EMOTIONAL CONTAGION

Gender and Occupational Differences

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Theorists have proposed that men and women and those in various occupational groups should differ in their susceptibility to primitive emotional contagion. Study 1 was designed to explore the extent to which gender and occupation affected respondents' self-reports of emotional contagion, as measured by the *Emotional Contagion (EC)* scale. As predicted, women in a variety of occupations secured higher total EC scores than did men. Study 2 was designed to determine the extent to which gender affected self-reports of emotional contagion (again as measured by the EC scale) and actual responsiveness to others' emotions. As predicted, women received higher EC scores, reported sharing the targets' emotions to a greater extent, and were rated by judges as displaying more emotional contagion than did men.

Recently, researchers have become interested in the process of primitive emotional contagion. Emotional contagion has been defined as:

> The tendency to automatically mimic and synchronize expressions, vocalizations, postures, and movements with those of another person's and, consequently, to converge emotionally. (Hatfield, Cacioppo, and Rapson, 1994, p. 5)[1]

Early investigators speculated that conscious reasoning, analysis, and imagination may account for the fact that people often come to share the emotions of those around them. Generally, however, theorists are now agreed that primitive emotional contagion is far too subtle, automatic,

quick, and ubiquitous to be accounted for by such processes. Hatfield and her colleagues (1994), for example, have argued that generally the contagion process operates in this way: (a) in interaction, people tend to automatically and continuously mimic and synchronize their movements with the facial expressions, voices, postures, movements, and instrumental behaviors of others; (b) subjective emotional experiences are affected, moment to moment, by the activation and/or feedback from such mimicry; and (c) consequently, people tend to "catch" others' emotions, moment to moment.

Logically, people should be especially likely to catch others' emotions if they (a) pay close attention to others, (b) construe themselves as interrelated to others rather than as independent and unique, (c) are able to read others' emotional expressions, (d) tend to mimic facial, vocal, and postural expressions, and (e) are aware of their own emotional responses. As yet, however, there is no evidence to support these speculations. Studies 1 and 2 were designed to explore the extent to which two basic demographic variables — gender and occupation — affect susceptibility to contagion.

Gender and Emotional Contagion

Hatfield and her colleagues (1994) theorized that men and women should differ in their susceptibility to emotional contagion. Traditional gender roles taught men and women to be differentially sensitive to the emotional states of others. Women were socialized to be nurturant, emotionally expressive, and emotionally responsive, whereas men were socialized to try to deal logically, coolly, and instrumentally with the demands of the outside world (Bem, 1994; Tavris & Offir, 1984). Men and women have been found to differ in the five characteristics thought to be the building blocks of contagion.

1. From birth onward, girls and women seem to be especially attentive to others' emotional expressions. They establish eye contact faster, make eye contact more frequently, maintain it for a longer duration, and spend a greater percentage of time locking eyes with others. Boys and men tend to avert their gaze (Haviland & Lelwica, 1987; Haviland & Malatesta, 1981; Hittelman & Dickes, 1979).
2. Men and women differ in their self-construals and social orientations. Women are less independent and more interdependent in their self-construals than are men (Markus & Kitayama, 1991) and are more individualistic and less collectivist in their social orientations than are men (Triandis, 1994).
3. Men and women differ in how well they interpret emotional cues (Haviland & Malatesta, 1981). From at least 4 years of age onward, girls and women are better at processing, storing, and retrieving social stimuli such as faces, names, or voices than are boys and men (Feldstein, 1976; Haviland & Malatesta, 1981). Generally, women are also better than men at decoding nonverbal communications (Buck, 1984; Hall, 1984). Hall (1978) conducted a meta-analysis of 125 studies exploring gender differences in the ability to read

nonverbal expressions of emotion. She found that, at all ages, women and girls were more accurate at judging emotional states, regardless of the emoter's gender and means of communication (face, voice, posture, or some combination thereof).

4. Men and women differ in their tendency to mimic emotional expressions. In laboratory studies, it has been observed that women are more likely to cry and to report feeling distressed at another's distress (Eisenberg & Lennon, 1983).

5. Finally, men and women have been found to differ in awareness of their own emotional responses (Hall, 1984). If women do pay more attention to others; construe themselves as interrelated; are better at decoding nonverbal messages; are more likely to mimic faces, voices, and postures; and rely more on peripheral feedback than do men, it seems likely that women might also be more susceptible to emotional contagion than are men. Thus, we propose:

Hypothesis 1: Women will be more sensitive to emotional contagion than will men. They will be more susceptible, overall, and more likely to catch both positive (joy and love) and negative emotions (anger, fear, and sadness) than will men.

