

# Sex Differences in Emotion: Expression, Experience, and Physiology

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Although previous studies of emotional responding have found that women are more emotionally expressive than men, it remains unclear whether men and women differ in other domains of emotional response. We assessed the expressive, experiential, and physiological emotional responses of men and women in 2 studies. In Study 1, undergraduates viewed emotional films. Compared with men, women were more expressive, did not differ in reports of experienced emotion, and demonstrated different patterns of skin conductance responding. In Study 2, undergraduate men and women viewed emotional films and completed self-report scales of expressivity, gender role characteristics, and family expressiveness. Results replicated those from Study 1, and gender role characteristics and family expressiveness moderated the relationship between sex and expressivity.

Conventional wisdom suggests that women are more “emotional” than men. Does this mean that women express their emotions more than men? Or, do women experience more or stronger emotion than men? Do women have stronger physiological responses than men in emotional situations? A fairly substantial body of research has demonstrated that women are more emotionally expressive than men; however, it remains somewhat unclear whether women also experience more emotion than men and whether they show greater physiological changes associated with emotion. The present study addressed two questions. First, we examined the expressive, experiential, and physiological domains of emotion in men and women to determine whether women are indeed “more emotional” or whether they are just more emotionally expressive. Second, we examined family expressivity and personality characteristics typically associated with masculinity and femininity to determine whether these characteristics could help account for expressive differences between men and women.

We conceptualize emotion as having multiple components, including a behavioral or expressive component, an experiential or verbal component, and a physiological component, which is consistent with a number of emotion theorists and researchers (e.g., Buck, 1994; Ekman, 1992; Gross & Muñoz, 1995; Izard,

1977; Lang, 1995; Levenson, 1994; Leventhal, 1984; Plutchik, 1993). In our view, emotional expressivity reflects the extent to which individuals outwardly display their emotions (Kring, Smith, & Neale, 1994), which is similar to Gross and John’s (1997) conceptualization: “the behavioral changes (e.g., facial, postural) that typically accompany emotion” (p. 435); it is also similar to Halberstadt and colleagues’ definition: “a persistent pattern or style in exhibiting nonverbal and verbal expressions that often but not always appear to be emotion related” (Halberstadt, Cassidy, Stifter, Parke, & Fox, 1995, p. 93). The degree to which the expressive, experiential, and physiological emotion components correspond to one another varies depending on a number of social, cultural, and situational factors (e.g., Adelman & Zajonc, 1989; Ekman, Friesen, & Ellsworth, 1982; Lang, 1968; Lang, Bradley, & Cuthbert, 1990; Miller & Kozak, 1993).

The literature on emotional response in men and women is replete with studies examining one or two of these components of emotion; however, few studies assess all three. Some studies explicitly examine sex<sup>1</sup> differences in emotional response, whereas others report sex differences secondary to other find-

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<sup>1</sup> Some authors have argued for distinguishing the terms sex and gender (e.g., Unger, 1979), often based on notions about causality. However, Deaux (1993) and others (e.g., Lewine, 1994) have argued that the terms should be distinguished without assumptions about underlying etiology. In this conceptualization, sex refers to demographic categories (men, women) and gender refers to psychological and sociocultural characteristics associated with maleness and femaleness (e.g., gender role). Because it remains unclear whether biological sex and sociocultural characteristics associated with sex are causally related to differences in emotion-expressive behavior, and because our study does not allow for explicit tests of causality, we do not presume differences between these terms nor do we advance causal explanations for any differences observed. Consistent with Deaux’s conceptualization, we have chosen to use the word *sex* to refer to the categories of male and female and *gender role* to refer to the categories defined by masculine and feminine personality characteristics. We do not, however, presuppose the cause of differences in expressivity observed, and we acknowledge the importance of understanding the origins of and (multiple) contributors to these differences between men and women.

ings. Not surprisingly, a number of different measures of expression (e.g., facial electromyography [EMG], observational coding by trained raters, judgments by naive raters, self-report) and physiology (e.g., skin conductance, heart rate, finger pulse amplitude) have been used. And although the experiential component is typically assessed by means of self-report, the types of measures vary greatly (e.g., Likert ratings of discrete emotion adjectives, scaling judgments of valence and activation emotion dimensions). Despite these methodological differences, a number of consistent findings emerge across studies assessing the expressive component of emotion. Findings on sex differences in the experiential and psychophysiological domains, however, are less clear and consistent.

The expressive component of emotion has been the most widely studied, and, with few exceptions, results indicate that women are more emotionally expressive than men (for reviews, see Ashmore, 1990; Brody & Hall, 1993; Hall, 1984). That is, a number of studies have found women to be more expressive than men using a variety of expression measures, such as EMG (e.g., Greenwald, Cook, & Lang, 1989; Lang, Greenwald, Bradley, & Hamm, 1993; Schwartz, Brown, & Ahern, 1980), ratings of communication accuracy (e.g., Buck, Baron, Goodman, & Shapiro, 1980; Buck, Miller, & Caul, 1974; Buck, Savin, Miller, & Caul, 1972; Fujita, Harper, & Wiens, 1980; Rotter & Rotter, 1988; Wagner, Buck, & Winterbotham, 1993; Wagner, MacDonald, & Manstead, 1986; Zuckerman, Lipets, Hall Koivumaki, & Rosenthal, 1975), self-report of expression (e.g., Allen & Haccoun, 1976; Balswick & Avertt, 1977; Gross & John, 1995; Kring et al., 1994), and ratings of a variety of nonverbal behaviors such as smiling and gesturing (e.g., Barr & Kleck, 1995; Frances, 1979; Halberstadt, Hayes, & Pike, 1988; Notarius & Johnson, 1982; Ragan, 1982; Riggio & Friedman, 1986). Although fairly rare, some studies have failed to find sex differences in expressiveness (e.g., Cupchik & Poulos, 1984; Fridlund, 1990; Lanzetta, Cartwright-Smith, & Kleck, 1976; Vrana, Wagner, 1990; Zuckerman, Hall, DeFrank, & Rosenthal, 1976).

Although there is some disagreement in the literature as to whether women are more expressive of all emotions or just a subset, the majority of studies have found that women appear to be more expressive of most emotions compared with men. Studies investigating specific emotions have found that women are more expressive of sadness (e.g., Allen & Haccoun, 1976; Balswick & Avertt, 1977; Fujita et al., 1980; Rotter & Rotter, 1988; Schwartz et al., 1980; Zuckerman et al., 1975; but see Tucker & Riggio, 1988), disgust (e.g., Fujita et al., 1980; Rotter & Rotter, 1988; Tucker & Riggio, 1988; Wagner et al., 1993; Wagner et al., 1986; Zuckerman et al., 1975), fear (e.g., Allen & Haccoun, 1976; Rotter & Rotter, 1988; Schwartz et al., 1980; Wagner et al., 1993; Zuckerman et al., 1975), surprise (e.g., Fujita et al., 1980; Wagner et al., 1993; Wagner et al., 1986; Zuckerman et al., 1975), happiness or smiling (e.g., Balswick & Avertt, 1977; Barr & Kleck, 1995; Frances, 1979; Fujita et al., 1980; Halberstadt et al., 1988; Tucker & Riggio, 1988; Zuckerman et al., 1975; but see Wagner et al., 1986), and anger (e.g., Allen & Haccoun, 1976; Schwartz et al., 1980; Wagner et al., 1993; Zuckerman et al., 1975; but see Rotter & Rotter, 1988).

At this point, it is important to note that a number of emotion theories and recent empirical studies suggest that both men and

women's expressive behavior is particularly susceptible to modification by various social factors (e.g., Buck, Losow, Murphy, & Costanzo, 1992; Ekman & Friesen, 1975; Ekman et al., 1982; Fridlund, 1994; Frijda, 1993; Gross & John, 1997; Halberstadt et al., 1995; Kraut & Johnson, 1979; Levenson, 1994). Indeed, expressivity serves both informative and evocative functions in the social environment (Keltner, 1996). In particular, expressive behavior in social situations is believed to be influenced by socially and culturally determined display rules—that is, social and cultural standards about how and when to express emotion (e.g., Buck et al., 1992; Ekman, 1992; Ekman & Friesen, 1975; Ekman et al., 1982). The majority of the studies on sex differences in expressivity reviewed above involved presentation of an emotional stimulus to an individual participant, which by most accounts is a minimally social situation (but see Fridlund, 1990, 1994). However, more recent studies have demonstrated that the presence of another person can modify expressive behavior. For example, positive expressivity appears to be facilitated in the presence of familiar others (e.g., Buck et al., 1992; Fridlund, 1990; Kring, Ranieri, & Eberhardt, 1995), whereas negative expressivity appears to be attenuated or inhibited in the presence of unfamiliar others (e.g., Buck et al., 1992; Kring et al., 1995). Buck and colleagues (Buck, 1988, 1990; Buck et al., 1992) have argued that the sociality of a situation influences expressive behavior because the presence of another person serves as an additional eliciting stimulus. That is, in a setting where an emotional stimulus is presented in the presence of another, the combination of these stimuli influences the expressive behavior of an individual. Buck et al. (1992) argued that expressive behavior in the presence of a social stimulus is particularly likely to be influenced by learned display rules and other demands of the social situation, whereas expressive behavior in a context with minimal sociality (e.g., viewing films alone) is less likely to be modified by display rules, since presumably there is no social stimulus present to activate the display rules acquired for use in social situations.

Unfortunately, the degree to which the sociality of a particular situation may impact on gender differences in expressivity has not yet been directly studied. Interestingly, in the few studies in which researchers have manipulated social context and included both male and female participants, the sociality of the situation did not differentially affect the expressive behavior of either adult men and women (Fridlund, 1990; Fridlund, Kenworthy, & Jaffey, 1992) or younger boys and girls (Chapman, 1973; Yarczower & Daruns, 1982). Nonetheless, as a first step toward understanding whether men and women differ in the expressive, experiential, and physiological components of emotion, we chose to use a minimally social situation to study responses more closely linked to one emotional stimulus rather than to multiple stimuli. This is not to say, however, that learned display rules will not be operative (Ekman, 1992). Rather, the influence of factors associated with social context will likely be minimized in a solitary situation.

