THE INTENSITY OF EMOTIONAL FACIAL EXPRESSIONS AND DECODING ACCURACY

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ABSTRACT: The influence of the physical intensity of emotional facial expressions on perceived intensity and emotion category decoding accuracy was assessed for expressions of anger, disgust, sadness, and happiness. The facial expressions of two men and two women posing each of the four emotions were used as stimuli. Six different levels of intensity of expression were created for each pose using a graphics morphing program. Twelve men and 12 women rated each of the 96 stimuli for perceived intensity of the underlying emotion and for the qualitative nature of the emotion expressed. The results revealed that perceived intensity varied linearly with the manipulated physical intensity of the expression. Emotion category decoding accuracy varied largely linearly with the manipulated physical intensity of the expression for expressions of anger, disgust, and sadness. For the happiness expressions only, the findings were consistent with a categorical judgment process. Sex of encoder produced significant effects for both dependent measures. These effects remained even after possible gender differences in encoding were controlled for, suggesting a perceptual bias on the part of the decoders.

Knowing what other people feel is an important element of everyday social interactions. Facial expressions of emotion have been directly linked to the emotional state experienced by the sender (e.g., Buck, 1984; Ekman, 1984; Frijda, 1986; Scherer, 1986—but see also Fridlund, 1991) and have been shown to be an important source of information regarding the emotional state of others (Ekman, Friesen, & Ellsworth, 1982; Hess, Kappas, & Scherer, 1988; Noller, 1985). Research on the processing of emotional facial expressions has focused mainly on the decoder's ability to distinguish

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among qualitatively different emotions based on relatively intense facial expressions. In this context it has been demonstrated, at least for a limited set of emotions, that such expressions are generally recognized at above chance levels (e.g., Buck, 1994; Ekman, 1984, 1993; 1994; Fridlund, 1994; Izard, 1980, 1994).

Though literally hundreds of studies have examined the decoding of the affective quality of facial expressions, the question of the effects of expression intensity on decoding has received almost no attention. By intensity we mean the relative degree of displacement, away from a neutral or relaxed facial expression, of the pattern of muscle movements involved in emotional expressions of a given sort. In the case of happiness, for example, the intensity of the expression can be characterized as the degree of perceivable activity in the *Zygomaticus Major* and *Orbicularis Oculi* muscles away their resting or relaxed states (Duchenne, 1990/1862; Ekman & O'Sullivan, 1991). This article addresses two questions regarding the intensity of patterned facial muscular activity and decoding. First, how is the perception of the intensity of the emotional state attributed to the stimulus person related to the physical intensity of an expression? Second, how are both the physical and the perceived intensity of the expression related to accuracy of decoding the qualitative aspect of the expression? That is, how intense does an expression of a particular emotion have to be before it is recognized at above-chance levels as representing a specific emotion category?

To our knowledge only two studies have directly investigated questions relevant to those at issue here. Katsikitis, Pilowsky, and Innes (1990) studied the influence of ratings made of smiling and non-smiling faces using line drawings as stimuli. In this context, they employed expressions with differing physical distances between key features of the face and found that expressions tend to be considered smiles when the distance between the corners of the mouth and the corners of the eyes is less than 40% of the maximum distance, suggesting a categorical recognition process on the neutral-happiness continuum.

These findings are similar to those by Etcoff and Magee (1992), who studied the influence of the intensity of the expression on decoding accuracy for expressions of happiness, sadness, and surprise using drawings. Thus, the present evidence suggests categorical perception of expressions of varying intensity. That is, the intensity of the muscular displacement involved in the expression must pass some particular level before perceivers can correctly infer a qualitatively distinct emotional state on the part of the expressor; once this level is passed the expressions will be accu-

rately decoded by most judges. However, these findings were largely obtained in studies using line drawings which reduced the number of available cues to a minimum.

As noted above, the present study investigated the influence of the actual physical intensity of a particular expression on (a) the perceived intensity of the underlying emotion and (b) decoding accuracy. For this, stimuli were selected from a standard set of expressions of young adults (JACFEE, Matsumoto & Ekman, 1988). This set contains both neutral and relatively intense posed emotional expressions for a number of basic affects. Normative data for this stimulus set confirm both the emotional neutrality of the non-expressive faces and the high recognizability of the emotional poses. For several stimulus persons in this set, the neutral and emotional expressions were selected. From each such pair, new stimuli, varying in the physical intensity of the pattern of muscle movements involved in the expression, were created using a "morphing" graphics program. The participants' task was to rate the expressions according to the intensity with which they expressed a series of emotions.