Occupation and Emotional Contagion

People generally tend to choose occupations that suit their temperaments and personalities. Once they are caught up in their careers, their environments and activities usually shape them further. It seems reasonable to argue that different careers both require and impart special traits and skills. This logic suggests that men and women in various occupations should differ in susceptibility or resistance to emotional contagion. Traditional wives and mothers, nurses, social workers, and so forth are trained to "tune in" to the suffering of others, so that they may help them. Traditional men, warriors, athletes, and so forth may be trained to "tune out" their own and others' suffering. Physicians, for example, must be sensitive to the anxiety and discomfort of others and empathic with the emotional states of those with whom they interact professionally. Physicians who are good at recognizing emotions (conveyed by body movements) have been found to have better rapport and more success with patients than do their less sensitive peers (Friedman & DiMatteo, 1982). At times, of course (such as when talking to a terminally ill patient or a bereaved family, or when conducting an autopsy), physicians must be able to keep their distance; to keep their emotions under control. Marines, on the other hand, must learn to control emotions such as fear, doubt, and (perhaps) anger that might interfere with their ability to coolly follow orders in life-threatening situations. If physicians routinely "tune in" to the suffering of others, and marines routinely "tune out" their own and others' suffering, one would predict that these two occupational groups would differ in how susceptible they are to catching the emotions of others. Thus, in our second hypothesis we propose:

Hypothesis 2: Students (who are just beginning their occupational training) will be more or less "typical" in their susceptibility to emotional contagion. (They may be more or less susceptible to contagion than are members of various occupational groups which require specialized skills — they are included in this study simply as a point of comparison.) Physicians and marines will differ significantly in susceptibility to contagion. They may differ little, if at all, in their susceptibility to catching positive emotions. Physicians should be more susceptible than marines to catching the negative emotions, however.

Gender × Occupation and Emotional Contagion

How might men and women in the various professions be expected to differ in susceptibility to emotional contagion? It is difficult to say. On one hand, we might expect traditional gender differences to exist in all occupations. (If this were the case, scientists would want to survey men and women from a variety of occupational groups to ensure the generality of their findings.) On the other hand, we might expect traditional gender differences to exist only when men and women are engaged in traditional occupations. When men and women are employed in the same occupations, we might expect traditional gender differences to be minimal — either because men and women were fairly similar at the time they chose to enter the profession or because they become increasingly similar over time. Thus, in Question 1 we asked:

Question 1: Are women more sensitive to emotional contagion than are men, regardless of profession? Are women in all professions more likely to catch both positive emotions (joy and love) and negative emotions (anger, fear, and sadness) than are men?

The following surveys were designed to test these questions.

STUDY 1[2]

Method

Research Participants
Participants were drawn from three groups. The first sample consisted of 290 men and 253 women who were students at the University of Hawaii. They ranged in age from 18 to 53 years, with a mean age of 22.8 years ($SD = 4.84$). The second sample consisted of 61 men and 24 women who were physicians at the Queen's Medical Center in Honolulu, St. Francis West Hospital in Ewa Beach, or Tripler Military Hospital in Honolulu. They ranged in age from 24 to 80 years, with a mean age of 40.9 years ($SD = 13.29$). Years of practice ranged from 1 to 50 years, with a mean

of 11.4 years (SD = 11.77). The physicians' areas of specialization varied widely; however, most were general practitioners or specialists in internal medicine, radiology, or pediatrics. The third sample consisted of 184 men and 71 women who were Marines from the First Marine Expeditionary Brigade at the Kaneohe Marine Corps Air Station on the island of Oahu. They ranged in age from 18 to 44, with a mean age of 24.6 years (SD = 5.2). Years of military service ranged from 1 to 21 years, with a mean of 5.26 years (SD = 4.71). The Marines ranged in rank from private first class to captain.

Combining the three groups provided a large and diverse sample (N = 884). The total sample consisted of 535 men and 349 women. Age ranged from 18 to 80 with a mean of 25.1 years (SD = 8.03). The ethnic diversity of the sample reflected Hawaii's multicultural society and included African Americans (5.5%), European Americans (29.7%), Chinese Americans (6.3%), Filipino Americans (6.9%), Hawaiian Americans (21.3%), Japanese Americans (1.5%), other Asian Americans (such as Indian, Korean, Thai, Vietnamese Americans, and those of mixed Asian ancestry (14.9%)), and others (e.g., Native Americans, Pacific Islanders, and Samoans (14%)).

