women, $t(57) = 3.51, p = .001$, whereas women reported neutral gender attitudes, $t(56) < 1.00, ns$. Finally, men and women alike reported liking sex more than no sex, both $ts > 4.63, ps < .001$.

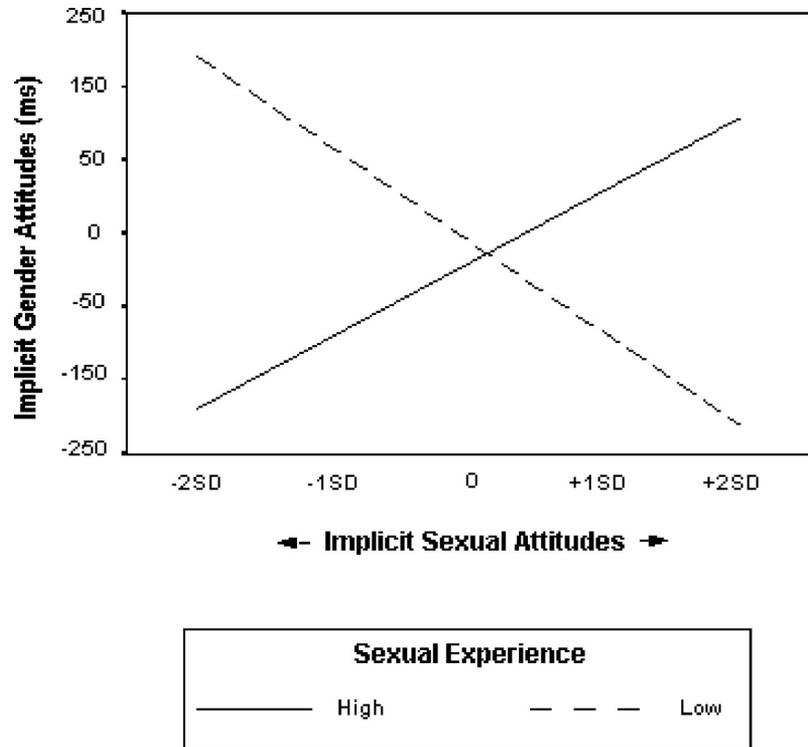


Figure 2. Regression lines predicting gender attitudes as a function of sexual attitudes and sexual experience for Experiment 4's men ($N = 58$). A high score on the sexual and gender attitude Implicit Association Tests (IATs) indicate pro-female and pro-sex bias, respectively. Regression lines were estimated using a millisecond index for the IATs and unstandardized regression coefficients. SD = standard deviation.

Thus, we expected Participant Sex \times Sexual Attitudes \times Sexual Experience interactions when predicting gender attitudes. If emotional conditioning in the form of sexual gratification is a more important source for implicit attitudes, then the IAT should yield more support for this expectation compared with self-reports.

Gender attitude IAT. To test this hypothesis, IAT scores were standardized in preparation for analyses that regressed gender attitudes on participant gender, sexual attitudes, sexual experience, and all interaction terms. This analysis revealed the expected three-way interaction ($\beta = -.25, p < .01$).⁷ Among women, simple effects showed a main effect for sexual attitude ($\beta = -.30, p < .05$), such that if they automatically liked sex, they also favored men. No other effects for women approached significance. By contrast, men showed the predicted Sexual Attitude \times Sexual Experience interaction ($\beta = .59, p < .001$).

To illustrate this effect, Figure 2 displays the regression lines predicting pro-female attitudes from sexual attitudes for men scoring 2 standard deviations above and below the mean on the sexual experience index. As expected, men high in sexual experience showed positive correlation between their sexual and gender attitudes. This is consistent with our prediction that men who associated women with sex would prefer them to men to the extent they liked sex. Although we predicted that the relationship between sex and gender attitudes would be weak among men low in sexual experience, we instead found a strong negative correlation (i.e., men low on sexual experience preferred own gender to the extent they liked sex). Possible reasons for this unexpected finding are

addressed in the General Discussion section. Here, we note that men's automatic in-group bias is indeed influenced by their liking for sex and that this relationship is moderated by sexual experience, as predicted.

Gender attitude index. A comparable analysis predicting explicit gender attitudes yielded only a significant Sexual Experience \times Participant Sex interaction ($\beta = -.34, p < .01$). Follow-up tests for men showed a positive relationship between sexual experience and pro-female bias, $r(56) = .31, p < .05$. Similarly, sexual experience and pro-male bias was associated for women, $r(55) = -.29, p < .05$. No other effects were significant, including the three-way interaction ($\beta = -.10, ns$). Thus, explicit attitudes toward sex were not linked to explicit gender attitudes. Instead, people who were sexually experienced tended to prefer the opposite sex.