Returning to sex differences in expressivity, the apparent advantage in expression for women may simply reflect their greater experienced emotion. That is, women may express more emotion because they experience more emotion. Indeed, both theory and research support the notion that, in general, expressive behavior and experienced emotion are positively related (see Adel-

mann & Zajonc, 1989, for a review). However, there are vast individual differences in expressive behavior (and in experienced emotion), and these differences render the relationship between emotion expression and experience more tenuous (e.g., Kring, Patel, & Bachorowski, 1996). Ekman (1992) suggested that individuals may have different thresholds for the expressive, experiential, and physiological components of emotion, and Rosenberg and Ekman (1994) demonstrated that emotional expression and experience congruence varies with the intensity of emotional events. With respect to sex differences, this intriguing notion suggests that men may have a lower threshold for experienced emotion than they do for facial expression. From a developmental perspective, fairly well-established theories suggest that boys and girls learn different rules for the expression of emotion, but not necessarily for the experience of emotion (see Brody, 1985, for a review). In general, boys learn to conceal their feelings, whereas girls learn to more freely express their feelings while also learning how to control their expressive behavior. Thus, the expression of emotion appears to be more heavily socialized than the experience of emotion. In addition, studies with children have demonstrated that both boys and girls recognize that in certain situations, emotional experience and emotional expression are not expected to correspond with one another (e.g., Saarni, 1979). Taken together, these accounts suggest that although men and women differ in their expressive behavior, these differences may not be dependent on differences in experienced emotion.

Empirical findings comparing the relationship between emotion expression and experience in men versus women are mixed. Some studies have found that women, who are more expressive, also report experiencing more emotion than men (Choti, Marston, Holston, & Hart, 1987; Greenwald et al., 1989; Gross & Levenson, 1993; Schwartz et al., 1980), and some studies that have found no sex difference in expression also found no difference in reports of experienced emotion (Cupchik & Poulos, 1984; Lanzetta et al., 1976). Unfortunately, a number of studies finding sex differences in expression did not assess or include reports of experienced emotion (Buck et al., 1974; Buck et al., 1972; Wagner et al., 1986; Zuckerman et al., 1975). Similarly, some studies finding no sex differences in expression did not include reports of experienced emotion (Wagner, 1990; Zuckerman et al., 1976). However, two studies found sex differences in expression (i.e., women were more expressive than men) despite finding no sex differences in reports of experienced emotion (Wagner et al., 1993; Zuckerman, Klorman, Larrance, & Spiegel, 1981). Thus, although the finding that women are more expressive than men appears fairly robust, it remains somewhat unclear whether women's greater expressive behavior can be accounted for by their reports of greater experienced emotion. Nonetheless, developmental evidence suggests that men and women are differentially reinforced for expressing emotion but not necessarily for experiencing emotion; thus, it seems likely that men and women will differ in their expressive behavior but not necessarily in their reports of experienced emotion.

Only a few studies have examined sex differences in the physiological domain of emotion. Buck and colleagues (Buck et al., 1974; Buck et al., 1972) found that women, who were more expressive, tended to be less psychophysiological re-

sponsive (labeled *externalizers*) and men, who were less expressive, tended to be more psychophysiological responsive (labeled *internalizers*). Other studies, however, have found sex differences in the relationship between physiological measures and other emotion domains. For example, Lang et al. (1993) found skin conductance to be more strongly related to reports of arousal for men than women. However, facial expression corresponded more to self-reports of valence for women than men.

In summary, women appear to be more expressive than men. It remains unclear, however, whether men and women differ in their reports of experienced emotion and in their physiological response to emotional stimuli. The present study was designed to assess whether men and women differ in the experiential and physiological components of emotion in addition to the expressive component in a controlled, laboratory setting. Although most laboratory studies are somewhat artificial and thus have limited external validity, we felt it was important to first examine sex differences in emotional response in a setting that allowed for more experimental control. In particular, we predicted that women would display more facial expressions than would men in response to emotional films. In addition, we expected that these expressive differences would not be dependent on differences in reports of experienced emotion. In other words, we expected that men and women would not differ substantially in their self-report of emotion. Finally, we investigated the linkage between expression and skin conductance response to determine whether more men than women would be internalizers and more women than men would be externalizers.

## Study 1

### Method

#### Participants

Twenty-two female and 21 male undergraduates from a state university received course credit for participating in the study. The mean age of the participants was 19.14 years ( $SD = 2.51$ ); 30 (69.8%) were 1st-year students; 11 (25.6%) were sophomores; and 2 (4.7%) were adult continuing education students. The majority of participants (87%) were Caucasian.

#### Stimuli

One limitation to laboratory inductions of emotion is that they are somewhat artificial in nature. We chose to use film clips as emotional stimuli for a number of reasons. First, film viewing is a relatively common occurrence for all people, and this method does not rely on participants' ability to recall past experiences. Second, slides or still photographs present momentary emotional scenes, whereas film clips present a more typical context in which emotional experiences typically develop over time. In addition, using film clips as opposed to reliving past emotional experiences allows for the nature of emotional stimuli to be consistent across all participants. Finally, several emotion researchers have successfully used the film clip method to elicit emotion in the laboratory (e.g., Gross & Levenson, 1993; Tomarken, Davidson, & Henriques, 1990; Berenbaum & Rotter, 1992; Ekman, Davidson, & Friesen, 1990; Ekman, Friesen, & Ancoli, 1980).

Participants viewed six brief emotional film clips (ranging in length from 264 to 350 s) that represented three emotion domains: happy, sad,

and fear (two clips from each domain).<sup>2</sup> These film clips have been successful in eliciting both experienced and expressed emotion in previous research (Fredrickson & Levenson, 1996; Kring, Kerr, Smith, & Neale, 1993; Kring et al., 1994), and they have been shown to elicit higher ratings of their intended emotion than other similar clips (Kring, Rauhuff, & Gordon, 1992). The film clips included scenes of slapstick comedy, children with a dying parent, a man being swarmed with cockroaches, and a man nearly falling off the ledge of a tall building. The clips were paired according to emotion domain (happy, sad, fear), and participants were randomly assigned to one of six different presentation orders.<sup>3</sup> Between each pair of emotion clips, a different neutral segment (150 s long) depicting nature scenes was shown as a distractor. The film clips were shown using a videocassette player and a 19-in. color television positioned approximately 5 ft (1.5 m) from the participant.

### Psychophysiological Recording

We chose to measure skin conductance, perhaps one of the most widely used measures in psychophysiology, for a number of reasons, although we recognize the limitation of using only one physiological measure. First, it is a reliable, peripheral indicator of sympathetic nervous system activity that is relatively easy to measure unobtrusively (see Dawson, Schell, & Filion, 1990, for a review). Second, skin conductance is sensitive to changes in psychological state, and in particular to changes in emotion (e.g., Averill, 1969; Ekman, Levenson, & Friesen, 1983; Fowles, 1980; Geen & Rakosky, 1973; Greenwald et al., 1989; Gross & Levenson, 1993; Lang et al., 1993; Levenson, Ekman, & Friesen, 1990). This is not surprising when one considers the relationship between emotion and autonomic nervous system (ANS) activity. One of the primary functions of the ANS is to provide the body the support to deal with behavioral demands. Similarly, a primary purpose of emotion is to respond to behavioral demands that may, in some circumstances, require mobilization for action (e.g., the response to a disgusting taste is to expel the substance from the mouth).

In the present study, skin conductance was recorded using Beckman standard electrodes attached to the hypothenar eminence of the nondominant hand. The electrolyte consisted of 0.05 molar sodium chloride and Unibase paste as recommended by Fowles et al. (1981). Recordings were obtained using a Beckman constant voltage skin conductance coupler with a constant 0.5 volts across the electrodes. The data were displayed on chart paper and later scored for the number of responses. The experimenter continuously monitored the recording, and potential sources of artifact (e.g., movement, sneezing) were marked on the chart paper for later deletion.

### Procedure

Participants were tested individually in what was described to them as a study of the psychology of movies. Participants were told that we were interested in measuring "palm sweating, an unconscious physiological process," and two electrodes were attached to the nondominant hand. A 10-min baseline was then recorded during which participants were instructed to relax. During film viewing, participants were videotaped without their knowledge from behind a one-way mirror, and the experimenter (female) was not present during the film clip presentation. Participants were told that the television and videocassette recorder were computer controlled and would stop and start automatically. To help allay suspicion about the one-way mirror, instructions were given to participants to knock on the wall or "window" (one-way mirror) if any equipment malfunctions occurred because the experimenter would be busy monitoring the psychophysiological equipment in a different room and would thus be unable to see what was happening in the experimental room. Following each clip, participants were asked to rate the extent to which they experienced four specific emotions (sadness,

fear, disgust, and happiness) using a 4-point Likert scale (1 = *not at all*, 4 = *very much so*). At the end of the study, participants were fully debriefed and given the opportunity to destroy their videotape. No participant chose to do so.

### Coding Facial Expressions

The videotaped facial expressions were coded using The Facial Expression Coding System (FACES; Kring & Sloan, 1991). FACES was developed to assess dimensions of facial expression consistent with previous theory and research on dimensional models of emotion (e.g., Russell, 1980; Schlosberg, 1952), and it has been used in several studies of emotion (e.g., Blanchard, Kring, & Neale, 1994; Kring et al., 1993; Kring et al., 1994; Kring & Tomarken, 1993). In FACES, an *expression* is defined as any change in the face from a neutral display (i.e., no expression) to a nonneutral display and back to a neutral display. When this activity occurs, a frequency count of expressions is initiated. Coders then rate the valence (positive or negative) and the intensity (using a 4-point Likert scale where 1 = *low*, 4 = *very high*) of each expression detected. In addition to valence and intensity, coders also record the duration of each expression. Thus, FACES coding yields six variables per film: the frequency, intensity, and duration of positive expressions and the frequency, intensity, and duration of negative expressions. Means across the two films in each emotion domain were computed, resulting in facial expression data for three emotional film types: happy, sad, and fear.