Assessing Susceptibility to Emotional Contagion

Respondents were asked to complete an early version of the *Emotional Contagion Scale (EC1)*, a 38-item, self-report instrument designed to assess susceptibility to catching two positive emotions (joy/happiness and love), three negative emotions (fear/anxiety, anger, and sadness/depression), and a general awareness of, and sensitivity to, the emotions of others. The EC1 scale included such items as "being with a happy person makes me feel light and cheerful" (joy/happiness) and "when someone paces back and forth I feel nervous and anxious" (fear/anxiety). They indicated their responses on a four-point scale, ranging from (1) *never* to (4) *always*. The higher the EC1 score, the more susceptible to emotional contagion the person is said to be. Susceptibility to specific emotions was assessed by using six subscales, each consisting of items tapping the specific emotion. (For information on the reliability and validity of the EC1, see Doherty, 1993, or Stockert, 1993.) In this study, the EC1 scale exhibited moderately good reliability (Chronbach's α = .79).

RESULTS

The data were analyzed using a 3 × 2 analysis of variance (ANOVA) on the participants' Total EC1 scores and a 3 × 2 multivariate analysis of variance (MANOVA) of the subscales described above (joy/happiness, love, fear/anxiety, anger, sadness/depression, and general). Bartlett's test of sphericity indicated that MANOVA was appropriate for these intercorrelated variables ($\chi^2(df = 20) = 933.81$, $p < .0001$). The independent

Table 1

The impact of gender on Emotional Contagion 1 scores:
Means and standard deviations

Emotional Contagion 1 Scales and Subscales	Gender			
	Men		Women	
	Mean	SD	Mean	SD
Total EC1 score	2.82_a	.22	3.03_b	.21
Individual emotions				
Joy	3.14_a	.36	3.31_b	.34
Love	3.28_a	.44	3.46_b	.37
Fear	2.61_a	.43	2.96_b	.38
Anger	2.39	.36	2.49	.36
Sadness	2.50_a	.42	2.83_b	.41
General	2.94_a	.33	3.08_b	.28

Note: Sample means are reported. Means with different subscripts are significantly different.

variables in both models were gender and occupation (student, marine, and physician). Preliminary model estimation indicated no systematic effects for age, education, or years of service (correlations with the Total EC1 scores were $-.05$, $-.06$, and .04, respectively). Therefore, these variables were not included in subsequent analyses as covariates. The total N of 884 was reduced to 880 because of deletions for missing values. Although unadjusted alphas are reported, a Bonferroni adjustment of the family-wise error rate ($p < .05$) was used to minimize the risk of Type 1 errors. All post hoc tests employed the Tukey HSD test ($F_T < .05$).

The Impact of Gender on Emotional Contagion

Hypothesis 1 proposed that women would be more susceptible to emotional contagion than would men. The results of the ANOVA provide strong support for this hypothesis ($F(1, 875) = 60.47, p < .0001$). The mean was 2.82 ($SD = .22$) for the men and 3.03 ($SD = .21$) for the women (see Table 1).

The results of the MANOVA indicate that gender had an important effect on the emotion subscales. With the use of Wilks's lambda, the combined DVs were found to be significantly affected by gender ($F(6, 869) = 14.46, p < .0001$). The results reflected a moderate association between gender scores and the combined DVs ($\eta^2 = .10$). The combined DVs formed only one significant conditional variate which was defined primarily by the sadness and fear subscales with loadings of .75 and .67, respectively.

Univariate results show that women were significantly more susceptible

Table 2

The impact of occupation on Emotional Contagion 1 scores: Means and standard deviations

Emotional Contagion 1 Scales and Subscales	Occupation					
	Students		Marines		Physicians	
	Mean	SD	Mean	SD	Mean	SD
Total EC1 score	2.95_a	.23	2.81_b	.24	2.89_a	.22
Individual emotions						
Joy	3.27_a	.35	3.08_b	.38	3.11_b	.30
Love	3.35	.41	3.37	.46	3.30	.41
Fear	2.83_a	.43	2.59_b	.44	2.70_b	.41
Anger	2.49_a	.32	2.35_b	.33	2.48_a	.33
Sadness	2.71_a	.42	2.46_b	.46	2.63_a	.43
General	3.01_a	.30	2.95	.36	3.03	.27

Note: Sample means are reported. Means with different subscripts are significantly different.

than men to the emotions of others on all subscales except anger. Women scored higher on the Total EC1 scores ($t(880) = -14.00, p < .0001$) as well as on the joy ($t(880) = 6.98, p < .0001$), love ($t(880) = 6.53, p < .0001$), sadness ($t(880) = 11.53, p < .0001$); and the general ($t(880) = 6.56, p < .0001$) subscales. (A significant univariate F was found for the fear subscale. However, in the face of a significant Gender × Occupational interaction, this effect will be discussed below.)

