Cued Activation of Relational Schemas: Self-Evaluation and Gender Effects

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Abstract

In two studies, men's and women's self-evaluative responses following presentation of rejection and acceptance cues were examined. Two different conditioning procedures were utilized to associate computer-generated tones with images of social rejection or acceptance. When these tones were played later in a self-evaluative situation, women tended to respond to rejection cues by becoming more self-critical, and to acceptance cues by becoming less self-critical. On some indicators, men responded in the opposite fashion. These findings are discussed in light of recent analyses of gender differences in the sources of self-esteem.

Résumé

Deux études examinent les réponses, fournies sous forme d'auto-évaluation, par des hommes et des femmes après la présentation d'indices de rejet et d'acceptation. On a utilisé deux procédures différentes de contrôle des conditions, pour associer les signaux sonores produits créés par ordinateur et les images de rejet social ou d'acceptation sociale. Lorsque les signaux sonores étaient présentés à la fin d'une situation à auto-évaluer, les femmes avaient tendance à répondre aux indices de rejet en devenant plus autocritiques et aux indices d'acceptation en devenant moins autocritiques. En ce qui concerne certains indicateurs, les hommes ont réagi de la manière opposée. Les conclusions sont abordées à la lumière des récentes analyses des différences entre les sexes en ce qui a trait aux origines de l'estime de soi.

Self-evaluative reactions – of pride and self-confidence, or shame and self-criticism – play a central role in people's inner lives. Particularly troubling, not surprisingly, are those at the negative end of the spectrum: Often even a passing thought or image can make people feel momentarily less self-assured, momentarily more self-scrutinizing. Should these crop up while engaged in a difficult task of some kind, many people might find it difficult to concentrate on the job at hand and might instead become highly critical of their performance at the task. Conversely, some individuals might respond defensively to negative evaluative feelings by working harder, thinking about personal strengths, or in some other way boosting their self-esteem. In this research we examined whether men and women might differ in their typical responses to the activation of rejection and acceptance information.

Our research was informed by interpersonal theories of self-esteem. Recent work has supported the idea originally forwarded by Mead (1934), Cooley (1902), and others, that self-evaluation is strongly shaped by social factors, particularly feedback from others. In Leary and colleagues' influential Sociometer Theory of self-esteem (Leary & Baumeister, 2000; Leary, Tambor, Terdal, & Downs, 1995), for example, the self-esteem system is portrayed as a gauge monitoring others' reactions of acceptance (or inclusion) versus rejection (or exclusion). In one study, Leary et al. (1995) asked participants to supply information about themselves to three other participants, in order to decide whether the other participants wanted to work with them on a group project. Some participants were then randomly assigned to receive rejection feedback, saying that the other participants did not want to include them in the working group. Participants who received this rejecting feedback rated themselves more negatively than participants who received accepting feedback.

From a social cognitive point of view, the impact of actual or imagined social feedback on self-evaluative responses is mediated by the activation of relational schemas (Baldwin, 1992) representing social acceptance or rejection. A relational schema is a knowledge structure consisting of an image of self (e.g., as inadequate), an image of other (e.g., as critical), and a script for a pattern of interaction between self and other (e.g., if I make a mistake, he will reject me). Several studies have shown that the cognitive activation of a criticism or disapproval schema such as this can lead people to be more self-critical, as the self-evaluative

process is shaped in accordance with the typical pattern of social feedback (e.g., Baldwin, 1994, 1997; Baldwin, Carrell, & Lopez, 1990; Baldwin & Holmes, 1987).

The current work represents part of a program of research into the *cued activation* of relational schemas. Images of being rejected or accepted often seem to spring to mind as if from nowhere. Closer examination, however, sometimes reveals cues or triggers for such activation; cues such as a song on the radio or a whiff of familiar perfume that were associated in the past with a rejecting or accepting person. As demonstrated by social cognition research into the phenomenon of transference (e.g., Chen & Andersen,1999), simple cues that trigger relational models can strongly influence people's sense of self as well as views of current interpersonal situations. Some recent experiments (e.g., Baldwin & Main, 2001; Baldwin & Meunier, 1999) have shown that it is possible to create, in the laboratory, conditioned stimuli that can come to activate schemas representing rejection or acceptance. Baldwin and Main (2001), for example, had subjects perform a computerized questionnaire in which they received acceptance and rejection feedback, ostensibly from their peers. These two types of feedback were paired repeatedly with two distinctive computer tones, to create conditioned stimuli for acceptance and rejection. A pilot study using a lexical decision task showed that the tone that had been paired with rejection feedback facilitated the identification of rejection-related words, compared to the tone that had been paired with acceptance feedback. In a follow-up study, the conditioned tones were played during a stressful conversation with a confederate, and results confirmed that participants' feelings of social anxiety were shaped by the activated structures. Participants hearing the tone that had been paired with rejection were much more anxious than those hearing the tone that had been paired with acceptance. We sought to build on this work, so in Study 1 we used the same conditioning manipulation in a novel context.