Three undergraduates trained to use FACES rated the videotapes. Each participant's videotape was coded by two raters. Interrater agreement for pairs of raters was computed for all FACES variables (positive frequency, positive intensity, positive duration, negative frequency, negative intensity, negative duration) using the Case 2 intraclass correlation (ICC) as described by Shrout and Fleiss (1979). In the Case 2 formula, raters (judges) are considered to be selected from a random sample of raters, and each rater codes each subject or target. Because the variance due to raters is estimated as an effect, the correlations can be interpreted as an index of agreement rather than consistency (Shrout & Fleiss, 1979). Similar to previous studies using FACES, these correlations were quite high, ranging from .70 to .97. Because the overall agreement was high, a mean across raters was computed for use in further analyses.

Also similar to previous studies using FACES (e.g., Kring et al., 1993) and other studies of facial expression components (e.g., Keltner, Moffitt, & Stouthamer-Loeber, 1995), the frequency, intensity, and duration variables were significantly and highly intercorrelated. To reduce the number of dependent variables in the analyses, the facial expression analyses reported below include only the frequency of facial expressions as the dependent variable. Separate analyses using the intensity and duration ratings yielded the same results as the frequency ratings.

## Results

### Facial Expression

Expressivity data were missing for one woman due to a videotape problem. The frequency of expressions (positive for the happy films, negative for the sad films and fear films) served as the dependent variables in a 2 (sex: male, female)  $\times$  3 (film: happy, sad, fear) multivariate analysis of variance (MANOVA),

<sup>2</sup> The films chosen to elicit fear also elicited reports of disgust. Accordingly, self-reports of disgust were also examined in the analyses.

<sup>3</sup> Film order was included in initial analyses of all dependent variables associated with film viewing. No main effects or interactions were found; thus order was not included in the reported analyses.

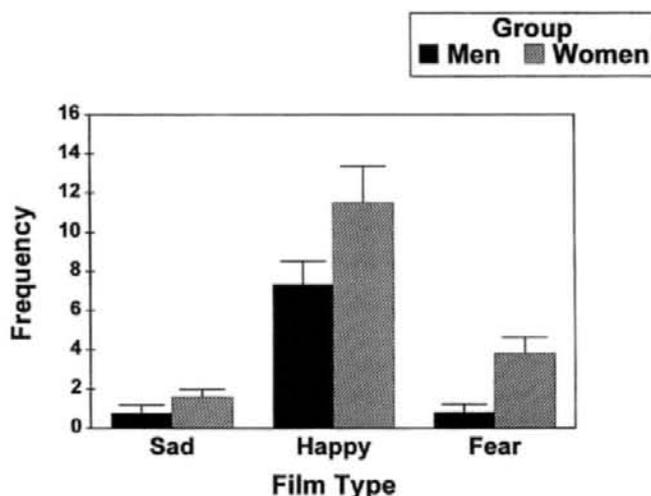


Figure 1. Frequency of positive and negative expressions ( $\pm$  SE) for men and women in Study 1.

with sex as a between-subjects factor and film as a within-subjects factor. The sex main effect was significant,  $F(1, 40) = 7.17, p = .011$ , indicating that women were more expressive than men across all films (see Figure 1). The Sex  $\times$  Film interaction was nonsignificant. The film main effect was also significant,  $F(2, 39) = 30.36, p < .01$ . Specifically, both men and women exhibited more positive expressions in response to the happy film than to either of the negative films,  $F(1, 40) = 61.58, p < .001$ , and more negative expressions in response to the fear films than to the sad films,  $F(1, 40) = 6.70, p = .013$ .

#### Reports of Experienced Emotion

Following each film, participants reported on their experience of four different emotions: happiness, sadness, fear, and disgust. Because the fear films also elicited reports of disgust, the mean of fear and disgust was computed for these films. Descriptive statistics for these adjectives are presented separately for men and women in Table 1. The target adjectives for the films (happy for happy films, sad for sad films, fear–disgust for fear films) were entered into a 2 (sex: male, female)  $\times$  3 (film: happy, sad, fear) MANOVA. Neither the sex main effect,  $F(1, 41) = 1.04, ns$ , nor the Sex  $\times$  Film interaction,  $F(2, 40) = 2.45, p = .10$ , was significant, suggesting that men and women did not differ in their reports of experienced emotion. The film main effect was significant,  $F(2, 40) = 23.23, p < .001$ . Follow-up tests indicated that both men and women reported experiencing more sadness in response to the sad films than fear–disgust in response to the fear films,  $t(42) = 5.92, p < .001$ , and more sadness in response to the sad films than happiness in response to the happy films,  $t(42) = 5.04, p < .001$ . To summarize, men and women did not significantly differ in their reports of experienced emotion.<sup>4</sup>

#### Skin Conductance

Skin conductance data were missing for 3 women and 3 men due to polygraph malfunction or experimenter error. The number

of skin conductance responses (SCRs) was counted from the chart paper recording for the baseline period and each of the six emotional films. Those sections of the chart paper that had been marked for movement were excluded from the count (on average, less than one response per participant per epoch). An SCR was defined as a response with a minimum amplitude of  $0.05 \mu S$  that occurred within 3 s (Dawson, Schell, & Filion, 1990). The mean number of SCRs across the two films of the same emotion domain was computed, and the frequency of SCRs was divided by the total time of each condition (baseline or film) to yield an index of SCRs per minute. Finally, reactivity scores were computed by subtracting the frequency of SCRs during baseline from the frequency of SCRs during each film type.<sup>5</sup> These reactivity scores are shown in Table 2. Men and women did not significantly differ in the number of SCRs during the baseline period.

Skin conductance reactivity scores were entered into a 2 (sex: male, female)  $\times$  3 (film: happy, sad, fear) MANOVA. The sex main effect did not attain significance,  $F(1, 35) = .94, ns$ ; however, the Sex  $\times$  Film interaction was significant,  $F(2, 34) = 5.68, p = .007$ . Univariate follow-up tests indicated that men demonstrated significantly higher skin conductance reactivity than did women to the fear films,  $F(1, 36) = 5.26, p = .028$ . Although men had higher reactivity to the happy films and women had higher reactivity to the sad films, these differences were not statistically significant ( $ps = .16$  and  $.27$ , respectively).

#### Internalizer–Externalizer Distinction

Buck and colleagues (Buck et al., 1974; Buck et al., 1972) presented data showing that women tended to be more accurate in their communication accuracy (i.e., facial expression) but less electrodermally reactive (externalizers); whereas, men tended to be less accurate in communication accuracy and more electrodermally reactive (internalizers). To investigate this distinction in the present study, the mean of expressive behavior and the mean of skin conductance reactivity across all films were computed. As was done by Buck and colleagues, median splits for these two variables were then conducted. Those scoring above the median on expressivity and below the median on

<sup>4</sup> We thank an anonymous reviewer for suggesting an analysis of covariance approach as a stronger test of the claim that sex differences in expressivity are not due to differences in reports of experienced emotion. We conducted a MANOVA for expressive behavior, controlling for reports of experienced emotion, and replicated the significant sex main effect,  $F(1, 59) = 30.47, p < .001$ .

<sup>5</sup> In the present study, delta ( $\Delta$ ; difference between response to task and response during baseline) was used as the measure of psychophysiological reactivity. Although  $\Delta$  has been criticized for its low reliability and the often found negative correlation between change and baseline (i.e., the law of initial values, Wilder, 1967), Llabre, Spitzer, Saab, Ironson, and Schneiderman (1991) showed that the reliability of  $\Delta$  is a function of the ratio of baseline variance to task variance ( $\lambda$ ). That is, the lower the variance ratio, the higher the reliability of  $\Delta$ . Similarly, the law of initial values (LIV) can be assessed based on a test of the equality of variances (initial and task; Geenen & Van de Vijver, 1993). For the present study, the reliabilities of  $\Delta$  were all adequate. In addition, LIV, as assessed by Geenen and Van de Vijver's recommendations, did not hold for any of the relationships between baseline and film.

Table 1  
Scores for the Self-Report Mood Adjectives—Study 1

Film	Adjective											
	Happy				Sad				Fear–Disgust			
	Men		Women		Men		Women		Men		Women	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Happy	2.93	0.78	2.68	0.82	1.12	0.27	1.18	0.33	1.00	0.00	1.02	0.11
Sad	1.02	0.11	1.16	0.24	3.36	0.62	3.75	0.51	1.12	0.27	1.20	0.37
Fear	1.10	0.20	1.05	0.21	1.55	0.84	1.50	0.69	2.71	0.75	3.00	0.71

Note. Ratings were based on a 4-point Likert scale (1 = not at all, 4 = very much).

skin conductance reactivity were considered externalizers; those scoring below the median on expressivity and above the median on skin conductance reactivity were considered internalizers. Two additional groups were also considered: those scoring above the median on both variables (labeled *high responders*) and those scoring below the median on both variables (labeled *low responders*). The breakdown of these four groups for men and women is shown in Table 3. A 2 (male, female)  $\times$  4 (externalizer, internalizer, high responder, low responder) chi-square analysis was significant,  $\chi^2(3, N = 36) = 23.01, p < .001$ . As can be seen in Table 3, more women than men fit in the externalizer category, and more men than women fit in the internalizer category. However, a number of women also fit into the high-responder category and a number of men fit into the low-responder category. Reflecting this distribution, the correlations between expressivity and skin conductance reactivity were low for both men and women ( $r_s = .07$  and  $.03$ , respectively).