Method

Participants

Twelve women and 12 men from Dartmouth College, ranging from 18 to 21 years of age (M = 18.97), participated individually for extra course credit.

Stimulus Materials

Facial expressions of anger, disgust, sadness, and happiness for two male and two female Caucasian actors were selected from the JACFEE stimuli created by Matsumoto and Ekman (1988). This series is composed of emotional facial expressions by Caucasian and Japanese young adults who have been instructed to pose various basic emotions. Each individual in the set poses a neutral expression and one of the basic emotions.

For the particular stimulus persons chosen, normative data provided by Biehl et al. (1997) show that the poses are correctly decoded on average by 85.3%, 79.3%, 97.9%, 91.8% for anger, disgust, sadness, and happiness respectively by the U.S. sample. The colored facial photographs were digitally scanned into high-quality black and white computer images. The neutral and the intense emotional pose from a given stimulus person were

then combined by a morphing program such that intermediate expressions between the neutral and the full emotional display were created. Each of the intermediate expressions represented 20% incremental intensity steps of the pattern of relevant muscle movements away from the neutral toward the intense emotional expression.[1] The resulting set of 96 stimuli (6 intensity steps × 4 emotions × 2 actors × sex of actor) was presented to the 24 participants in 24 random orders using a Macintosh Performa 575 computer with a 14 inch screen.

Procedure

After greeting the participants the male experimenter explained that the task was to rate a series of facial expressions on both the particular emotion being expressed and the intensity of that expression. Participants were seated at a small table at a comfortable viewing distance from the computer screen. Detailed instructions regarding the task and the use of the mouse to make the ratings were presented on screen. After participants had read the instructions and completed two practice trials the experimenter answered any questions regarding the procedure and left the room. Participants were informed that if they became fatigued during the stimulus sequence they could rest their eyes for a couple of moments between stimuli and that if they wanted to terminate their participation in the study at any point they were free to do so. The participants initiated the stimulus sequence using the mouse to click a start button. For each trial the program displayed one of the 96 stimuli randomly selected from the total set. Each face appeared on the screen for 5 seconds. It was immediately replaced by a set of scales with specific emotion labels (anger, contempt, disgust, fear, happiness, sadness, surprise). Using the mouse, participants clicked a point along each emotion scale indicating the intensity with which the face reflected that specific emotion. A final scale asked for their perception of how difficult it was to rate that particular expression. After the participants had responded to all scales they clicked an 'OK' button on the screen to initiate the next trial. If they had skipped any rating scales the program did not display the next stimulus until all ratings scales had been responded to. Following the completion of the total set of judgments, participants were asked to fill out a questionnaire asking them to indicate their overall level of confidence in their ratings and their level of interest in the task. Finally the experimenter debriefed the participants regarding the goals of the experiment and answered any remaining questions.

Dependent Variables

Rating scales. Participants were asked to indicate for each face the intensity with which it expressed each of the following emotions: anger, contempt, disgust, fear, happiness, sadness, and surprise. The scales were represented by a 200 pixels long, bounded rectangle on the screen, the first 30 pixels of which were white and indicated a judgment of 0.[2] The remaining 170 pixels were graded in color from light gray to dark gray, with the darker end of the scale indicating greater intensity of the emotion. Each scale contained an emotion label and was anchored with the labels "not at all" and "very intensely." An additional scale with the same appearance was employed for the task difficulty ratings.

Decoding accuracy. We defined decoding accuracy as the observers' ability to correctly infer the posed emotion. An expression was considered as accurately identified when the emotion receiving the highest intensity rating on the emotion profile corresponded to the target emotion. An accurately identified expression received a score of 1 and a misidentified expression received a score of 0.

Data reduction. Intensity judgments and accuracy scores were averaged over the expressions of the two male and two female actors respectively. All data analyses were conducted on these averages.

Results

Intensity Ratings

Mixed-model analyses of variance with the between-subjects factor sex of rater and the within-subjects factors sex of actor and intensity of the expression (20%, 40%, 60%, 80%, and 100%), were conducted for the intensity ratings on the target emotion scale (continuous scale from 0 to 170) for the anger, disgust, sad, and happy expressions. The means are presented in Figure 1.[3] Table 1 shows the *F*-values.