We had two general research questions. First was whether cued-activation effects would occur in the context of explicit self-evaluation. In previous research, dependent measures had included feelings of social anxiety during an interaction (Baldwin & Main, 2001, Study 2) as well as the facilitation of recognition times to rejection words (Baldwin & Main, 2001, Study 1; Baldwin & Meunier, 1999). These are relatively indirect measures compared with the kinds of self-evaluative questions often asked in self-esteem research. In other types of studies where direct primes were used (e.g., visualizing an evaluative significant other just before performing a task; Baldwin &

Holmes, 1987), the self-evaluative impact of activated structures has been demonstrated, but this effect has not yet been examined in a cued-activation context. It seemed plausible to us that the effects of cued activation might not extend to explicit self-evaluations because people can control their responses and so might try to override the feelings produced by the cues (see, e.g., Chaiken & Trope, 1999, for a survey of findings on automatic and controlled processing differences).

Our second question involved gender differences in responsiveness to such cues. Recent work suggests that men and women may differ in the nature of their self-esteem systems (e.g., Bakan, 1966). In terms of level of global self-esteem, the literature presents mixed results (e.g., Feingold, 1988; Maccoby & Jacklin, 1974), but recent meta-analyses suggest that there is a small but reliable tendency for men to report slightly higher self-esteem (e.g., Kling, Hyde, Showers, & Buswell, 1999; Major, Barr, Zubek, & Babey, 1999). A more robust difference between the genders seems to appear when considering the sources from which people draw self-esteem. Josephs, Markus, and Tafarodi (1992; also Baumeister & Sommer, 1997; Cross & Madson, 1997; Roberts, 1991; Schwalbe & Staples, 1991), for example, stress that men and women in our culture pursue different types of self-concepts, and derive their self-esteem from different sources. In particular, whereas women obtain self-esteem by being sensitive to, connected to, or interdependent with others, men are observed to obtain self-esteem by achieving the goals ascribed to their gender, such as being independent, separate, and better than others. This difference in emphasis has implications for how men and women should be expected to react to feelings of social rejection: "...rejection would provide a more direct challenge to women's self-esteem, and so they may be unable to draw on their self-esteem to cope with the threat. For men, however, the rejection would not challenge their self-esteem so directly, which may provide them with a coping advantage in this particular instance" (Kling et al., 1999, p. 491).

Some research has supported this prediction of gender differences in reactions to rejection. Leary et al. (1995), for example, found that men and women reacted differently to being included in or excluded from a laboratory work group. Women and men had similar self-evaluations when they were included in the group, but when excluded from the group women rated themselves more negatively than men.

We explored whether a similar gender difference would appear in response to the cognitive activation of rejection and acceptance schemas. Analyses in previous social cognitive research on the activation of

relational schemas have either shown no gender differences (e.g., Baldwin & Sinclair, 1996) or have not addressed this issue because single-sex samples were employed (e.g., Baldwin & Holmes, 1987; Baldwin & Main, 2001). We hypothesized that we might be particularly likely to observe gender differences when measuring explicit self-evaluative responses to cued schemas, as this context represents a relatively deliberate, controlled response to a fairly minimal source of activation. If men did indeed have a "coping advantage" as suggested by Kling et al. (1999), we thought it might be particularly likely to show itself in this context. We also considered the possibility that women's sensitivity to social relatedness might confer an advantage of its own in contexts where positive feedback was available.

Study 1

We first wished to examine the influence of the cued-activation of relational schemas on men's and women's explicit self-evaluations and on their resulting mood. Participants completed the bogus computerized questionnaire previously described (from Baldwin & Main, 2001), designed to condition them to associate different computer tones with rejection and acceptance feedback. Some time later, they filled out self-esteem and mood questionnaires while a computer on the other side of the room played one of the tones repeatedly. We predicted that the conditioned tones would influence people's self-evaluative reactions and mood, and that this effect would be more pronounced for women than for men.