The Impact of Occupation on Emotional Contagion

Hypothesis 2 predicted that people in different occupations would vary greatly in susceptibility to emotional contagion. The results of the ANOVA offer evidence that the groups do, in fact, vary significantly on their Total EC1 scores ($F(2, 875) = 17.95, p < .0001$). As can be seen in Table 2, the Total EC1 scores of the students (who were as yet untrained for any occupation) indicate that, in general, the students were much more susceptible to contagion than were the Marines and physicians (who were well into their careers). However, both the students' and the physicians' scores were significantly higher than those of the Marines.

Wilks's criterion indicated that the combined DVs were also significantly affected by occupation ($F(12, 1738) = 9.28, p < .0001$). A slightly stronger association was found ($\eta^2 = .12$) between occupation and the composite DV than was found for gender. The combined DVs formed two significant conditional variates. The first variate, accounting for approximately 85% of the variance, was defined primarily by the joy, sadness, fear, and anger subscales as indicated by correlations between the

conditional DVs and the composite variate (r = .67, .61, .55, and .53, respectively). The second variate accounted for almost 15% of the variance with only the general subscale loading to any definitive degree (r = .50). Significant univariate main effects were found for the joy ($F(2, 875)$ = 11.32, $p < .001$) and sadness ($F(2, 875)$ = 20.11, $p < .0001$) subscales. Differences for the love and general subscales were nonsignificant. Significant univariate Fs were also found for the fear ($F(2, 875)$ = 15.14, $p < .0001$) and anger ($F(2, 875)$ = 15.69, $p < .0001$) subscales. However, because significant interactions were found involving these variables, they will be discussed below.

Our next step was to explore the exact nature of these occupational differences. Again, Tukey's HSD test indicated that the students' scores were significantly higher than both other groups on the joy and fear subscales and that both the students' and the physicians' scores were significantly higher than the Marines' on the anger and sadness subscales. To summarize the comparisons of primary interest — the relative susceptibility to emotional contagion of the physicians versus the Marines — it was found that the physicians' scores were significantly higher than the Marines' on the Total, as well as on the anger and sadness subscales.

The Impact of Gender × Occupation on Emotional Contagion

In Question 1, we asked whether the same traditional gender differences that are assumed to exist in the general population would be found in a variety of occupational groups (specifically, students, physicians and Marines). The results for the Gender × Occupation interaction on the Total EC1 score do not *fully* resolve the question ($F(2, 875)$ = 2.92, p = .053).

In our multivariate model, Wilks's lambda indicated a small but significant effect on the composite DV for the Gender × Occupation interaction ($F(12, 1740)$ = 2.45, $p < .004$) with much less of an association (η^2 = .03) than was found for either occupation or gender. The combined DVs formed only one significant conditional variate which, as was observed with the variates formed for the tests of effect for both occupation and gender, was defined primarily by fear and anger (r = .69 and .61, respectively).

As noted above, the univariate results indicated a significant interaction for the fear ($F(2, 875)$ = 5.18, $p < .005$) and anger ($F(2, 875)$ = 5.83, $p < .005$) subscales. On the fear subscale we find, in both the student and Marine groups, traditional gender differences consistent with the main effects already described. However, when we turn to the physicians we discover that these traditional gender differences have all but disappeared. Male physicians exhibited increased susceptibility to emotional contagion to such a degree that male and female physicians are

almost equally susceptible to the fear of others (M for male physicians = 2.69, SD = .39; M for female physicians = 2.71, SD = .48). Finally, there was a Gender × Occupation interaction for the anger subscale. Students reflected traditional gender differences in susceptibility to contagion (i.e., M for men = 2.40 (SD = .36); M for women = 2.53 (SD = .36)). Neither physicians nor Marines reflected these gender differences, however. Physicians were slightly more affected by anger (i.e., M for men = 2.48, SD = .32; M for women = 2.45, SD = .37) than were the Marines (i.e., M for men = 2.35, SD = .32; M for women = 2.36, SD = .37).

STUDY 2[3]

This experiment was conducted to test Hypothesis 1, which proposed that women would be more vulnerable to emotional contagion than would men. Specifically, we proposed three subhypotheses.