In general, the more intense the expression, that is, the higher the percentage of the full-blown expression in the morphed expression, the higher the intensity ratings on the target emotion scale. Post-hoc comparisons indicate significant ($p < .05$) differences between each level of intensity and the next for all emotions.[4] Interestingly, a significant main effect of sex of actor emerged for all four emotions. Specifically, anger and disgust

TABLE 1

2 (Sex of Rater) × 2 (Sex of Actor) × 5 (Intensity of the Expression) Analyses of Variance on the Intensity Ratings for Expressions of Anger, Disgust, Sadness, and Happiness

		F			
Source	*df*	Anger	Disgust	Sadness	Happiness
	Within-subjects effects				
Sex of Actor (A)	1,22	17.43***	8.41**	5.70*	93.28***
Intensity (I)	4,19	77.65***	51.08***	35.64***	97.26***
A × I	4,19	1.28	2.39	18.59***	4.11*
	Between-subjects effects				
Sex of Rater (R)	1,22	0.48	0.83	2.60	0.38
A × R	1,22	0.01	0.00	0.05	0.02
I × R	4,19	0.19	5.36*	0.75	0.47
A × I × R	4,19	0.69	3.38*	3.43*	2.59

Note. *** $p < .001$ ** $p < .01$ * $p < .05$

expressions by male actors were rated as more angry and more disgusted while happiness expressions by female actors were rated as more happy. Further, post-hoc comparisons show that weak sad expressions by male actors were rated as more sad than weak expressions of female actors while the reverse was the case for the full blown expressions (see Figure 1).

To test the hypothesis that intensity ratings varied linearly with the intensity of the expression, a linear contrast was tested. For all emotions a significant linear trend emerged for the intensity of the expression ($p < .001$), with eta^2 larger than .80. Significant departures from linearity were found only for expressions of joy by female actors and expressions of disgust by male actors. For these expressions, the eta^2 for the quadratic trends was .44 and .66 respectively.

Accuracy Ratings

For the present analysis an expression was considered as accurately identified when the emotion receiving the highest intensity rating on the emotion profile corresponded to the target emotion. However, this ap-