Method

Participants. Fifty-nine University of Winnipeg introductory psychology students (31 women and 28 men; median age of 19.5 years) participated in the study for course credit.

Procedure. Participants were run in individual sessions in a room with two computer desks on opposite sides of the room, separated by a divider. Participants first filled out the Rosenberg (1965) self-esteem questionnaire, which measures chronic self-esteem and was used as a baseline measure of self-esteem. They then turned to their computer, which presented instructions for the remainder of the study.
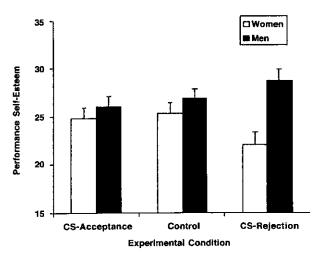
Participants were first given a bogus survey on attitudes and personality characteristics (Baldwin & Main, 2001), which actually served as the conditioning procedure. The survey consisted of multiple choice questions such as "Do you have a lucky number? yes/no," and "If you could be one of the follo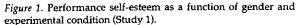wing animals, which one would it be? bird/cat/lion." This survey was described as a compilation from prior surveys of university students who had indicated what attitudes and personality traits they liked and admired most. Participants were asked to complete the survey questions to see if their answers matched those of the "ideal" person's answers, which supposedly would indicate how prevalent the desirable attitudes and traits were among university students. The instructions also explained that at regular intervals, the computer would indicate whether their answers were matching the most desirable answers or not. This feedback would consist of a row of either smiling, happy faces, which indicated a "match," or a row of frowning, critical faces, which indicated a "mismatch."

The feedback procedure was used to create two conditioned stimuli: One cue for acceptance, and one cue for rejection. After every third survey item, the computer emitted one of two distinctive tone sequences. These tones were both distinctive sounds lasting for approximately one second each. One was a high-pitched sound that resembled a doorbell while the other was a low-pitched sound that gradually increased in pitch. After an interstimulus interval of .5 s, either the row of smiling faces or frowning faces appeared for 1 s. The stimuli were presented such that one type of tone (e.g., high-pitched) was always paired with one type of face (e.g., smiling) and the other tone (e.g., low-pitched) was paired with the other expression (e.g., frowning; the tones and pictures were counter-balanced). The tone-face pairings each occurred 10 times in the same random order for all participants, and the feedback was independent of participants' actual responses. By the end of this bogus questionnaire, then, each participant had undergone a training procedure to create a conditioned stimulus for approval or acceptance (*CS-acceptance*) as well as one for disapproval or rejection (*CS-rejection*).

Participants then completed a word-search filler task that lasted 10 minutes. During this period, the experimenter entered the room three times; she appeared to be programming another computer on the other side of the room divider. This computer occasionally emitted beeps and tones.

At the end of this filler task, the experimenter initiated a program on her computer that randomly assigned (with the constraint that there be an equal number of male and female participants in each condition) participants to acceptance, rejection, and control conditions. The experimenter was therefore blind to the experimental condition throughout the study. The manipulation consisted of repeatedly presenting one tone while the participant filled out questionnaires (ostensibly, the computer the experimenter had been

Figure 1. Performance self-esteem as a function of gender and experimental condition (Study 1).

Figure 2. Negative mood as a function of gender and experimental condition (Study 1).

working on was undergoing reprogramming). Participants in the acceptance group heard the second computer emit the tone that had been paired with the smiling, happy faces during the conditioning phase; the rejection group participants heard the tone that had been paired with the frowning, critical faces, and the control group participants heard no tone at all. The tones were presented every 10 s until the end of the experimental session. During this time, participants completed mood and self-esteem questionnaires. First was the PANAS (Watson, Clark, & Tellegen, 1988), which measures positive (enthusiasm, alertness) and negative (subjective distress) mood. This questionnaire was supplemented by 15 positive and negative self-evaluative adjectives drawn from McFarland and Ross (1982) (e.g., smart, confident, proud, worthless, stupid, and inadequate). Finally, they filled out Heatherton and Polivy's (1991) State Self-Esteem Scale, which contains subscales assessing evaluations of one's performance, concerns of social evaluation, and evaluations of one's appearance. Participants were debriefed, thanked, and counter-conditioned by having them observe the smiling faces paired with the tone that was originally paired with the frowning faces.