In sum, Experiment 4's focal finding was support for the prediction that men who liked sex and engaged in sexual activity would automatically favor women over men. Thus, to the extent that men are sexually experienced, their greater interest in and liking for sex may promote automatic preference for the out-group

⁷ There was also a Sexual Experience \times Participant Sex interaction ($\beta = .28, p < .01$). Follow-up tests showed that men high on sexual experience also tended to possess pro-female bias, $r(56) = .27, p < .05$. By contrast, women did not show a reliable link between sexual experience and gender attitudes, $r(55) = .13, ns$.

(women). In addition, we found that women who implicitly liked sex tended to prefer men on the gender attitude IAT, although this linkage was not moderated by their sexual experience. Finally, using self-reports, both women and men high on sexual experience expressed greater liking for the opposite gender. Although the data suggest differences in the correlates of implicit and explicit gender attitudes, they cohere in one important respect. Taken together, they strongly suggest that gender attitudes have a sexual component. Although our findings are novel and intriguing in this regard, their importance for the present investigation centers on their ability to explain, in part, why men show relatively weak in-group bias. Because men are implicitly more enthusiastic about sex, their dependence on women for sexual relations may lead them to automatically favor the opposite sex.

General Discussion

Although men, historically and cross-culturally, are the dominant sex, they possess remarkably weaker in-group bias than do women. In four experiments, we found this sex difference persisted using both implicit and explicit measures, despite using a gender attitude IAT that was unconfounded with gender stereotypes. Averaging IAT effect sizes for men and women across four experiments revealed $d_s = 0.28$ and 1.27 , respectively. (The comparable effect sizes using self-reports were -0.67 and 0.06 , respectively.) In each case, a high score reflects greater in-group bias. Thus, we can claim with confidence that even when men are responding automatically, their in-group bias is surprisingly frail and that women's in-group bias is particularly strong at the implicit level (i.e., stronger than men's by a factor of 4.5).

Because this sex difference in automatic in-group bias contradicts SJT (Jost & Banaji, 1994), it undermines cultural status as a prominent source for implicit attitudes (Rudman, 2004). Thus, we sought to identify factors that would counteract, for gender groups, the general tendency for high-status groups to show robust in-group bias (e.g., Jost et al., 2002; Nosek et al., 2002a; Rudman et al., 1999, 2002). Out of five hypotheses tested, we found support for all but gender stereotypes. That is, implicit power-warmth stereotypes and gender attitudes were not related, although Experiment 2 replicated their previously observed linkage using self-reports (e.g., Eagly et al., 1994). So what then does predict implicit gender attitudes? That is, what factors, when taken together, might account for sex differences in automatic in-group bias?

Why Do Women Like Women More Than Men Like Men?

Besides SJT, the most systematically investigated source for implicit attitudes is cognitive balance. According to the unified theory, people with high self-esteem and gender identity should favor their own gender, but only at the automatic level (Greenwald et al., 2002). Because both men and women possess robust implicit self-esteem and gender identity, both groups should show strong in-group bias. However, because men's weak in-group bias contradicts this prediction, Experiment 1 tested (and supported) our suspicion that only women have a balanced gender identity. Thus, women's automatic in-group bias is stronger, in part, because they alone possess a cognitive mechanism that promotes own group preference. Because men supported the unified theory in research unrelated to gender attitudes (e.g., Greenwald et al., 2002; Nosek

et al., 2002b; Rudman, Greenwald, & McGhee, 2001), Experiment 1's finding of sex differences in balanced gender identities is all the more remarkable.

In addition, recent evidence suggests that emotional conditioning influences implicit attitudes (Rudman, 2004). Consistent with this hypothesis, Experiment 2 showed that people who implicitly preferred their mothers also favored women in general. Of course, the causal direction of this relationship is unknown, but we suspect that because of early (even preverbal) attachment to maternal caregivers, people's mental machinery may be geared to automatically favor the feminine sex. In support of this interpretation, people who reported being raised primarily by their mothers also showed stronger pro-female bias, and the sequence of events is clear in this case. Thus, Experiment 2's results suggest that similarities in how children are raised (primarily by their mothers) can lead to automatic maternal preference, and this preference extends to liking women in general. Finally, the absence of this phenomenon using self-reported attitudes suggests that emotional conditioning is more pertinent to implicit than explicit evaluations.