### Discussion

Consistent with a number of previous investigations, the present study found that women were more expressive than men. That is, women exhibited more positive expressions in response to happy films and more negative expressions in response to sad and fear films. These expressive differences, however, were not accounted for by differences in reports of experienced emotion. Indeed, although women were more expressive than men, they did not report experiencing more emotion than men. Men and women did differ, however, in their skin conductance reactivity. Men were more reactive than women in response to the fear films. In addition, the present data lend some support to the internalizer–externalizer distinction. More men than women

were internalizers, and more women than men were externalizers. However, women also tended to be high responders and men tended to be low responders.

Although the results of Study 1 are informative with respect to sex differences in emotion, a number of questions remain unanswered. First, the measure of experienced emotion included only target emotion adjectives consistent with the emotion the films were intended to elicit. Although the predominant emotion elicited by the films was indeed their target emotion (e.g., reports of sadness to the sad film were greater than reports of fear), it is also likely that the films elicited other emotions (e.g., distress and gloom were also likely elicited by the sad film). In addition, the facial coding system provided ratings of valence and intensity dimensions rather than discrete target emotions. A number of researchers have argued that self-reported emotion can be represented in a circular structure (circumplex) composed of two bipolar dimensions (e.g., Russell, 1980; Watson & Tellegen, 1985). One representation of the circumplex (e.g., Larsen & Diener, 1992; Russell, 1980) focuses on two dimensions that reflect the overall valence of emotion (pleasant, unpleasant) and the arousal or activation of emotion (high, low). To our knowledge, no studies examining sex differences in experienced emotion have assessed these dimensions of emotion, and the theoretical work on emotion dimensions does not speak directly to sex differences. Accordingly, it is difficult to make specific predictions about how men and women might differ in their reports along these dimensions. Nonetheless, a more comprehensive measure of experienced emotion that samples

Table 2  
Skin Conductance Reactivity Scores—Study 1

Film	Men		Women	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Happy	1.70	1.58	0.92	1.74
Sad	0.87	1.88	1.51	2.09
Fear	4.40	1.78	3.00	2.35

Table 3  
Internalizer–Externalizer Distinction for Men and Women—Study 1

Sex	Group			
	Internalizer	Externalizer	High responder	Low responder
Men	8	1	3	7
Women	0	9	7	2

Note. Values represent frequencies of men and women fitting into each category. Group membership was determined by median split of mean skin conductance reactivity and mean expressivity across all films.

both of these emotion dimensions might elucidate differences between men and women in their reports of experienced emotion. Second, although the first study documented that women were more expressive than men despite no differences in experienced emotion, the question of why women are more expressive remains largely unanswered.

Because conclusions based on any study are bolstered with replication, the second study was designed to replicate and extend the findings of Study 1. In particular, a more comprehensive measure of experienced emotion was employed, and more emotional films were shown: happy, sad, fear, disgust, and anger. Finally, two potential moderating variables were assessed to begin to address the question of why women are more expressive than men.

Gender role has been posited as a possible contributor to sex differences in expressivity (e.g., Brody & Hall, 1993). Gender role measures such as the Bem Sex-Role Inventory (BSRI; Bem, 1974) and the Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1978; Spence, Helmreich, & Stapp, 1974) measure constellations of socially desirable characteristics or traits that reflect stereotypical feminine (also referred to as *expressive*) and masculine (also referred to as *instrumental*) behaviors. Women who ascribe to a number of feminine traits and men who ascribe to a number of masculine traits are often referred to as *sex-typed*. Women and men who ascribe to a number of both feminine and masculine characteristics are often referred to as *androgynous* (or *non-sex-typed*).

Although the construct of femininity is also called *expressiveness*, the characteristics that define the construct bear a limited relationship to emotional expressiveness at face value. Indeed, femininity or expressiveness is more closely related to nurturance and warmth (e.g., Wiggins, 1979; Wiggins & Holzmueller, 1978). Feminine items from the BSRI include warm, sympathetic, and tender, and items from the Expressiveness scale of the PAQ are very similar to the BSRI feminine items (e.g., gentle, kind, warm in relation to others). By contrast, the construct of masculinity or instrumentality is closely related to independence and dominance (e.g., Wiggins, 1979; Wiggins & Holzmueller, 1978), and sample items from the BSRI include independent, forceful, aggressive, and assertive.

Androgyny is believed to represent a behavioral flexibility such that behaviors in various situations are not governed by "rules" associated with one's gender. In other words, androgynous individuals are less likely to modify their behavior so that it conforms to societal notions about sex-appropriate behavior. This notion suggests that androgynous persons' expressive behavior may be less constrained than the behavior of other individuals by socially and culturally learned display rules; however, this hypothesis has not been empirically tested. Compared with masculinity and femininity, androgyny has been found to be significantly related to psychological health and well-being (e.g., Williams & D'Alessandro, 1994). Both men and women consider androgynous characteristics to be the most desirable in a romantic partner (Green & Kenrick, 1994). In addition, androgynous persons have been found to be more extraverted and less neurotic than sex-typed individuals in both Western (e.g., Ramañiaiah & Detwiler, 1992) and non-Western cultures (Pei-Hui & Ward, 1994). Interestingly, extraversion is also related to expressivity (e.g., Gross & John, 1995; Kring et al.,

1995; Kring et al., 1994). Taken together, these findings suggest that androgynous individuals might also be more expressive than feminine or masculine individuals.

A few studies documenting sex differences in expressivity have also noted gender role differences; however, the findings are inconsistent from one study to the next. For example, some studies have found that femininity is related to expressivity, whereas others have not. Zuckerman, DeFrank, Spiegel, and Larrance (1982, Study 2) found that although women were more accurate at posing emotion expressions than men (cf. Zuckerman et al., 1981), femininity was also related to accurate posing. By contrast, Halberstadt et al. (1988) found that women smiled and gazed more often than men in conversation; however, smiling and femininity were not significantly related for either men or women. Masculinity was significantly related to smiling for men but not for women. Unfortunately, neither of these two studies specifically examined the link between expressivity and androgyny. In a similar study, LaFrance and Carmen (1980) found that women smiled and gazed more than men during conversation, and that men had more interruptions and filled pauses than women. However, unlike Halberstadt et al., LaFrance and Carmen found that feminine women gazed and smiled more than masculine males, and masculine men had more filled pauses than feminine women. Interestingly, androgynous individuals' expressivity was in between the amounts of feminine women and masculine men. Other studies including measures of androgyny have found that androgynous persons are more expressive than their sex-typed counterparts. For example, Ganong and Coleman (1985) found that androgynous individuals reported being more expressive of love, happiness, and sadness than masculine or feminine individuals. Interestingly, they found no sex differences in the self-report of these emotions. Narus and Fischer (1982) found that androgynous men reported being more expressive in conversation than masculine men. In sum, these studies suggest that gender role characteristics are related to expressivity and may help account for sex differences in expressivity. Specifically, femininity may be related to expressivity, particularly for women. However, as noted above, the characteristics that make up the femininity construct are not necessarily related to expressivity. By contrast, androgyny reflects behavioral flexibility, suggesting that expressive behavior may be less constrained by notions of social appropriateness or display rules. In other words, androgynous individuals may more openly express their emotions without regard to what is "expected" of men and women in a given situation. In addition, insofar as extraversion is related to expressivity, androgynous individuals may be more expressive than either feminine or masculine individuals because androgynous individuals have been shown to be more extraverted.

A second potential moderating variable that has been posited by many as an important contributing factor in the development of expressive behavior in general is family socialization of expressive behavior. Indeed, a number of studies have found that more expressive persons report coming from more expressive family environments (e.g., Balswick & Avertt, 1977; Burrows & Halberstadt, 1987; Halberstadt, 1986; Halberstadt, Fox, & Jones, 1993). The mechanism by which children adopt expressive styles similar to those of family members is unclear, but a number of socialization processes have been posited, including mod-

eling, labeling, and reinforcing (Halberstadt, 1991; Malatesta & Haviland, 1985; Saarni, 1985).

The linkage between sex and family expressiveness is less clear. Studies of infants have shown that spontaneous expressions of a number of emotions are seen at as early as 3 months of age (e.g., Malatesta & Haviland, 1982). In general, however, these studies have failed to find consistent and significant differences in expressiveness between male and female infants. Rather, differences between boys' and girls' expressiveness appear to emerge after the preschool years and are likely influenced by both peer and family socialization (Brody, 1985).

There is some evidence suggesting that girls' home environments may be more emotionally "charged" than boys' (e.g., Dunn, Bretherton, & Munn, 1987; Noller & Callan, 1989). In addition, more recent research suggests that mothers are more expressive within the family environment than fathers (Cassidy, Parke, Butkovsky, & Braungart, 1992; Halberstadt et al., 1995), which is consistent with research finding women to be more expressive than men. Interestingly, Halberstadt et al. (1995) found that mothers' positive expressivity and fathers' negative expressivity were somewhat more frequent than mothers' negative expressivity and fathers' positive expressivity. Mothers may play a particularly important role in the development of girls' expressivity, particularly of positive emotions (Halberstadt et al., 1993). Continuing into adulthood, Halberstadt (1986) found that female college students reported coming from a more expressive family than male college students. In sum, women's experiences in the family may consist of greater expressivity, both individually and reciprocally, than men's experiences. In addition, family socialization of expressivity in general may bear a particularly strong relationship to women's expressivity, indicating that their expressive behavior is associated with the expressive climate of their family of origin.