Results and Discussion

Preliminary analyses of trait self-esteem showed no effects corresponding to gender or experimental condition; this measure was used as a covariate in subsequent analyses. First, a MANOVA was conducted with the major dependent variables: state self-esteem (Mean = 69.06, SD = 12.55), positive (Mean = 53.49, SD
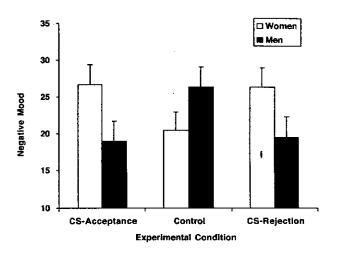
= 13.68) and negative mood (Mean = 23.11, SD = 9.84. This analysis showed a significant effect only for the Gender x Condition interaction, $F(6, 100) = 2.68$, $p < .05$. Examination of the univariate effects showed that the interaction was accounted for by the self-esteem and negative mood measures.

State self-esteem. On the state self-esteem measure, men reported higher self-esteem than women, $F(1, 52) = 6.10$, $p < .05$. Men and women did not respond identically in the different experimental conditions, however, and the gender main effect was qualified by a marginally significant Gender x Condition interaction, $F(1, 52) = 2.99$, $p = .06$. This measure is composed of three subscales, and analyses of these showed that although the pattern was similar across the subscales, the overall interaction was accounted for primarily by the subscale measuring participants' self-evaluations of their performance. The performance subscale showed both a significant gender effect, $F(1, 52) = 4.75$, $p < .05$, and a significant Gender x Condition interaction, $F(2, 52) = 3.51$, $p < .05$. As seen in Figure 1, the most pronounced difference between men and women's self-esteem was evident in the CS-Rejection condition, where women's self-esteem was relatively lowered but men's was slightly raised. Thus, the tone reinstating a feeling of rejection seemed to undermine women's self-esteem feelings, particularly regarding their feelings of competency. Men, on the other hand,

1 Note that while the interaction effect was significant, indicating a reliable pattern that must be explained, neither specific contrast within gender was, by itself, statistically reliable.

did not respond to the cue for rejection by becoming more self-critical; if anything, they regarded themselves somewhat more positively.[1]

Mood. Mood items were drawn from two sources (McFarland & Ross, 1982; Watson et al., 1988). Because exploratory factor analyses indicated the presence of two major factors corresponding to positive and negative items, however, these items were combined into separate positive and negative subscales by summing across relevant items. Analysis of the positive mood subscale showed no significant effects. On the negative mood subscale, however, women in both experimental conditions reported relatively more negative mood than in the control condition, whereas men tended to report less negative mood in the experimental conditions, as shown by the significant Gender x Condition interaction, $F(2, 52) = 3.86$, $p < .05$, (see Figure 2).

Men and women, then, differed in their reactions to the conditioned tones. Women seemed to react much as one would expect on the basis of interpersonal theories of self-esteem: When a tone was played that had been paired with rejection and disapproval, their self-evaluations and mood became more negative. Unexpectedly, women's mood also appeared more negative when an approval tone was played. We speculate that this might be because *both* approval and disapproval represent an experience of being evaluated by others, others whose acceptance seems entirely conditional on how one behaves (see, e.g., Baldwin & Sinclair, 1996). Women might have found this overall experience unpleasant, even if at times the feedback was positive, and so led to enhanced self-evaluations. Although the discontinuity between mood and self-esteem responses was not predicted, it does serve to underscore that the effects of cued activation are not simply produced by affective conditioning. We argue that the cues become signals for a certain type of social feedback, which then shapes both self-evaluative and affective responses independently.

Men responded quite differently. Their self-esteem was most positive when the tone being played had once been paired with disapproval feedback. Their mood was relatively positive when either the approval or disapproval tone was played. To us, this response seems rather defensive, perhaps representing a compensatory response aimed at alleviating implicit feelings of social evaluation and rejection. We speculate that men might be especially prone to discount feedback when it comes from total strangers, as was the case in the bogus questionnaire.

It is important to note that men and women did not differ in their baseline level of trait self-esteem, but rather in their momentary self-evaluative reactions. Specifically, the self-esteem effects in this study were most pronounced on the performance subscale of the State Self-Esteem Scale (Heatherton & Polivy, 1991). Exploratory item analyses showed that the most striking effects were on the item, "I feel that I have less scholastic ability right now than others." Although we had not anticipated this reaction, it seems that participants perceived the word-search filler task as a test of some kind – a not unreasonable assumption, given that it came during a psychology experiment. Then when the tone began to sound, it might have retrospectively influenced the way participants felt about the task they just completed. It appeared, therefore, that the conditioned tones were primarily influencing self-evaluations of performance even in a situation that was not intentionally designed to induce these concerns. Consequently, in Study Two we examined the effects of cued activation during an achievement test.