Similarly, Experiment 3 supported threat perceptions as a source for implicit attitudes (see also Phelps et al., 2000; Rudman, Ashmore, & Gary, 2001). As expected, compared with women, men were more automatically linked to threatening attributes (e.g., violence and aggression; see also Rudman, Greenwald, & McGhee, 2001, Experiment 2). More important, male threat associations predicted automatic pro-female bias for both men and women. Thus, men's greater proclivity for violence and aggression may bolster automatic preference for women, the less threatening sex. By contrast, self-reported attitudes were not reliably associated with explicit male threat beliefs.

Experiment 4 showed the power of sex to predict heterosexuals' gender attitudes. As expected, men reported greater liking for sex than did women, echoing past research (e.g., Baumeister, 2000; Oliver & Hyde, 1993). Unique to Experiment 4, this sex difference was also shown using the IAT. Thus, men showed greater enthusiasm for sex, irrespective of measurement method. We suspected that this enthusiasm might lead men to show pro-female bias, provided they associated women with sex (i.e., were sexually experienced). This hypothesis was not supported using self-reported attitudes; instead, sexual experience was the sole predictor of gender attitudes. For both men and women, the more sexual encounters they had, the more they reported a preference for the opposite sex (irrespective of their liking for sex). By contrast, the sexual attitude IAT predicted automatic gender attitudes. First, women implicitly preferred men if they also liked sex. Second, men echoed this pattern, but with an important caveat—only if they were high on sexual experience. Thus, men supported our expectation that if they associated women with sex (through sexual encounters that likely lead to emotional conditioning), they would prefer women to the extent they liked sex. By contrast, men low on sexual experience implicitly disliked women to the extent they liked sex.

Although we did not expect the latter result, in hindsight it supports emotional conditioning as a source for implicit attitudes. A plausible interpretation is that men who like sex and have their sexual needs fulfilled by women tend to automatically favor women, whereas men who want but are deprived of sex may implicitly resent women. That is, if we assume that sexual gratification (or its absence) is an affective experience for men, the

pattern of results is not surprising. Moreover, this interpretation coheres with Glick and Fiske's (1996) argument that men may express benevolence toward women because they depend on them (e.g., for sexual relations). If women are not forthcoming, their dyadic power over men may backfire, resulting in implicit sexism.

Finally, we also did not expect sex differences in the pattern of relationships observed using the IAT. Why would sexual experience be less likely to play a role in women's automatic gender attitudes? If sexual gratification is a weaker emotional need for women (Baumeister et al., 2001), then the amount of experience may be less important to their identity and well-being than it is for men. In essence, the emotionally conditioned link between attitudes toward sex and the opposite gender may be sufficient for heterosexual women, who might be described as "If I like sex, I like men," but for men, sexual gratification may be required to strengthen the same link (i.e., "If I like sex and receive it from women, I like women"). However, we caution that the converse description for sexually inexperienced men ("If I like sex and don't receive it from women, I don't like women") assumes they are heterosexual when, in fact, their very lack of experience may prevent them from knowing their sexual orientation. If that were the case, our subset of inexperienced men may have included an unknowable number of incipient homosexuals, for whom liking for sex would be expected to covary with implicit male preference. Thus, the negative link between implicit sexual and gender attitudes shown on the part of sexually inexperienced men may be due to sexual frustration, homosexual inclinations, or some combination of both.

In concert, the findings suggest that for men and women alike there are numerous factors that inhibit the generally observed linkage between social status and automatic in-group bias (e.g., Jost et al., 2002; Rudman et al., 2002). Although men are inarguably the dominant sex, they are raised by their mothers, threatened by male violence, dependent on women for sex, and deprived of cognitive balance vis-à-vis gender attitudes. Similarly, women are the subordinate sex, but they are raised by their mothers, intimidated by male violence, less enthusiastic about sex, and possess a cognitively balanced gender identity, which bolsters in-group bias for the majority of women. Thus, factors that we have characterized as emotional conditioning (maternal nurturance, male threat perceptions, and sexual gratification) can help to explain why cultural status—which would predict stronger implicit in-group bias for men than women—may be overridden in the case of gender attitudes. In addition, on average, women's generally high self-esteem and feminine identity bolster their automatic liking for women, whereas men's liking for men is not a similar function of their generally high self-esteem and masculine identity. The picture as a whole is one of women having several sources that promote automatic in-group bias (cognitive balance, a match between maternal caregivers and own gender, and male threat beliefs) that are either not shared by men (cognitive balance) or that hinder male preference (maternal nurturance, male threat beliefs). By contrast, both genders share a source that promotes out-group preference (sexual gratification), but this is somewhat weakened for women, who are less enthusiastic about sex. These discrepancies help to explain why women show dramatically greater liking for women than men show for men at the automatic level.