## Study 2

### Overview

Study 2 consisted of two phases. In the first phase, several hundred male and female undergraduates completed a number of questionnaires, including the short form of the BSRI (Bem, 1979) and the Family Expressiveness Questionnaire (FEQ; Halberstadt, 1986). Based on their BSRI scores, participants were then classified into one of three groups: androgynous, feminine, or masculine. In the second phase, 67 men and women classified in one of the three groups from the first phase were called back and asked to participate in a study on the psychology of movies. The second phase was very similar to Study 1 with any changes noted below.

### Phase I: Classification

#### Participants

Three hundred forty-one male and female undergraduates from a private university received course credit for completing a number of different questionnaires.

#### Measures

**BSRI.** Construction of the original BSRI (Bem, 1974) followed from Bem's theory of gender stereotyped behaviors, in that the items

chosen were those that best reflected culturally prescribed stereotypes of appropriate male and female behaviors. These items constitute two scales, Masculine and Feminine, which included items tapping socially desirable masculine (instrumental) and feminine (expressive) characteristics, respectively. The short form of the BSRI (Bem, 1979) was devised based on factor analyses of the original measure and contains only those items with the highest loadings on the masculinity and femininity factors (plus 10 filler items). The short form of the BSRI is very similar in content to the PAQ (Spence & Helmreich, 1978; Spence, Helmreich, & Stapp, 1974, 1975). Despite being derived from different theories, the short form of the BSRI and the PAQ are similar both in content and in their relationships to other measures (Lubinski, Tellegen, & Butcher, 1983; Spence, 1991). To complete the BSRI, participants rate the extent to which the 30 characteristics pertain to them using a 7-point Likert scale.

**FEQ.** Halberstadt (1986) developed the FEQ to assess family expressiveness. Using a 9-point Likert scale, participants rate the extent to which 40 different expressive behaviors occurred in their families.

**The Emotional Expressivity Scale (EES).** Kring et al. (1994) developed the 17-item EES to measure dispositional expressiveness. Participants are instructed to report, using a 6-point Likert scale, the extent to which they outwardly display their emotions.

### Classification

The primary purpose of this phase was to identify participants according to gender role for participation in the second phase. The BSRI contains two scales: Masculine and Feminine. Prior studies using the BSRI have categorized participants based on a median split of the two scales. Dichotomizing continuous measures such as the BSRI can be problematic in that this method may lower statistical power and underestimate the magnitude of bivariate relationships (Maxwell & Delaney, 1993). In other words, creating groups based on a median split may obscure effects that actually exist, thus providing a conservative estimate of the relationship between the dichotomized variable (in our case the BSRI) and the dependent variable. A few methods have been proposed for creating a continuous measure of androgyny—for example, geometric mean (Bryan, Coleman, & Ganong, 1981) and Kalin's K (Kalin, 1979)—such that high scores reflect greater androgyny; however, these methods do not allow for an examination of those persons falling in the middle of the distribution (i.e., masculine and feminine persons). In a study of gender roles and psychological health, Williams and D'Alessandro (1994) found that both the continuous measures of androgyny and the median split classification method were highly related to one another and that both methods yielded significant relationships with psychological health. That is, androgyny, no matter how it was measured, was significantly positively correlated with psychological health (i.e., higher self-esteem, less anxiety and depression, higher satisfaction with life). However, only the median split method allowed for direct comparisons of androgynous persons with masculine and feminine persons. In the present study, we were interested in expressive behavior among androgynous, feminine, and masculine participants, and we thus chose to use the median split procedure, although we acknowledge its limitations. In this sample, the median score for the Feminine scale was 5.5, and the median for the Masculine scale was 4.8. Therefore, those participants classified as masculine scored above the median on the Masculine scale and below the median on the Feminine scale. Those participants classified as feminine scored above the median on the Feminine scale and below the median on the Masculine scale. Finally, those participants classified as androgynous scored above the median on both scales.

### Phase II: Film Study

#### Participants

Participants who were called back based on their BSRI scores included 12 men and 12 women classified as masculine, 10 men and 12

women classified as feminine, and 10 men and 11 women classified as androgynous. The mean age of the sample was 18.42 years ( $SD = 0.84$ ). Thirty-eight (57%) of the participants were freshmen, 24 (36%) were sophomores, 4 (6%) were juniors, and 1 was a senior. Sixty-five (97%) of the participants were single; 1 participant lived with a significant other, and 1 participant was separated. The majority of participants (85%) were Caucasian (6% were Asian or Indian, 3% were African American, 3% were Latino, and 3% were other).

### Stimuli

Participants viewed five emotional film clips ranging in length from 230 to 252 s. Four of the film clips were intended to elicit one of the following negative emotions: fear, disgust, anger, and sadness; one film clip was intended to elicit happiness. The sad and happy clips were the same clips used in Study 1. Separate fear and disgust clips were presented in this study, and an anger clip was also added that included scenes of a child hiding from a killer, a woman under attack, a rat approaching a sleeping man and another man eating crickets, innocent people being massacred, and racial slurs and violence against a woman. These film clips have successfully elicited both experienced and expressed emotion in other studies of emotion (Kring et al., 1993; Kring et al., 1994; Rosenberg & Ekman, 1994; Tomarken et al., 1990), and they have been shown to elicit higher ratings of their intended emotion than other similar clips (Kring et al., 1992). A neutral segment (180 s) depicting trains moving along a track was also shown to acclimate participants to the procedure. In order to ensure that reactions to the film clips were not specific to any one set of films or any particular order of presentation, two different stimulus tapes (A and B) and three different orders were used.<sup>6</sup> Participants were randomly assigned to watch either Tape A or B in one of the three orders (neutral always came first). The film clips were shown using a videocassette player and a 19-in. color television positioned approximately five ft (1.5 m) from the participant.

### Psychophysiological Recording

Skin conductance data were obtained using a Coulbourn Instruments polygraph connected to a PC. Electrodes, electrolyte, and electrode placement were the same as in Study 1. Skin conductance level (SCL) was recorded using a Coulbourn Instruments constant-voltage skin conductance coupler (S71-23) with a constant 0.5 volts across electrodes. SCL was displayed and stored on-line. SCRs were extracted from the SCL record during later analysis using the same criteria for defining a response as in Study 1.

### Procedure

Participants were tested individually. After the participant signed the consent form, skin conductance electrodes were placed on his or her nondominant hand, and instructions for the study were given using the same procedure as in Study 1. The experimenter (male) then left the room, and a 5-min baseline was recorded. The experimenter reentered the room and gave further instructions for the film-viewing task. Participants were told that the television and videocassette recorder were computer controlled and would stop and start automatically. In this study, the one-way mirror was not visible to participants. Rather, it was concealed with posters and books. The camera was located behind the one-way mirror and focused on the participant through an opaque bookend. During film viewing, participants' facial responses to the films were videotaped without their knowledge. As in Study 1, the experimenter was not present during the film clip presentation. At the end of the study, participants were thoroughly debriefed and given the opportunity to erase their videotape. None of the participants chose to do this.

### Self-Report of Experienced Emotion

Following each film, participants rated their experienced emotion using a 5-point Likert scale (1 = *very slightly or not at all*, 5 = *extremely*) on a 20-item emotion self-report measure that included adjectives representing the valence (pleasant, unpleasant) and activation (high, low) dimensions of emotion (Larsen & Diener, 1992). Four scales were the dependent variable in the analyses: Pleasant (e.g., pleased, happy), Unpleasant (e.g., sad, gloomy), High Activation (e.g., aroused, intense), and Low Activation (quiet, tranquil).

### Coding Facial Expression

As in Study 1, participants' videotaped responses to the films were coded using FACES by three undergraduates trained to use FACES (each participant's videotape was coded by two raters). Interrater agreement for pairs of raters was computed for all FACES variables using the Case 2 ICC (Shrout & Fleiss, 1979). Similar to Study 1, these correlations were quite high, ranging from .65 to .98 (mean ICC = .93). Because the overall agreement was high, a mean across raters was computed for use in further analyses. Also as in Study 1, the individual FACES variables were highly correlated. The frequency of expressions was used as the dependent variable in the analyses; however, the results did not differ when either duration or intensity ratings served as the dependent variable.

### Results

Of the 67 participants in the study, 9 were excluded because they indicated during debriefing that they felt as if they were being "watched." These participants were all students in a section of Introductory Psychology that had viewed a film about research experiments. This instructional film showed an experiment very similar to this one in which participants were videotaped without their knowledge while they watched films. Table 4 shows the remaining 58 participants broken down by sex and gender role classification. Descriptive statistics for all the self-report measures are also shown in Table 4. Reliabilities (Cronbach's alphas) for all measures were high, ranging from .82 to .94.

### Expressiveness

*Facial expression.* Using the frequency of expressions as the dependent variable, between-groups differences in facial expression were assessed using a 2 (sex: male, female)  $\times$  3 (gender role: masculine, feminine, androgynous)  $\times$  5 (film: happy, sad, fear, disgust, anger) repeated measures MANOVA. Sex and gender role were between-subjects factors, and film was a within-subjects factor. The sex main effect was significant,  $F(1, 52) = 12.00, p < .001$ , indicating that women were more expressive than men across all films (see Figure 2). In addition, the gender role main effect was also significant,  $F(2, 52) = 4.58, p < .05$ . Follow-up tests indicated that those participants classified as androgynous were more expressive than those participants classified as masculine,  $t(36) = 2.32, p = .028$  (see

<sup>6</sup> Stimulus tape and order were included in initial analyses of all dependent variables associated with film viewing. No main effects or interactions were found for either variable; thus they were not included in the reported analyses.