Study 2

In the second study, we modified both the situation and the conditioning procedure. Instead of playing the conditioned tones while participants simply filled out scales, we played them while they worked on a difficult anagrams task. We presented the anagrams task as indicative of intelligence and future success in school, which is an ego-involvement induction commonly used in the test-anxiety literature. We then assessed participants' perceptions of their performance on the anagrams task. Previous research (e.g., Roberts & Nolen-Hoeksema, 1989) has not found gender differences in actual performance in such situations, but primarily in cognitive factors related to self-evaluation. One such variable that we measured is the ability to concentrate on the task at hand, rather than being distracted by self-evaluative thoughts (Sarason, Sarason, Keefe, Hayes, & Shearin, 1986).

Second, there was a slight interpretive problem introduced in Study 1 by the fact that all subjects were exposed to the two tones during the feedback-conditioning procedure, so both tones might have come to represent evaluation by others. In this second study, therefore, we modified the design (see also Baldwin & Meunier, 1999) so that each individual would be conditioned to only one tone, and this tone would be paired with either acceptance or criticism. During the testing phase, either this tone or another, neutral tone was played repeatedly while they worked. Again, we predicted that the conditioned tones would shape participants' self-evaluations of their performance, and we anticipated that the effects would be most pronounced for women.

Method

Participants. Eighty-seven University of Winnipeg introductory psychology students (45 women and 42 men; median age of 19.5 years) participated in the study for course credit. They were run individually by a female experimenter.

Procedure. Upon arrival at the experimental room, participants read and signed a consent form, and they were seated in front of a computer, which provided all of the other instructions for the experiment. The computer randomly assigned participants to one of eight treatments representing the possible combinations of experimental conditions and tone order; thus, the experimenter was blind to the participant's condition during the study.

Participants first engaged in a bogus visualization exercise during which they visualized 18 different kinds of "places" (e.g., crosswalk, farm) for five seconds each, followed each time by the computer presenting one of the distinctive tones. This exercise was designed to familiarize participants with one of the computer-generated tones (we will term this the *control tone*, as it was not conditioned to any social stimulus), and with the visualization exercise. After this exercise, participants rated their visualizations on a number of scales to support the cover story that the study was about different "cognitive styles."

Participants then filled out an Interpersonal Information Questionnaire, which asked them to generate the names of people who fit different descriptions like "a reliable person" or a "shy person." One description was of an *accepting* person, "who seems to accept you for who you are; who appears to like you even if you don't excel at everything; who will probably think you are competent even if you make a mistake or do not succeed at something." Another was of a *critical* person, "who seems quite demanding; who may be very evaluative, and accepts you only to the extent that you live up to certain standards; this person might also be someone who is perfectionistic." All participants generated a name for each description.

Next, participants were instructed as to which person they were going to visualize. Half were assigned the accepting person and half the critical person (designation was via a number on the questionnaire rather than reference to the description, which might have induced experimental demands). Participants read some prompts that were to guide their visualizations (e.g., "we would like you to try to visualize this person; try to picture the colour of the person's eyes"). They then visualized this person for 90 seconds during which the computer generated the second, CS tone sequence every five seconds and displayed the mes-

sage, "Please continue visualizing this person" 18 times. In this manner there were 18 conditioning trials designed to create an association between this *CS tone* (tones were counterbalanced across participants) and the visualized person. After this exercise, participants completed a Visualization Ratings sheet, again to support the cover story, and then worked on various filler tasks for 10 minutes.

Participants were then instructed to try to solve 10 anagrams, presented sequentially on the computer screen. They were allotted 30 seconds to try to solve each anagram. To increase ego-involvement, as in the test anxiety literature (Sarason, 1981), the instructions suggested that anagram performance was related to intelligence and that most high school and college students could complete them.

While participants worked on this task, the computer presented one of the two tones every five seconds, ostensibly as a timing signal. Participants in the experimental group heard the *CS tone* that had been presented during the person visualization exercise; participants in the control group heard the *control tone* previously heard during the "places" visualization exercise.