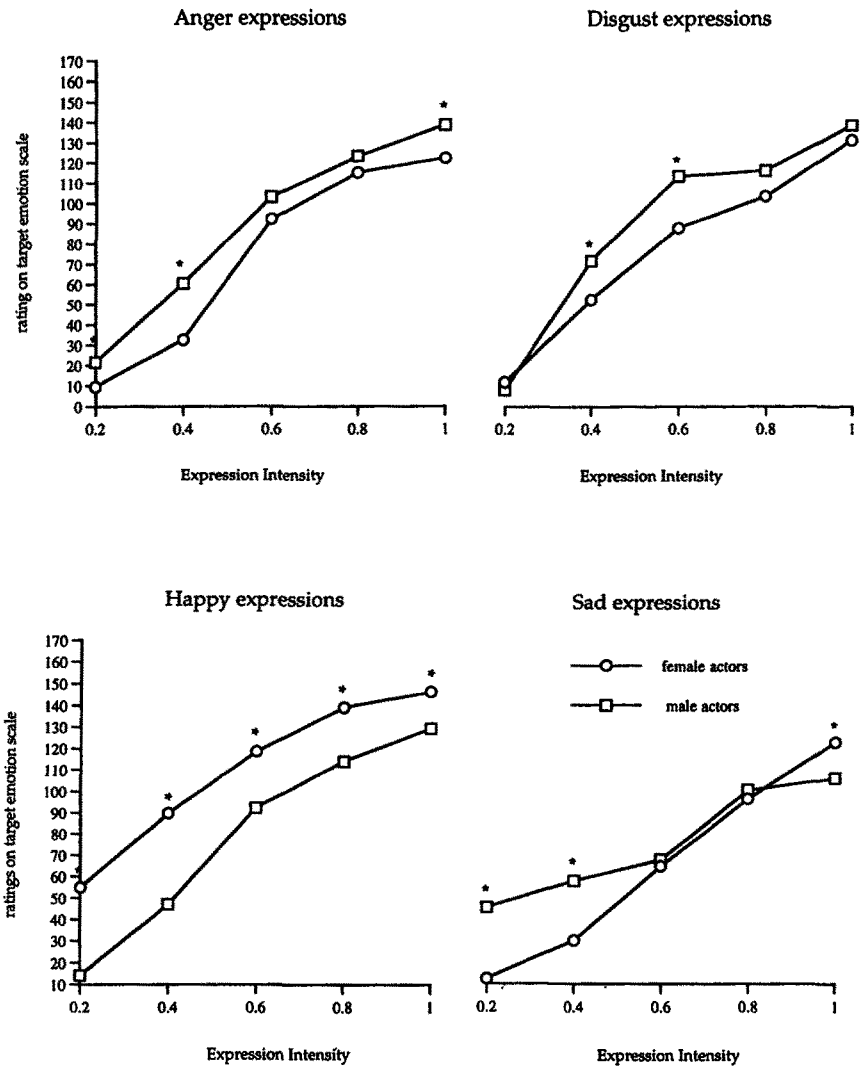

Figure 1. Mean intensity for ratings on the target emotion scale for expressions of anger, disgust, sadness, and happiness as a function of the intensity of the expression and the sex of the actor (* $p < .05$ for the difference in intensity between the expressions of male and female actors).

proach is only valid when it can be assumed that judges tend to use all scales similarly. If judges systematically give higher ratings to some scales than to others, accuracy for these scales would be overestimated. Table 2 shows both raw accuracy scores and bias-corrected accuracy scores using the approach proposed by Wagner (1993). The accuracy scores derived from both procedures are very similar. Since bias-corrected scores demand additional transformations before they can be subjected to parametric statistics all analyses were conducted on the raw scores.

Analyses of variance with the between-subjects factor sex of rater and the within subjects-factors sex of actor and intensity of the expression

TABLE 2

Raw and Bias-Corrected Accuracy Scores as a Function of Sex of Actor, and Intensity of the Expression for Expressions of Anger, Disgust, Sadness, and Happiness

		Female actor		Male actor	
Sender's expression	Intensity	Raw	Corrected for bias	Raw	Corrected for bias
Angry	20%	.17	.06	.29	.19
	40%	.42	.21	.58	.53
	60%	.79	.60	.67	.63
	80%	.79	.61	.77	.77
	100%	.83	.76	.88	.92
Disgusted	20%	.08	.06	.17	.08
	40%	.33	.25	.60	.47
	60%	.54	.45	.83	.79
	80%	.58	.54	.85	.76
	100%	.75	.64	.98	.94
Sad	20%	.27	.13	.63	.35
	40%	.52	.47	.75	.61
	60%	.79	.73	.83	.78
	80%	.92	.92	.94	.94
	100%	.91	.92	.90	.90
Happy	20%	.96	.63	.35	.27
	40%	1.0	.81	.77	.75
	60%	.96	.90	.92	.92
	80%	.96	.96	.98	.98
	100%	.97	.96	.98	.98

(20%, 40%, 60%, 80%, and 100%) were conducted separately for each of the four emotions. The means are presented in Figure 2. Significant main effects of intensity emerged for all four emotions. Further, a significant main effect of sex of actor was found for joy, disgust, and sadness. A significant Intensity × Sex of actor interaction was found for joy, anger, and sadness (see Table 3). Effects involving sex of rater emerged for disgust expressions only; for these expressions a significant Sex of rater × Intensity of the expression as well as a Sex of rater × Intensity of the expression × Sex of actor interaction was found.

In general, the more intense the expression the more accurately the expression was recognized. Further, significant linear trends for rating accuracy as a function of the intensity of the expression ($p < .001$) were found for all emotions. Thus, the increase in recognition accuracy as a function of the intensity of the expression was roughly linear for all emotions; however, for all emotions except anger significant departures from linearity emerged ($p < .001$) for both male and female actors. These depar-

TABLE 3

2 (Sex of Rater) × 2 (Sex of Actor) × 5 (Intensity of the Expression) Analyses of Variance on the Accuracy Scores for Expressions of Anger, Disgust, Sadness, and Happiness

		F			
Source	*df*	Anger	Disgust	Sadness	Happiness
	Within-subjects effects				
Intensity (I)	4,19	20.44***	104.59***	17.25***	15.84***
Sex of Actor (A)	1,22	0.94	32.54***	13.78***	55.39***
I × A	4,19	3.07*	1.29	4.46**	21.93***
	Between-subjects effects				
Sex of Rater (R)	1,22	0.03	0.51	1.67	0.59
A × R	1,22	0.10	0.27	3.08	0.10
I × Sex of Rater	4,19	0.53	9.02***	0.75	1.25
A × I × Sex of Rater	4,19	1.99	3.97*	0.83	0.90