Table 4  
Scores for the Self-Report Measures—Study 2

Measure	Men						Women					
	Masculine <sup>a</sup>		Feminine <sup>a</sup>		Androgynous <sup>b</sup>		Masculine <sup>a</sup>		Feminine <sup>a</sup>		Androgynous <sup>b</sup>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
EES	61.30	14.10	58.70	13.33	70.11	11.47	55.10	14.57	70.00	9.30	81.00	8.49
FEQ	221.80	31.45	223.10	24.51	237.56	27.84	225.88	33.29	241.14	30.72	254.89	19.07
BSRI-M	5.77	0.46	4.23	0.32	5.52	0.63	5.68	0.31	4.24	0.44	5.46	0.53
BSRI-F	4.44	0.60	6.21	0.30	6.29	0.16	4.64	0.59	6.56	0.37	6.64	0.40

Note. EES = Emotional Expressivity Scale; FEQ = Family Expressiveness Questionnaire; BSRI-M = Bem Sex-Role Inventory—Masculine; BSRI-F = Bem Sex-Role Inventory—Feminine.

<sup>a</sup>*n* = 10. <sup>b</sup>*n* = 9.

Figure 3). The comparison between androgynous and feminine participants approached significance,  $t(36) = 1.71, p = .09$ .

**Self-reported expressiveness.** Between-groups differences in the self-report of expressiveness were examined using a 2 (sex: male, female)  $\times$  3 (gender role: masculine, feminine, androgynous) ANOVA with scores on the EES as the dependent variable. The gender role main effect was significant,  $F(2, 52) = 9.20, p < .000$ , as was the Sex  $\times$  Gender Role interaction,  $F(2, 52) = 3.67, p < .04$ . The sex main effect approached significance,  $F(1, 52) = 3.28, p < .08$ .<sup>7</sup> Follow-up tests indicated that androgynous participants reported being significantly more expressive than masculine,  $t(36) = 3.56, p < .05$ , and feminine participants,  $t(36) = 2.43, p < .05$ . The interaction is primarily a reflection of masculine men's reporting greater expressivity than feminine men, whereas masculine women reported less expressivity than feminine women (see Figure 4).

#### Family Expressiveness

Women reported slightly greater family expressiveness ( $M = 241.26, SD = 29.47$ ) than men ( $M = 227.14, SD = 27.99$ ),

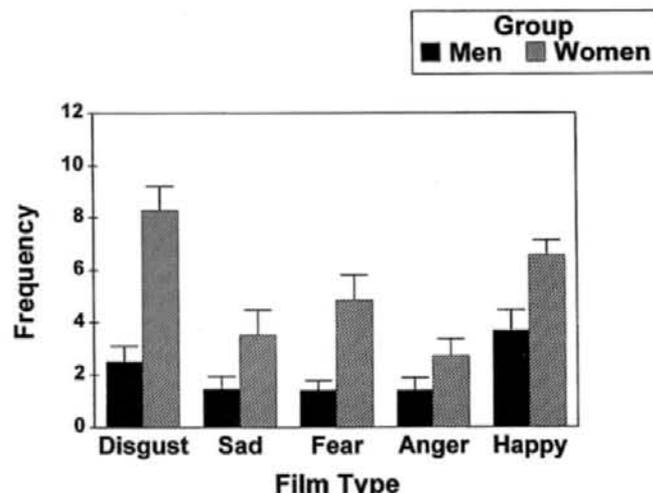


Figure 2. Frequency of positive and negative expressions ( $\pm SE$ ) for men and women in Study 2.

$t(52) = 1.80, p = .078$ . To assess the association between reports of family expressiveness and expressivity, we computed Pearson product-moment correlations between the FEQ and the EES and FACES composites. The EES was related to the FEQ for both men,  $r(28) = .36, p = .052$ , and women,  $r(25) = .44, p < .05$ , suggesting that individuals who reported coming from an expressive family also reported being more dispositionally expressive. Facial expressivity during the films was related to reports of family expressiveness for women, but not men. Specifically, women's FEQ scores were significantly related to negative expressivity during the sad film,  $r(25) = .44, p < .05$ , and positive expressivity during the happy film,  $r(25) = .46, p < .05$ . For men, the correlations between the FEQ and expressivity during the sad and happy films were not significant ( $r_s = -.13$  and  $-.17$ , respectively); however, the magnitude of these correlations was significantly different from the women's (Fischer's  $r$ -to- $z$  transformations;  $z_s = 2.11$  and  $2.34$ , respectively).

To summarize, women were more facially expressive than men in response to all films. Women also tended to report being more expressive than men on the EES. Despite these sex differences, androgynous persons were more facially expressive and reported greater dispositional expressivity than masculine and feminine persons, regardless of sex. In addition, although both men and women who reported coming from a highly expressive family also reported being more expressive, the relationship between facial expressivity during films and reports of family expressiveness was significant for women but not for men.

#### Reports of Experienced Emotion

To capture the range of emotions elicited by the films, separate analyses examining the Pleasant, Unpleasant, High Activation, and Low Activation scales were conducted. Descriptive statistics for these scales are presented in Table 5. For the valence dimension, reports of Unpleasant emotion to the negative films (anger, sad, fear, disgust) and reports of Pleasant emotion to the positive

<sup>7</sup> This finding was not anticipated since other studies using the EES have found that women report greater expressiveness than men (e.g., Kring et al., 1994). Indeed, in the original sample from Study 2 of over 300 participants, women reported greater expressivity than men,  $t(339) = 6.53, p < .001$ .

film (happy) were the dependent variables in a 2 (sex: male, female)  $\times$  3 (gender role: masculine, feminine, androgynous)  $\times$  5 (film: happy, sad, fear, disgust, anger) repeated measures MANOVA. Neither the sex, gender role, nor Sex  $\times$  Gender Role interaction was significant, nor did sex or gender role significantly interact with film. Only the film main effect attained significance,  $F(4, 48) = 56.22, p < .001$ . Follow-up tests revealed that reports of Pleasant emotion to the happy film ( $M = 3.40$ ) were significantly greater than reports of Unpleasant emotion to all negative films (overall  $M = 2.37$ ), and reports of Unpleasant emotion to the anger film ( $M = 2.61$ ) were significantly greater than reports of Unpleasant emotion to the other negative films (overall  $M = 2.28$ ). No other contrasts were significant.

Use of the same 2  $\times$  2  $\times$  5 repeated measures MANOVA design with reports of High Activation emotion as the dependent variable yielded results parallel to the valence analysis. That is, only the film main effect attained significance,  $F(4, 48) = 50.20, p < .001$ . Univariate follow-up tests indicated that reports of High Activation emotion to the happy film ( $M = 1.69$ ) were significantly less than reports of High Activation emotion to any of the negative films (overall  $M = 2.65$ ). Reports of High Activation emotion to the sad film ( $M = 1.90$ ) were significantly less than reports of High Activation emotion to the fear ( $M = 2.96$ ), disgust ( $M = 2.89$ ), and anger ( $M = 2.84$ ) films.

Analysis of Low Activation emotion revealed a somewhat different pattern of findings. The main effects for both sex,  $F(1, 51) = 3.79, p = .057$ , and gender role,  $F(2, 51) = 3.14, p = .052$ , approached significance. In general, men reported feeling more Low Activation emotion (e.g., quiet, tranquil) than women; however, only comparisons for the fear and disgust films were significant. Feminine participants generally reported feeling more Low Activation emotion than did either masculine or androgynous participants, but only the comparison between feminine and androgynous participants for the anger film

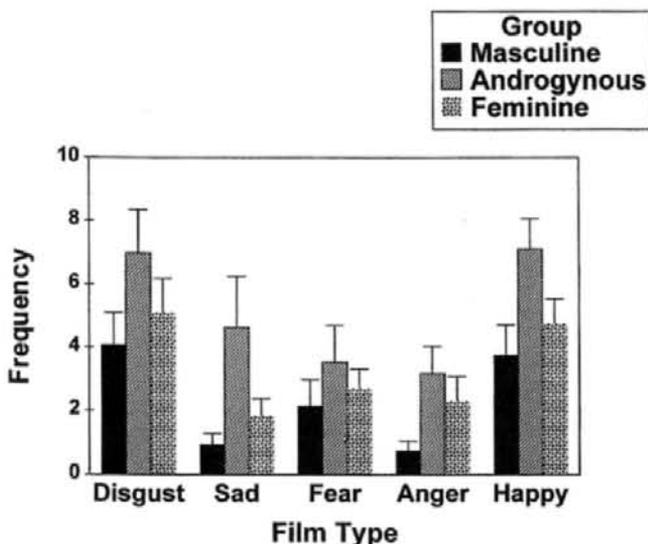


Figure 3. Frequency of positive and negative expressions ( $\pm SE$ ) by gender role classification in Study 2.

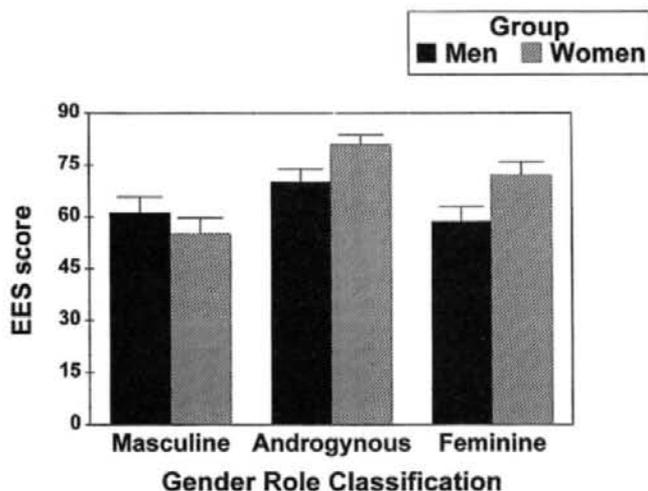


Figure 4. Emotional Expressivity Scale (EES) scores ( $\pm SE$ ) by gender role classification in Study 2.

reached significance,  $t(36) = 2.19, p = .035$ . Similar to the analyses for valence and activated emotion, the film main effect was significant,  $F(4, 48) = 34.63, p < .001$ . All participants reported more Low Activation emotion following the happy film ( $M = 2.27$ ) than following any of the negative films (overall  $M = 1.38$ ).