After the anagrams task, participants completed several measures. First was the Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988). Second, Heatherton and Polivy's (1991) State Self-Esteem Scale was used to measure fluctuations in momentary levels of self-esteem. Third, the Cognitive Interference Questionnaire (Sarason et al., 1986) was administered to measure intrusive thoughts that occurred during the anagrams task. We also asked a single question, "Please circle the number... which best represents the degree to which your mind wandered during the task you just completed," which participants answered on a 7-point scale. Then, participants were asked how many problems (out of 10) they thought they solved correctly on the anagrams test. Finally, as a manipulation check, they then indicated how the person they visualized earlier would feel about their task performance on a 7-point scale ranging from "very disappointed with my performance" to "very satisfied with my performance."

After completing these measures, the participants learned the purpose of the study. Finally, to guard against participants leaving with an association between a critical person and a distinctive tone, all participants were asked to visualize an accepting person at the sound of the *CS tone* they had heard during the person visualization exercise.

Results and Discussion

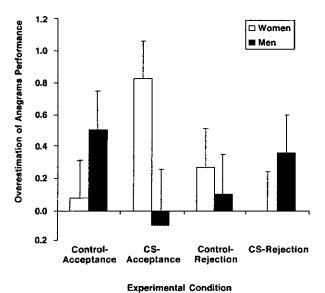As a manipulation check, participants were asked at

Figure 3. Overestimation of anagrams performance as a function of gender and experimental condition (Study 2).

the end of the study to rate how the significant other they visualized earlier would feel about their performance. A 2 (Tone: control vs. CS) x 2 (Prime: rejecting vs. accepting) x 2 (Gender: male vs. female) ANOVA was performed on this variable. There was a significant main effect only for prime, $F(1, 79) = 20.44$, $p < .001$. Participants who visualized an accepting person felt that person would be more satisfied with their performance ($M = 5.00$) than did participants who visualized a critical person ($M = 3.37$). Thus, the primes adequately represented accepting and critical others.

Preliminary analyses showed no effects involving gender or experimental condition on the number of anagrams successfully solved, $Fs < 1.5$; therefore this variable was entered in subsequent analyses as a covariate. First, a 2 (Tone: control vs. CS) x 2 (Prime: rejecting vs. accepting) x 2 (Gender: male vs. female) MANOVA was conducted with the major dependent variables: state self-esteem (Mean = 71.02, SD = 13.52), positive (Mean = 26.61, SD = 7.71), and negative mood (Mean = 19.56, SD = 6.86), cognitive interference (measured with both the CIQ scale, Mean = 23.56, SD = 12.45, and the single-item questionnaire, Mean = 2.92, SD = 1.51), and performance estimation (Mean = 4.91, SD = 1.93). This analysis showed effects for gender, $F(6, 73) = 2.89$, $p < .05$, and the Gender x Tone x Prime interaction, $F(6, 73) = 2.45$, $p < .05$. In contrast to Study 1, univariate analyses showed no significant effects on mood, and the only effect on state self-esteem was for gender, with men reporting higher self-esteem than

women, $F(1,78) = 11.31$, $p < .01$ (which replicates Study 1 as well as some past research, e.g., Josephs et al., 1992; see Kling et al., 1999).

In this study, the impact of the experimental variables was focused on self-ratings of performance during the anagrams task. Participants were asked how many problems (out of 10) they believed they had solved correctly on the anagrams test. Analysis of this measure showed only a significant three-way interaction between gender, tone, and prime, $F(1,78) = 8.33$, $p < .01$. For expositional purposes, a difference score was created by subtracting actual correct performance from self-estimates of performance (analysis of this difference score showed the same three-way interaction as the analysis of covariance, $F(1,79) = 7.49$, $p < .01$); means for this variable are displayed in Figure 3. This difference score allows an examination of the degree to which people engage in the well-known tendency to self-enhance and inflate one's self-evaluations. The most striking difference involved women in the two cued-activation conditions. In the condition where the tone reinstated a rejecting relationship, women showed no evidence of self-enhancement: Their estimates were exactly equal, on average, to their actual performance (yielding a difference score of zero). Conversely, women became most confident, giving the most glowing assessment of their own performance, when a conditioned tone reinstated an accepting relationship. As in Study 1, then, women's self-evaluations were influenced by cues for social feedback. Men showed a different, less clear pattern. Their self-ratings were relatively higher when a tone reinstated a critical relationship – again indicating the kind of coping or defensive response seen in Study One. Unexpectedly, they also were quite positive in the condition where they had visualized an accepting person, but the tone played was not the one that had been conditioned to that visualization. The explanation for this cell is not entirely clear; perhaps simply performing the accepting visualization had some beneficial carry-over effects, which were somehow erased if a tone reinstated the feelings during a performance task.