1. Women will perceive themselves to be more susceptible to emotional contagion than will men (i.e., women will secure higher scores on the EC scale than will men). Women should not just *think* they are more susceptible to emotional contagion than are men, but they should actually *be so*. Thus, we would predict that when participants observe happy and sad interviews that:

   1A. Women's self-reports of the emotions they experience while watching the interviews will reveal more evidence of contagion than will men's.
   1B. Objective judges will rate women's faces as showing more evidence of contagion than do men's.
   1C. Because theoretically, people's EC scores, people's self-reports of emotions, and judges' ratings of participants' emotions are all measuring the same thing (susceptibility to emotional contagion) we would expect all three indicants of contagion to be positively correlated.

Method

Research Participants
The sample consisted of 63 men and 125 women who were undergraduates at the University of Hawaii. Their average age was 23.9 (SD = 5.04). Their ethnic distribution was typical of Hawaii's multicultural population. They identified themselves as: African American (0.5%), Chinese American (12.8%), European American (19.1%), Filipino American (9.0%), Hawaiian American (3.7%), Japanese American (37.2%), Korean American (2.7%), Mixed (3.2%), and other (11.7%).

Stimulus Tape
Our first step was to prepare a tape that contained both the experimental instructions and the experimental stimuli. Two women, an Asian Ameri-

can and a European American, were chosen to be the senders of the
emotional messages. (In all previous emotional contagion research, men
[and only men] were recruited to deliver the emotional messages. To
increase the generalizability of our findings, in this experiment, we asked
an Asian-American woman and a European-American woman [both in
their 20s], to record the emotional messages. Research suggests that
women should be better senders of emotional material than are men. This
was a second reason for recruiting female stimulus persons.) Each woman
was asked to tell a happy and a sad story from her own personal experience
while being videotaped. The European-American woman told a happy
story about the delights of playing music for the Bolshoi Ballet company
and a sad story about the near death of her infant son. The Asian-
American woman told a happy story of being asked to join a friend for a
trip to France and a sad story about visiting her grandmother in the
hospital after a near fatal stroke. Each story lasted approximately 2.5 min.

The four stories were edited onto a single tape. The tape contained
instructions for the experimental participants, the four stories, and pauses
between the stories so that subjects would have time to indicate their
reactions to the tapes (see the Procedure section). Two versions of the tape
were constructed. On the first, the European-American woman's stories
appeared first; on the second, the Asian-American woman's stories ap-
peared first. On both tapes, the happy stories came first, the sad stories
second.[4] Participants were randomly assigned to listen to one of the two
versions of the tape.

Procedure

Participants were recruited from undergraduate psychology classes to par-
ticipate in a study of "preferences for cooperative learning partners."
When they arrived for the experimental hour, they were asked to provide
some demographic information and to complete an 18-item EC scale (see
Measures).

Then they were led to a small office and seated at a table, containing a
television and videocassette recorder. They were given a videotape, which
contained the experimenter's instructions and the four interviews. They
were also given the questionnaire on which they could indicate their reac-
tion to the potential partners and to their stories. Participants were re-
minded that they might wish to pay close attention to the videotapes
because, at the end of the session, they would be asked to choose one of
the women as their learning partner. The experimenter then asked if they
had any questions. He/she instructed the participants to come outside
when they were finished and left the room, closing the door.

After viewing each interview, participants were asked to fill out scales
asking how happy and how sad they had felt. At the end of the videotape,
they were asked which woman they would prefer to work with in the

cooperative learning situation. Participants were videotaped by a hidden camera while they viewed the stimulus stories.

When participants emerged from the experimental room after viewing the stimulus tapes, they were fully debriefed. The experimenter asked for their permission to view the videotape. Only one man declined and his tape was erased. One woman reported that she knew the stimulus person and had been told about the nature of the experiment prior to viewing the tape. She was also dropped from the study.

Measures

The Emotional Contagion scale. In this experiment, an 18-item EC scale (Doherty, 1993) was used to assess susceptibility to emotional contagion. The EC is designed to measure susceptibility to five basic emotions — two positive emotions (joy/happiness and love), three negative emotions (fear/anxiety, anger, and sadness/depression), and a general awareness of, and sensitivity to, the emotions of others. The EC contains such items as "If someone I'm talking with begins to cry, I get teary-eyed" (sadness/depression) and "It irritates me to be around angry people" (anger). Participants were asked to indicate their responses on a four-point scale, which ranged from (1) *never* to (4) *always.* The higher the EC scale score, the more susceptible to emotional contagion subjects were said to be. (For information on the reliability and validity of this scale see Doherty, 1993, or Stockert, 1993.) In the former study, the EC was found to possess excellent construct validity, being positively correlated with affective orientation (Booth-Butterfield & Booth-Butterfield, 1990), femininity (Spence & Helmreich, 1978), and emotional empathy (Mehrabian & Epstein, 1972). In this study, the EC was found to possess adequate reliability (Cronbach's $\alpha = .82$).