Note. *** $p < .001$ ** $p < .01$ * $p < .05$

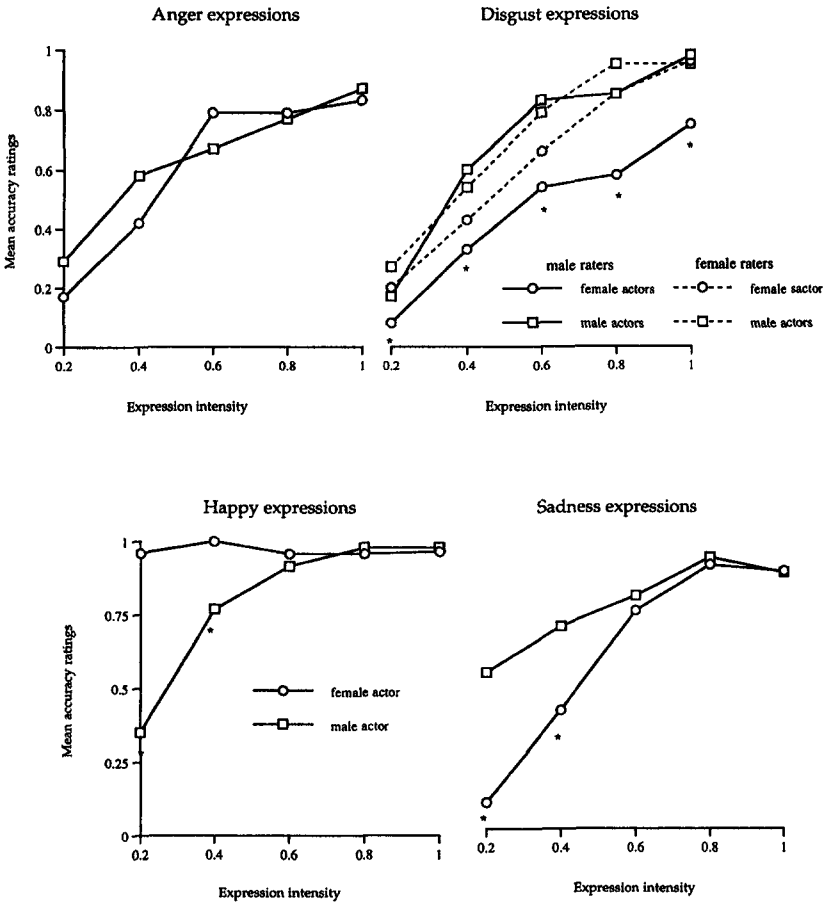

Figure 2. Mean rating accuracy for expressions of anger, disgust, sadness, and happiness as a function of the intensity of the expression and the sex of the actor (* $p <$ .05 for the difference in intensity between the expressions of male and female actors).

tures were due to significant quadratic trends for all emotions as well as significant cubic trends for disgust and happiness expressions. However, the eta^2 for the linear trend was generally substantially larger than those for the quadratic and cubic trends, suggesting a basically linear trend. The exception was for happiness expressions. Here the quadratic and linear trends were of comparable strength. Overall, recognition accuracy was highest for happy expressions and lowest for sad expressions. The accuracy

scores for the full-blown expressions are consistent with those reported by Biehl et al. (1997).

Sex of actor effects. Interestingly, differences in rating accuracy due to sex of actor emerged for expressions of disgust, sadness, and happiness. For happy and sad expressions this effect was qualified by a Sex of actor × Intensity of the expression interaction such that low-intensity expressions of male actors were better recognized than low-intensity expressions of female actors, while for more intense expressions no differences were found. For disgust expressions the main effect of sex of actor was qualified by a Sex of rater × Intensity of the expression × Sex of actor interaction. Specifically, male raters were less accurate in decoding female actors' expressions than male actors' expressions and this difference was larger for more intense expressions.

The main effects and interactions involving sex of actor suggest that judgments differ according to whether an emotional expression is shown by a male or by a female actor, especially for low- to mid-intensity expressions. Two explanations for this finding can be advanced. First, it is possible that raters hold stereotypes regarding the emotional expressivity of men and women and that these stereotypes influence the judgments of the emotional facial expressions, especially as regards less intense expressions.