The remaining effects involved measures of interfering thoughts experienced during the anagrams task (see Table 1). The frequency of interfering thoughts experienced by participants was determined by summing up their responses to the 21 items of the CIQ. On this measure women reported more frequent interfering thoughts than men did, $F(1, 78) = 7.93$, $p < .01$. This main effect was qualified by a number of interactions. There was a marginally significant two-way interaction between tone and prime, $F(1, 78) = 2.97$, $p = .08$, indicating that in addition to the effects of gender

TABLE 1
Cognitive Interference Scores (CIQ Composite and Single-Item) as a Function of Gender, Person Visualized, and Tone Presented

Tone	Control Tone				CS (Conditioned) Tones			
Person Visualized	Accepting		Critical		Accepting		Critical	
Gender	Women	Men	Women	Men	Women	Men	Women	Men
CIQ composite	27.7	16.5	28.2	15.5	17.4	25.7	31.8	24.0
SD	14.2	11.0	12.7	9.1	4.0	12.8	12.0	12.8
Single Item	2.4	3.1	3.1	2.3	3.4	2.8	3.0	3.3
SD	0.9	1.6	1.6	0.9	2.1	1.7	1.6	1.4

Note: Higher numbers represent greater cognitive interference.

there was an overall tendency for people to be more distracted when the CS *tone* reinstated the evaluative relationship. Women appeared more distracted in the condition where they had visualized the evaluative person, as indicated by a marginally-significant Gender x Prime interaction, $F(1, 78) = 3.26, p = .07$. Finally, whereas men were more distracted in the CS condition than the control condition, women reported being less distracted in the CS condition, as indicated by a Gender x Tone interaction, $F(1, 78) = 5.46, p < .05$. The three-way interaction was nonsignificant on this measure.

On the single-item measure of cognitive interference, "the degree to which your mind wandered," only the critical three-way interaction was marginally significant, $F(1,78) = 3.38, p = .07$. As shown in Table 1, these self-reports of cognitive interference were not perfectly in line with the CIQ measure, or participants' estimates of their own performance. Both women and men reported a fairly high degree of distraction in the rejecting-tone condition, but women also reported distraction in the accepting-tone condition. This pattern for women is somewhat reminiscent of the finding in Study 1 that women responded negatively to both forms of conditioned tones.

Although there were some anomalies, many of the findings of this second study were consistent with those of the first study. In the context of a demanding task, the impact of conditioned tones was not apparent on participants' general sense of self-esteem and mood, but rather was focused on thoughts about their performance on the anagrams task. As in the first study, when women heard a tone that had been paired with negative social feedback, this led them to be more self-critical. In particular, they showed none of the documented penchant people usually have for overestimating their performance, instead giving a precisely accurate estimate (Figure 3). If they heard a tone that reinstated an accepting relationship, on the

other hand, they were quite willing to inflate their estimates of their performance, engaging in overestimation to a greater extent than any other group. Conversely, it was men exposed to negative-feedback cues who were somewhat inclined to overestimated their success at the anagrams task. As in Study 1, then, women's self-evaluations became more negative with the activation of negative feedback schemas, whereas men's self-evaluations paradoxically became, if anything, more positive.

The composite cognitive interference measure showed some two-way interactions that, although not predicted on the basis of Study 1's results, were generally consistent with the thrust of those findings. There was a marginally significant interaction showing that, irrespective of gender, the conditioned tone that reinstated the critical relationship tended to produce more distraction. A second, marginal effect showed that visualizing a critical person – irrespective of whether a tone was later played to reinstate the feelings – led women to experience more distraction. These findings, although not predicted, generally were in line with the notion that negative feedback is disruptive, particularly to the women in our sample. There was also an interaction between gender and tone condition, the meaning of which is less clear. In this study, men reported more distraction when hearing one of the conditioned tones, whereas women exposed to a conditioned stimulus reported less distraction than women in the corresponding control conditions. Examination of the means in Table 1, however, suggests that the low level of distraction for women was accounted for primarily by the condition where the conditioned tone activated an acceptance relationship, which again is consistent with the notion that they were responding positively to positive social feedback.