To summarize, using a dimensional measure of experienced emotion, men and women did not differ in their reports of Pleasant, Unpleasant, High Activation, or Low Activation emotion.<sup>8</sup> Men tended to report greater Low Activation emotion, but only for the fear and disgust films, and feminine participants tended to report greater Low Activation emotion than androgynous participants, but only for the anger film.

#### Skin Conductance

Skin conductance data were missing for 3 women and 2 men due to polygraph malfunction or experimenter error. During data collection, potential sources of artifact (e.g., moving) were marked on a separate channel. The skin conductance data were analyzed using a computer program written for this study, and as part of the program, data surrounding artifact indicators ( $\pm 5$  s) were removed (on average, less than 3 s per epoch were removed for each participant). The number of SCRs was then counted from the stream of SCL data. As in Study 1, the frequency of SCRs was divided by the total time of each condition (baseline or film) to yield an index of SCRs per minute. Then, reactivity scores were computed by subtracting the frequency of SCRs during baseline from the frequency of SCRs during each film type. Men and women did not significantly differ in

<sup>8</sup> Similar to the analyses conducted in Study 1, we recomputed the MANOVAs for facial expressivity, controlling for reports of positive, negative, high-activation, and low-activation emotion. In all cases, the results were identical to those reported above, suggesting that sex differences in facial expressiveness are not accounted for by reports of experienced emotion.

Table 5  
Self-Reports of Emotion During the Film—Study 2

Film and scale	Men						Women					
	Masculine		Feminine		Androgynous		Masculine		Feminine		Androgynous	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Happy												
Pleasant	3.4	0.88	3.37	0.49	3.48	0.54	3.16	0.99	3.68	0.55	3.36	0.59
High Activation	1.73	0.38	1.70	0.32	1.69	0.33	1.77	0.67	1.67	0.40	1.55	0.43
Low Activation	1.90	0.58	2.52	0.64	2.19	0.50	2.50	0.84	2.33	0.31	2.19	0.65
Sad												
Unpleasant	2.30	0.47	2.29	0.45	2.03	0.51	2.59	0.63	2.30	0.51	2.21	0.51
High Activation	1.90	0.44	1.811	0.58	1.69	0.45	2.23	0.68	1.99	0.60	1.75	0.49
Low Activation	1.80	0.57	2.22	0.75	1.67	0.34	1.45	0.40	1.74	0.15	1.76	0.45
Disgust												
Unpleasant	2.34	0.57	2.29	0.45	2.03	0.51	2.59	0.63	2.30	0.51	2.21	0.46
High Activation	2.88	0.70	2.88	0.76	2.75	0.61	3.10	0.89	3.11	0.86	2.57	0.78
Low Activation	1.43	0.62	1.52	0.54	1.19	0.29	1.08	0.18	1.17	0.22	1.04	0.11
Anger												
Unpleasant	2.69	0.57	2.36	0.45	2.51	0.51	2.84	0.50	2.80	0.75	2.46	0.52
High Activation	3.03	0.60	2.68	0.57	2.82	0.70	2.87	0.61	2.99	0.96	2.64	0.58
Low Activation	1.27	0.34	1.57	0.41	1.22	0.26	1.23	0.31	1.33	0.53	1.11	0.14
Fear												
Unpleasant	2.13	0.41	2.11	0.61	1.93	0.48	2.43	0.68	2.43	0.55	2.17	0.53
High Activation	2.97	0.60	2.97	0.98	2.83	0.42	3.00	0.80	3.24	0.76	2.78	0.79
Low Activation	1.38	0.57	1.38	0.45	1.24	0.32	1.15	0.36	1.13	0.26	1.02	0.06

Note. Values represent means for each scale (Pleasant, Unpleasant, High Activation, Low Activation) rated on a 5-point scale (1 = very slightly or not at all, 5 = extremely).

the number of SCRs during the baseline period. Reactivity scores are shown in Figure 5.

Skin conductance reactivity scores were entered into a 2 (sex: male, female)  $\times$  3 (gender role: masculine, feminine, androgynous)  $\times$  5 (film: happy, sad, disgust, anger, fear) repeated measures MANOVA. As was found in Study 1, the sex main effect was not significant; however, the Sex  $\times$  Film interaction was significant,  $F(4, 43) = 2.66, p < .05$ . As can be seen in Figure

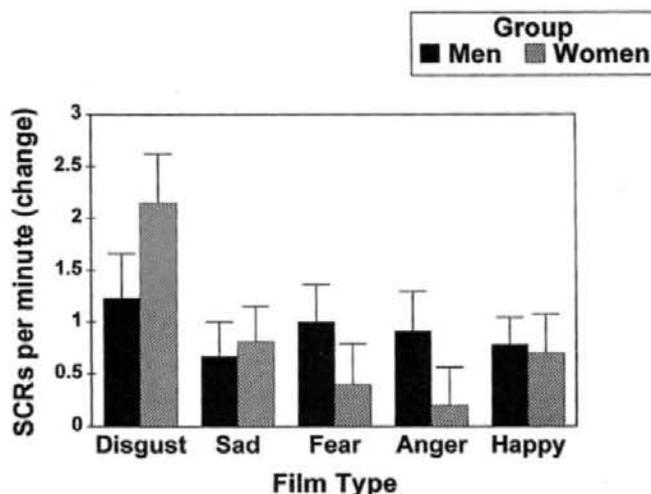


Figure 5. Skin conductance reactivity scores ( $\pm$  SE) for men and women in Study 2. SCR = skin conductance response.

5, men demonstrated greater reactivity to the anger and fear films; women demonstrated more reactivity to the sad and disgust films, although these contrasts only approached significance (probability values ranged from .08 to .14).

#### Internalizer–Externalizer Distinction

As in Study 1, median splits of the mean of expressive behavior across all films and the mean of skin conductance reactivity were conducted. The breakdown of the four groups (internalizer, externalizer, high responder, low responder) for men and women is shown in Table 6. A 2 (male, female)  $\times$  4 (externalizer, internalizer, high responder, low responder) chi-square analysis was significant,  $\chi^2(3, N = 53) = 14.05, p < .01$ . Similar to Study 1, more women than men fit in the externalizer category,

Table 6  
Internalizer–Externalizer Distinction for Men and Women—Study 2

Sex	Group			
	Internalizer	Externalizer	High responder	Low responder
Men	11	4	3	10
Women	4	10	9	2

Note. Values represent frequencies of men and women fitting into each category. Group membership determined by median split of mean skin conductance reactivity and mean expressivity across all films.

and more men than women fit in the internalizer category. However, a number of women also fit into the high responder category and a number of men fit into the low responder category.

To further investigate this distinction including gender role classification, a 3 (masculine, feminine, androgynous)  $\times$  4 (externalizer, internalizer, high responder, low responder) chi-square analysis was conducted but did not attain significance. This finding is not surprising given that gender role group differences were found only for expressivity and not for skin conductance reactivity.

### Discussion

Replicating the findings of Study 1, we found that women were more facially expressive than men in response to emotional films. Women also tended to report being more dispositionally expressive than men on the EES. However, in the present study, we also found a relationship between gender role and expressivity. Androgynous participants, regardless of sex, were more facially expressive and reported greater dispositional expressivity than masculine and feminine participants.

Also similar to Study 1, the expressive differences do not appear to be accounted for by differences in reports of experienced emotion. That is, men and women did not differ in their reports of Pleasant, Unpleasant, High Activation, or Low Activation emotion. However, men did report more Low Activation emotion than women following the fear and disgust films, suggesting that men felt more calm and tranquil than women during these films. Unlike the expressivity results, no significant gender role differences in reported emotion were found with one exception: Feminine participants reported experiencing more Low Activation emotion following the anger film than did androgynous participants.

Sex differences in skin conductance reactivity were found, paralleling the results from Study 1. Men had greater reactivity to the fear and anger films; women had greater reactivity to the sad and disgust films. Also replicating the findings from the first study, we found that more men than women were internalizers, and more women than men were externalizers. However, a number of women also fit into the high responder category and a number of men also fit into the low responder category. No gender role differences in skin conductance reactivity were found.

Men and women did not significantly differ in their scores on the FEQ, although women reported slightly more family expressiveness than did men. For both men and women, reports of greater family expressiveness were related to reports of greater dispositional expressivity. In other words, men and women who reported coming from an expressive family also reported being fairly expressive themselves. Reports of family expressiveness were related to facial expressivity during the films only for women, suggesting that women's reports of family expressiveness are related to expressivity in a number of contexts.

### General Discussion

Are women more emotional than men? The answer is neither simple nor straightforward. Results from these two studies indi-

cate that women are more expressive than men; however, women do not report experiencing more emotion than men. Men and women differ in their skin conductance reactivity, but this difference is not necessarily in the direction that suggests women are more emotional than men.

### *How Do Men and Women Differ in their Emotional Responses?*

Across two studies, women were more facially expressive than men of both positive and negative emotions. In addition, women reported being somewhat more dispositionally expressive than men on a self-report measure of expressivity. Although these findings are consistent with a number of other studies that have found women to be more expressive than men, the nature of these expressive differences is not well understood. That is, current empirical evidence about women's greater expressivity does not allow for more refined statements about sex differences. Rather, conclusions can be made about differences in global expressivity, positive and negative expressivity, or even individual emotions, but in very few contexts (e.g., solitary experimental situations). Might there be types of expressivity that do not distinguish men from women? Recent evidence suggests that this may be the case. In an attempt to more clearly map the domain of expressivity, Gross and John (1998) introduced a model containing five facets: positive expressivity, negative expressivity, expressive confidence, impulse intensity, and masking. Gross and John found that compared with men, women reported greater impulse intensity and greater positive and negative expressivity, and that men reported masking their emotions more than did women. Interestingly, men and women did not differ in the expressive confidence facet, indicating that men and women feel equally confident about their expressive skills. This finding suggests that men's diminished expressive displays are not simply due to a lack of confidence in revealing their feelings.