Self-reported emotional contagion. Participants were asked to indicate how happy and sad they were while observing each interview. They rated their feelings on a scale developed by Borg (1982), which allows the ratio measurement of categorical data related to subjective experience of intensity (see Borg for information on the reliability and validity of this scale). The two questions asked, "While watching the videotape, how happy (sad) did you feel?" Possible answers ranged from (0) *nothing at all* to (11) *extremely strong.* These raw data were then treated in two ways. First, to determine the *content* of the participants' reactions, a total Happiness Index (HI; score on the happiness question minus the score on the sadness question) was constructed. The HI had a possible range of +11 (extremely happy) to −11 (extremely sad).

A second index was developed to assess the *intensity* of emotional contagion irrespective of emotion type. The Emotional Contagion Index (ECI) was constructed from the HI as follows: (a) For reactions to happy stim-

uli, positive scores greater than or equal to 0 were retained. Negative scores (indicating a sad reaction) for happy stimuli were rescored as 0 (i.e., no contagion occurred); (b) For reactions to sad stimuli, scores less than or equal to 0 were taken as absolute values. Positive scores (indicating a happy reaction) to sad stimuli were rescored as 0 (i.e., no contagion occurred). The ECI, then, is an absolute indicator (not valenced to emotion type) of the degree (intensity) of emotional contagion, which could range from 0 (no contagion) to +11 (extreme contagion).

Participants' facial expressions of emotional contagion.   The videotapes containing the participants' facial expressions were edited into tapes containing 752 30-s segments (188 subjects × 4 segments for each subject).[5] Each segment began approximately 45 s after the subjects began watching the stimulus interview (this lag was designed to give subjects time to become involved in the story) and ended 30 s later. On the tape, each participant's reactions to the four segments were presented in random order.

Three judges (who were unaware of our hypotheses or the stimuli that evoked the expressions) were asked to view the edited tape. Three women were chosen as our judges. This was because women have generally been found to be superior to men in decoding facial expressions of emotion in both men and women (Buck, 1984; Hall, 1984), and we wanted judges who were as sensitive to facial expressions as possible. Women with Asian, European, and mixed backgrounds were chosen to minimize potential cultural bias in judging the expression of emotions. The judges were asked to rate the type and degree of emotion displayed by each face in the 30-s segment on the same Borg scales (one for happiness and one for sadness) described earlier. The judges' HI ratings were averaged, and an ECI was calculated in the manner described earlier.

The judges' ratings did seem to be reasonably reliable. Interrater reliabilities for the three judges' ratings of facial expressions (HI) were computed by the Spearman-Brown formula for each of the four stories. They ranged from .80 for reactions to the sad story told by the Asian-American stimulus person to .93 for the reactions to the happy story told by the European-American stimulus person. The average interrater reliability for the four stories was .87.

Results

Manipulation Check
Our first step was to make sure that the happy person's emotional expressions and story were indeed happier than her sad expressions and stories. To ensure that they were, a pretest was conducted. Eleven judges were asked to view the stimulus tapes, focusing on the speakers' faces, voices, and gestures, and to rate the happiness/sadness expressed in each interview

Table 3

Mean self-reported emotional contagion and judges' ratings of contagion
categorized by gender, stimulus person's culture, and emotion type

| | *Stimulus Person's Culture and Type of Emotion* | | | | |
| | | *European American* | | *Asian American* | |
Group	*Total*	*Happy*	*Sad*	*Happy*	*Sad*
Self-Rating					
Women *(SD)*	3.89 (1.77)	4.08 (2.30)	4.40 (2.65)	3.54 (2.18)	3.53 (2.53)
Men *(SD)*	2.73 (1.31)	2.94 (1.86)	3.46 (2.56)	2.33 (1.73)	2.18 (1.85)
Judge's ratings					
Women *(SD)*	1.14 (0.89)	1.59 (1.59)	0.84 (1.09)	1.38 (1.45)	0.78 (0.98)
Men *(SD)*	0.73 (0.69)	1.14 (1.58)	0.43 (0.60)	0.85 (1.33)	0.49 (0.65)

(using the same Borg scales described earlier). As expected, the happy
interviews were rated significantly higher on the HI scale ($M = 5.68$, SD
$= 3.69$) than were the sad interviews ($M = -4.93$, $SD = 4.14$), ($t(42)$
$= 8.98$, $p < .001$).