General Discussion
We believe there are two conclusions that can be

drawn from the current findings: one involving self-evaluative processes and one involving gender. First, both studies showed self-evaluative effects of auditory cues that had earlier been paired with social feedback. Thus, through simple conditioning processes we were able to create cues that could activate representations of social acceptance or approval on the one hand, or criticism and disapproval on the other. These cues were established either by presenting them as signals right before the social feedback was delivered (in Study 1) or by presenting them repeatedly, concurrent with a visualization of a certain type of relationship (in Study 2). The fact that such minimal conditioning treatments were successful at creating cues shows how closely attuned people are to social feedback and to learning the contingencies of social approval, presumably due to a core human need to belong (Baumeister & Leary, 1995). It also demonstrates that, consistent with much recent research, self-evaluative responses are closely tied to the activation of interpersonal cognitive structures representing evaluation, inclusion, and exclusion by others (e.g., Baldwin, 1992). Previous research had shown that cued-activation procedures could establish momentary states of social anxiety during a stressful interaction. The current research shows that cues can also influence people's explicit self-evaluations about their performance on concrete tasks. We believe that the impact of these cues is due to their becoming triggers for already-established relational schemas representing rejection and acceptance. Future research is required to establish the degree to which conditioning procedures such as these might ultimately alter the activation patterns of overlearned schemas themselves.

The second conclusion is that, at least in the kinds of circumstances explored in the current research, women and men do not respond in the same manner to the activation of representations of rejection and acceptance. We acknowledge that the results were not as clear or consistent as one might have liked. Nevertheless, there were several robust gender differences that must be explained. On the whole, women responded in a manner largely consistent with interpersonal theories of self-esteem: Activation of a sense of social rejection led them to be more self-critical than activation of a sense of social acceptance or approval. Men, conversely, seemed to respond in a defensive or compensatory manner to the activation of rejection. They rated themselves more highly on various scales, and reported performing better on concrete tasks. Presumably, women's highly interdependent self-concepts were momentarily undermined by the rejection feedback, whereas men were able to draw on other, less relationship-based, sources of self-esteem.

Alternatively, perhaps the gender difference occurred at the time of conditioning, with women associating the tones to the social outcome and men instead associating them to a defensive response. Either way, the findings demonstrate the utility of the cued-activation approach for examining gender differences in reactions to information representing evaluative and interpersonal feedback.

On the face of it, men would appear to be better off. When exposed to a trigger for feelings of rejection, men manage to respond in such a way as to feel better about themselves rather than worse (see Roberts, 1991, for a review of related findings). On the other hand, Leary and colleagues (Leary & Baumeister, 2000; Leary et al., 1995) make the case that the self-esteem system has evolved because it is functional. According to this view, in acting as a gauge of when one is and is not accepted by others, the self-esteem system functions to help people maintain social inclusion. Thus, it might be anticipated that people who are better able to learn contingencies of social feedback might also be better able to maintain positive, satisfying relationships with others. An individual who ignores or defends against input from the self-esteem sociometer might run the risk of ignoring important social feedback, and so alienating others. Clearly, there may be costs and benefits to both types of response. One benefit of women's responsiveness to social feedback, for example, is seen in the overestimation scores in Study 2, where women cued with acceptance feedback gave the most positive self-evaluations of any group.

Although our results identified gender differences, it is important to recognize that several studies have shown that both men and women are influenced by relational schemas representing acceptance and rejection, so it is by no means the case that such processes apply only to women. These studies typically used direct primes to activate the relational schemas, though, and it may be that the relatively indirect activation produced by conditioned cues is more open to individual differences in response. If so, future research will need to examine more closely the cognitive mechanisms mediating these sorts of differences in self-evaluative reactions. In some recent work (Dandeneau & Baldwin, 2002), for example, we have found that it is possible for people to learn, via repetitive training, to inhibit representations of rejection. Perhaps men in our sample were simply more practiced at this inhibitory response (e.g., as a result of gender role expectations regarding the nonexpression of dependency or insecurity) and this allowed them to override the activation produced by the conditioned tones. If so, this suggests that people might learn to control, in whatever manner is most functional for

them at the time, their emotional and cognitive responses when images of social rejection are activated.

In conclusion, our findings demonstrate that triggers for structures representing social rejection and acceptance can subtly shape people's explicit self-evaluative reactions. Individual differences, in this case associated with gender, can moderate the nature of people's responses. Additional research is called for to clarify the cognitive processes involved when people manage to defend against, override, or otherwise cope with the activation of rejection schemas, and also when they are able to benefit from the activation of acceptance schemas.

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