Limitations and Future Directions

The research is limited by its use of only college-aged samples. To date, no evidence exists to inform us as to whether children or more mature adults would also show sex differences in automatic in-group bias. Thus, future research should examine gender attitudes in both younger and older samples. In particular, the results of Experiments 2 and 4 might not generalize to older adults if the influence of being nurtured by maternal caretakers is diluted as people mature and if the meaning of sexual encounters changes significantly over time.

The present findings are also limited by our use of the IAT as the sole implicit measure. As previously noted, this decision was made because of the method's flexibility—a critical attribute, given the broad array of constructs measured in our work. Nonetheless, future investigations will be needed to determine the generalizability of our findings to other response latency methods. This is particularly important given the novelty of the relationships examined (e.g., between parent and gender attitudes and between sexual and gender attitudes).⁸

The present research suggests that implicit and explicit gender attitudes can be distinguished, in part, by differences in their underlying sources (Rudman, 2004). However, the research did not compare the relative strength of various predictors (e.g., maternal evaluations, male threat perceptions, and attitudes toward sex), which might be tested in future research. Here, we speculate that some sources might prove stronger than others, depending on the context in which attitudes are assessed (for a review, see Blair, 2002). For example, exposing people to violent rap music enhanced the positive relationship between automatic negative Black stereotypes and pro-White bias (Rudman & Lee, 2002). Similarly, priming people to think about male criminals might bolster the link between implicit male threat perceptions and gender attitudes.

There are avenues left unexplored in our efforts to predict automatic gender attitudes. One intriguing possibility is that men may resist own group preference for fear that it would signal latent homosexuality (Schmitt & Branscombe, 2001). At the explicit level, men may deliberately curb their in-group bias in order to present themselves as "all male" (i.e., strictly heterosexual). Implicitly, men are not likely to be able to use this strategy, but a history of being taught to avoid the appearance of being gay could lead to automatic own group aversion. Implicit associations are, at bottom, well-learned mental routes connecting, in this case, gender and evaluation. If we liken these routes to mental ruts, then any experiences that diminish the groove linking men to positive evaluation should help to account for men's weaker in-group bias, including the fact that men are socialized (early and often) to avoid homosexual labeling. Perhaps the greatest obstacle to testing this hypothesis is the need for a valid measure of implicit anxiety toward homosexual labeling. Here, we merely point out that men represent a unique case for intergroup relations theorists because liking for own gender may cast doubt on their sexual identity,

⁸ At the present time, this suggestion is made with respect to testing the robustness of the gender attitude predictors. Because there is debate as to whether implicit measures assess similar or very different aspects of attitude objects (Fazio & Olson, 2003), it would be premature to suggest that using other response latency tools would uncover additional mechanisms.

whereas women may freely show liking for women (including displays of affection) without being subject to homosexual labeling.

Another possibility, derived from social identity theory, is that women, by virtue of their lower status, may share a stronger collective bond compared with men (Ellemers, Spears, & Doosje, 1997). For example, the rejection-identification model posits that societal discrimination can lead to a desire for group mobility that in turn creates stronger affinity among women than men (Schmitt, Branscombe, Kobryniewicz, & Owen, 2002). Future research might find this perspective useful for predicting sex differences in automatic in-group bias.

Finally, future work should examine gender attitudes in specific contexts that might decrease pro-female bias by increasing the salience of gender status differences (e.g., in performance settings). In fact, Eagly and Karau (2002) argued that women are viewed more positively than men as long as they remain in traditional roles; as a result, the “women are wonderful” effect might be better termed the “women are wonderful when” effect—when they are not in charge (e.g., Rudman & Kilianski, 2000). Nonetheless, our experiments suggest that in the absence of specific power manipulations, women strongly implicitly prefer their own gender, whereas men do not.

Conclusion

The present research sought to underscore the special case of gender for intergroup relations theorists. The fact that women show stronger automatic in-group bias than men is provocative, because it suggests a reversal of sexism at the implicit level. Despite the suggestion (and growing evidence) that implicit attitudes stem from societal evaluations (e.g., Jost & Banaji, 1994; Jost et al., 2002; Rudman et al., 2002), men and women alike fail to conform to status-driven expectations when they automatically evaluate each other. Although we uncovered several factors that in tandem help to account for this phenomenon, we have no doubt that we left many stones unturned. However, we hope that our work provides the impetus for future investigations of implicit gender attitudes and spurs progress toward understanding gender relations, which are uniquely important for human happiness.

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