Tests of Hypotheses

Hypothesis 1 stated that women should be more susceptible to emotional
contagion than were men. The appropriate test for our hypothesis is a 2
(Gender) × 2 (Stimulus Person's Culture — Asian American or European
American) × 2 (Stimulus Person's Emotion — happy or sad) factorial de-
sign. Gender was a between-subjects factor and stimulus person and emo-
tion were within-subject factors. Hypotheses 1A, 1B, and 1C were tested
in separate analyses.

Our first step was to examine gender differences on our first dependent
variable — Total EC scale scores. As predicted, women received higher
scores on the EC scale than did men. Women received an average score of
3.07 ($SD = 0.31$); men a score of 2.81 ($SD = 0.32$). These differences
were significant ($F(1, 181) = 26.69$, $p < .001$).

Second, we looked at gender differences in subjects' self-reports of con-
tagion (see Table 3). As predicted, women's self-reported ECI scores (M
$= 3.89$, $SD = 1.77$) were higher than were men's ($M = 2.73$, $SD =$
1.31), ($F(1, 181) = 20.40$, $p < .001$). We also found a main effect for
the culture of the stimulus person ($F(1, 181) = 24.60$, $p < .001$). As we
noted, women's ECI scores were higher than were men's. In addition,
participants were more likely to catch the emotions of the European-
American woman than of the Asian-American stimulus person. This may
be caused by expansiveness of expression in the European-American stimu-
lus person, which is consistent with the literature on cultural differences
in the display of emotion (Scherer, Wallbott, & Summerfield, 1986). In
addition, we secured a significant stimulus Culture × Emotion interac-

tion ($F(1, 181) = 4.72$, $p < .05$), such that participants reported greater ECI for sad than happy emotions for the European-American stories; however, the difference was very slightly in the opposite direction for the Asian-American stories.

Judges' ratings of participants' facial expressions also confirmed women's greater susceptibility to contagion (again, see Table 3). Judges' rated women 1.14 ($SD = 0.89$) and men .73 ($SD = 0.69$) on the ECI measure. This time, we secured a main effect for gender ($F(1, 173) = 9.51$, $p < .001$), and for emotion type ($F(1, 173) = 26.53$, $p < .001$). Judges felt that participants showed a stronger reaction to the happy interviews than to the sad ones.

Finally, we proposed that the three measures of emotional contagion should be positively correlated. We found clear support for this contention. Overall, subjects' *EC* scale scores correlated significantly with both self-reported ECI scores ($r = .45$, $p < .001$) and raters' judgments of participants' emotions on the ECI measure ($r = .25$, $p < .001$). Participants' self-reports of emotional contagion were also correlated with judges' ratings of emotional contagion ($r = .19, p < .05$).

DISCUSSION

In this duo of studies, we explored three questions. We found that there were individual differences in susceptibility, or resistance, to catching the emotions of others. In both Studies 1 and 2, we found compelling evidence that generally women were somewhat more susceptible to emotional contagion (for both positive and negative emotions) than were men. In Study 1, women from a variety of occupations reported being more susceptible to emotional contagion (as assessed by the EC1 scale and the individual EC subscales) than did men. In Study 2, judges also found that college women displayed more emotional contagion (to both positive and negative emotions) in a seminaturalistic setting than did men. This research, then, seems to demonstrate that women are somewhat more affected by the emotional atmosphere that surrounds them than are men.

Also, as predicted, people in various occupations reported differing in sensitivity to contagion. Students, who had not yet selected a career and/ or been socialized into one, showed more evidence of contagion, both generally and to specific emotions, than did either physicians or Marines. Although physicians and Marines differed little on susceptibility to contagion for the positive emotions, they did differ on sensitivity to the negative emotions of others. The physicians remained far more sensitive to the negative emotions of anger, fear, and sadness than did the Marines.

Our final step was to determine whether the EC scale Total score and the scores of the individual emotion subscales of the EC scale were useful measures of emotional contagion. Critics have often criticized the use of self-report measures to assess such complex processes as emotional sensitiv-

ity to the emotional experience/expressions of others. They point out that often respondents are not consciously aware of how they generally react to others. Even if they are, they may not wish to admit being "overly" sensitive or "overly" insensitive to the feelings of others. Thus, one purpose of Experiment 2 was to determine the extent to which men and women not only *claimed* to differ but the extent to which they actually *did* differ in their tendency to catch others' emotions. We found that, as predicted, there was a significant correlation between participants' EC self-reports and judges' ratings of participants' actual emotional reactions. (Since this study was conducted, Stockert (1993) has replicated these findings. She confirmed that men's and women's Total EC scale scores predicted their tendency to actually catch others' positive and negative emotions.)