The difference in men and women's expressive behavior also does not appear to be accounted for by differences in reported experienced emotion. Across both studies, women did not report experiencing more emotion than men, even though they were more expressive. In Study 1, men and women did not significantly differ in their reports of the specific target emotions that the films were intended to elicit. In Study 2, men and women did not significantly differ in their reports of the valence and activation emotion dimensions. These findings are consistent with the developmental view that suggests males and females are differentially socialized with respect to expressive behavior but not necessarily with respect to experienced emotion. In addition, Gross and John (1998) reported that men mask their feelings more than do women, which suggests an expressive difference, not an experiential difference, between men and women. Analyzing reports of emotion on a momentary basis, Rosenberg and Ekman (1994) found that among women participants (men were not included in the study), the congruence between emotional expression and reports of emotional experience depended on the intensity of the response such that greater congruence was observed at greater levels of intensity. It would be interesting to replicate this finding with men to determine whether the same relationship between intensity and congruence

is present. Our findings suggest that the intensity level at which emotional expression and experience correspond might be higher for men than for women.

If women do not express more because they report experiencing more emotion, why are they more expressive? One hypothesis (Buck et al., 1974; Buck et al., 1972) holds that women tend to be externalizers in that their display of emotion tends to be primarily in the expressive domain. By contrast, men tend to be internalizers in that their display of emotion is manifested primarily via the psychophysiological domain. The present data provide some support for this distinction. In both Study 1 and Study 2, more men than women fit into the internalizer category, and more women than men fit into the externalizer category. However, nearly equal numbers of men and women fit into the low and high responder categories, respectively. The internalizer and low-responder categories are similar in that they are defined by lower (below the median) expressivity. By contrast, the externalizer and high responder categories are defined by greater (above the median) expressivity. Not surprisingly then, women who were more expressive fit into the categories defined by greater expressivity, and men who were less expressive fit into the categories defined by less expressivity.

Cacioppo and colleagues (Cacioppo et al., 1992) argued that facial expression and physiological reactivity are not only emotion response channels but also individual differences variables. Thus, individual differences in reactivity are reflected in response styles (characteristically high vs. low facial expressivity; characteristically high vs. low physiological reactivity). Consistent with this framework, some individuals will be more reactive facially than physiologically (externalizers); others will be more reactive physiologically than facially (internalizers), and still others will demonstrate similar facial and physiological reactivity (labeled *generalizers*). The extent to which sex figures into this framework remains an empirical question. Data from the present research suggest that although some men and women are internalizers and externalizers, respectively, both men and women also fit within the generalizer framework. Nonetheless, women's greater expressivity does not appear to be accounted for by either greater or lesser skin conductance reactivity.

Differences between men and women in skin conductance also varied according to emotion type, particularly for negative emotions. That is, men had greater reactivity to fear and anger films, and women had greater reactivity to sad and disgust films. These film type differences were not evident, however, in the expressivity or experienced emotion domains. Rather, women were more expressive than men across all films and did not differ from men in their reports of experienced emotion on any of the films. Although women were more expressive than men, this expressivity advantage is not entirely consistent with the internalizer-externalizer framework proposed by Buck and colleagues (Buck et al., 1974; Buck et al., 1972). Rather, only a subset of women fit into the externalizer category; a comparable number of women can be classified as generalizers or high responders. As noted above, our findings regarding the physiological component of emotional response are limited to just one measure: skin conductance. Indeed, research on the autonomic specificity of emotion suggests that different patterns of physiological response across a number of physiological measures accompany different emotions (e.g., Ekman et al., 1983; Leven-

son et al., 1990). Interestingly, the patterns of autonomic responses across different emotions appear to be the same for men and women (Levenson et al., 1990; Levenson, Carstensen, Friesen, & Ekman, 1991), although it remains unclear whether men and women differ in the magnitude of these responses. Certainly, future work on sex differences in emotional response would be enhanced by including additional physiological measures, both peripheral and central.

#### *Do Gender Role and Family Expressiveness Moderate Expressive Differences?*

To further address the question of why women are more expressive than men, Study 2 examined the role of two potential moderating variables: gender role characteristics and family expressiveness. Indeed, gender role differences were observed in expressive behavior but not for the experiential or physiological domains of emotional response. Rather than moderating the relationship between sex and expressivity, however, gender role appears to provide a contribution to expressive behavior independent of sex. That is, both male and female participants endorsing a high number of characteristics traditionally associated with both masculinity (instrumentality) and femininity (expressivity) were more facially expressive and reported being more dispositionally expressive than those participants only endorsing a high number of masculine characteristics and those participants only endorsing a high number of feminine characteristics. In other words, androgynous men and women were the most expressive. However, is it not possible that androgyny may account, at least in part, for women's greater expressiveness? Although participant selection for Study 2 was conducted to ensure an equal number of women and men in the three gender role categories, the original sample included more than 300 persons. We looked at this larger sample to see if more women than men fit into the androgynous category compared with the other two categories.<sup>9</sup> For women, 42% were categorized as androgynous, 37% as feminine, and 21% as masculine. For men, 50% were categorized as masculine, 30% as androgynous, and 20% as feminine. The difference between the proportion of women classified as androgynous and feminine was not significant; however, the difference between the proportion of men classified as masculine and androgynous did reach significance ( $z = 2.98$ ). Thus, half of the men in the original sample endorsed a high number of sex-typed characteristics, whereas the women did not disproportionately fall into their sex-typed category. Rather, a comparable number of women were classified as androgynous and feminine (with both of these groups representing more women than the masculine group). These proportions from the larger sample reveal that masculinity was more prevalent among men and that androgyny was at least equally (and slightly more) prevalent among women compared to the other categories. Results from the film study indicated that androgynous participants were more expressive than masculine participants. Thus, although women are more expressive than men, they appear to be just as likely to report being androgynous as feminine. By contrast, not only are men likely to be less expressive than

<sup>9</sup> We thank an anonymous reviewer for this suggestion.

women, they are also likely to be classified as masculine rather than androgynous. Taken together, these findings indirectly suggest that androgyny (and not femininity) may be linked to women's greater expressivity. This is not surprising when one considers the items that make up the femininity scale. That this construct is also labeled expressiveness is perhaps misleading.

Why might androgynous persons be more expressive? As noted earlier, androgyny is believed to reflect greater behavioral flexibility, and it is also associated with extraversion. Other studies have found a positive correlation between self-reports of expressivity and extraversion (e.g., Gross & John, 1995; Kring et al., 1994); however, the relationship between facial expressivity and extraversion is less well understood (e.g., Hammel, Eng, Gross, & Sutton, 1996; Keltner, 1996; Kring et al., 1995). Future studies of sex differences in emotion would be well served by including a wider sample of personality measures to more specifically examine the link between gender role, personality, and expressive behavior.

Androgynous persons may be less likely than other individuals to modify their expressive behavior in order to conform to societal notions of sex-appropriate expressivity. On the other hand, the notion of behavioral flexibility also suggests that androgynous persons may be more skilled at modifying their expressive behavior depending on the demands of the situation. It would be informative to conduct a study in which context is manipulated with, for example, high and low expressive demand conditions to determine whether androgynous persons modify their expressive behavior according to contextual changes or whether they remain highly expressive across situations.

Both men and women who reported coming from expressive families reported being more expressive than participants who reported coming from families that were not as expressive. This is consistent with Halberstadt's (1986) finding that participants who came from expressive families were better at sending emotional cues during a conversation than participants who came from low expressive families. Interestingly, reports of family expressiveness were correlated with facial expressivity for women but not men. Although family expressiveness was more strongly related to facial expressivity for women than men, conclusions about the nature of the influence (i.e., whether or not family expressiveness leads to greater individual expressiveness) cannot be made from these data. Nonetheless, family expressiveness appears to be importantly related to both dispositional reports of expressivity and facial expressive behavior for women.

### Limitations

Limitations of the present research must be acknowledged. First, facial expressivity was elicited in just one context: viewing films while alone. It is plausible that men and women's facial expressivity may differ according to changes in social context. For example, recent studies have found that expressivity is facilitated or enhanced in the presence of friends, particularly expressivity of positive emotion (Buck et al., 1992; Fridlund et al., 1992; Kring et al., 1995). However, studies that have included both men and women as participants did not find that the social context manipulation differentially affected the expressive behavior of men and women (Fridlund, 1990; Fridlund et al.,

1992). Nonetheless, consideration of the relationship between social context and expressive behavior for men and women warrants further investigation. As mentioned earlier, the generalizability of findings from a film-viewing paradigm is limited. Certainly future research in naturalistic settings will be informative with respect to sex differences in emotion. Second, participants in these studies were college men and women. Studies using younger participants will be informative for understanding emerging sex differences in expressivity. Longitudinal studies of emotional behavior, although expensive in several respects, may be a particularly ideal manner in which to examine influences on the development of individual differences in expressivity. Third, most of the participants in both studies were predominantly Caucasian, thus making it impossible to examine whether there were ethnic and racial differences in emotion and how ethnicity might interact with sex in moderating emotional response. Fourth, although we were able to replicate our findings across two studies, the sample sizes in each study were somewhat small.

In conclusion, the present research suggests that sex differences in expressivity cannot be accounted for by differences in reported emotional experience or differences in skin conductance reactivity. However, family expressiveness may contribute to sex differences in expressivity, but it is likely not sufficient to fully account for the gap between men and women's expressive behavior. Finally, androgyny is related to increased expressive behavior, but the extent to which it moderates the relationship between sex and expressivity appears to be minimal. Insofar as these variables reflect aspects of familial and peer socialization processes, they represent pieces to a puzzle that likely includes a number of variables associated with the development of individual emotional response styles.

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