What are the implications for these findings? People can use multiple means to gain information about others' emotional states. Most people are fully aware that they can use conscious analytic skills to figure out what makes other people "tick." They seem to be less aware that they can gain even more information by focusing in now and then on *their own* emotional reactions during social encounters. As people automatically mimic their companions' fleeting expressions of emotion, they often come to feel pale reflections of their partners' feelings. By attending to this stream of tiny moment-to-moment reactions, people can and do "feel themselves into" the emotional landscapes inhabited by their partners.

In fact, there is evidence that what people think *and* what they feel may provide valuable, and different, information about others. Hsee, Hatfield, and Chemtob (1991), for example, found that people's conscious assessments of what others "must be" feeling were heavily influenced by what the others *said*. People's own emotions, however, were more influenced by the others' nonverbal clues as to what they were *really feeling*.

Usually, the information one gets from consciously observing one's own and others' emotional reactions might be expected to give one an "edge" in social encounters. In many situations, then, women might be expected to have a slight edge in dealing sensitively with others. Men may wish to learn to attend more closely to their own emotional reactions and those of others, in such settings. In some very special circumstances, of course — for example, when a person is forced to deal with others' intense expressions of fear, anxiety, sadness, anger, or pain, for a prolonged period — the ability to share others' emotions may be a disadvantage. People may well have to learn how to "turn off" their emotions or gather up the courage to leave the scene if they are to function effectively. In such settings, men may be expected to have a slight edge. This time, it is women who will have to engage in a bit of "insensitivity training" if they are to function effectively.

We were uncertain as to how gender and occupation might be expected to interact in shaping susceptibility to emotional contagion. It made some sense to predict that gender socialization might mean that women in all

bury Park, CA: Sage.
Hatfield, E., Cacioppo, J., & Rapson, R. (1994). *Emotional contagion*. New York: Cambridge University Press.
Haviland, J., & Lelwica, M. (1987). The induced affect response: 10-week-old infants' responses to three emotion expressions. *Developmental Psychology, 23,* 97–104.

occupations were more sensitive to contagion than were men in those same occupations. It made equal sense to predict that traditional gender differences might disappear once people began to engage in the same occupations. Unfortunately, the data do not provide a clear answer to this question. When we look at Total EC scores, we find no evidence of a Gender × Occupation interaction. This would suggest that although gender and occupation both have an impact on susceptibility to contagion, the two do not interact. However, when we look at the Gender × Occupation interactions for the individual emotions, especially fear and anger, we do secure significant interactions. Students and Marines showed traditional gender differences in susceptibility to fear. Male and female physicians did not. Perhaps male and female physicians were similar in their ability to deal with fear at the time they entered medical school; perhaps they become similar in the long process of medical education. After all, the physicians had more education than had any other group in this study.

Again, students (male and female) differed in their susceptibility to catching others' anger. Male and female Marines and physicians did not. Again, it may be that the latter groups were similar in their ability to deal with anger before they joined their professions; it may be that they became similar after working at their profession for a time. In addition, both students and physicians seemed to be "hotter" than were Marines.

Subsequent research will have to be conducted to determine the extent to which personality and the adherence to traditional gender roles is shaped by occupation. A methodological note: Because we were primarily concerned with the effects of gender rather than the effects of positive versus negative emotions, in this preliminary study, we did not fully counterbalance the tapes for emotion and ethnicity of stimulus person. In subsequent research, one would, of course, probably wish to utilize male *and* female targets, of various ethnic backgrounds, and counterbalance targets' positive versus negative communications.

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NOTES

1. Theorists make a sharp distinction between the process in which we are interested, primitive emotional contagion, and the more cognitive, complex, and socially beneficial processes of empathy and sympathy (Eisenberg & Miller, 1987; Wispé, 1991).
2. Study 1 was conceived and conducted by Janine Hebb, Lisa Orimoto, and R. William Doherty.
3. Study 2 was conceived and conducted by Theodore M. Singelis.
4. Because we were primarily concerned with the effects of gender rather than the effects of positive and negative emotions, the tapes were not fully counterbalanced for emotion and ethnicity of stimulus person.
5. Eight participants were not rated because their faces were not clearly visible in the tapes. Consequently, only 180 participants received a raters' HI and ECI score.