Second, it is possible that differences in decoding accuracy are due to differences in the stimuli. Male and female actors' full-blown expressions may be of different intensities thus resulting in intensity differences over the whole span of expressions. This notion is supported by the sex of actor effect for the ratings of the perceived intensity of the target emotion as well as by the normative data provided by Biehl et al. (1997) for the full-blown expressions. Biehl et al.'s data show differences for expressions by male and female actors in the percentages of subjects choosing the predicted emotion which are congruent with the differences found in the present study. Also, expressions from male and female actors may differ regarding the level of other emotions present together with the target emotion, that is, the ambiguousness of the expression.

To assess these latter possibilities, an analysis of covariance was conducted with the factors sex of actor and intensity of the expression, separately for each emotion, on the accuracy ratings. Two covariates were employed. First, to assess whether the sex of actor differences are due to differences in the intensity of the expressed target emotion, the perceived intensity of the target emotion was included as covariate. Second, to assess whether the sex of actor differences are due to differences in the ambiguity

TABLE 4

Univariate Analyses of Covariance: Sex × Intensity × Sex of Actor

		F			
Source	*df*	Anger	Disgust	Sadness	Happiness
Actor (A)	1,21	0.22	2.48	14.97***	6.19**
Regression	2,22	5.82**	7.18**	11.01***	0.98
Intensity (I)	4,90	4.33**	4.04**	6.81***	6.03***
Regression	2,90	24.79***	25.67***	10.10***	12.44***
A × I	4,90	1.31	0.19	1.26	26.50***
Regression	2,90	26.87***	41.23***	11.39***	6.85**

Note: *** $p < .001$ ** $p < .01$ * $p < .05$

of the expressed emotion, the mean of the intensity ratings for all other emotions was employed as covariate. Table 4 shows the results.

In general, as expected, a significant effect of the covariates emerged. However, the effect of sex of actor remained significant for expressions of sadness and happiness. Thus, only for disgust were differences in rating accuracy for expressions of male and female actors explained by differences in the intensity and the ambiguousness of the expression. That is, while there is some evidence for sex of encoder differences regarding the intensity and the ambiguousness of the expressions, an additional decoding bias remains for all emotions except disgust when these effects are controlled for.

Task Difficulty

A mixed-model analysis of variance involving the between-subjects factor sex of rater and the within-subjects factors emotion, intensity of the expression, and sex of actor was conducted for self-reported task difficulty. Significant main effects of emotion and of intensity of the expression emerged as well as an Emotion x Sex of actor interaction, $F(3, 20) = 14.03$; $p < .001$, $F(4, 19) = 13.53$, $p < .001$, and $F(3, 20) = 13.76$, $p < .001$ respectively. In general, the more intense the expressions the less difficult the task was perceived to be. Further, expressions of disgust, anger, and sadness were perceived as more difficult to decode than expressions of joy ($M = 43.04$, $SD = 34.05$; $M = 47.39$, $SD = 35.82$; $M = 45.60$, $SD = 36.87$; and $M = 29.53$, $SD = 31.90$, respectively). Finally, for anger

and sadness the expressions of the male actors were perceived as easier to decode than the expressions of the female actors while for joy the reverse was the case. These findings for self-reported task difficulty largely mirror the findings for the accuracy data. This can be expected since both decoding accuracy and self-reported task difficulty measure essentially the same variable: decoding difficulty. However, a number of interesting exceptions emerge. While for joy both male and female expressions at 60%, 80%, and 100% intensity were almost perfectly decoded, expressions by female actors at 60% and 80% intensity were perceived as significantly less difficult to decode than the corresponding expressions by male actors. Further, for disgust no significant differences in self-reported task difficulty between expressions by male and female actors emerged while decoding accuracy differed significantly at all levels except 20% intensity.

Discussion

The goal of the present study was to assess the influence of levels of intensity of emotional expressions (a) on the perceived intensity of the underlying emotional state and (b) on decoding accuracy. Two main findings emerged. Regarding the first issue, perceived intensity of the underlying emotion varied linearly with the physical intensity of the expressions. That is, raters attributed to the target person an emotional state of an intensity that corresponded to the manipulated intensity of the expressions. Thus, weak expressions of emotions were perceived as reflecting weak emotional states while strong expressions of emotions were seen to reflect strong emotional states. These findings may suggest that, at least in absence of situational information, participants view emotional facial expressions as a relatively direct read-out of an underlying emotional state. This is particularly interesting given the recent debate regarding the issue of whether the intensity of an emotional facial expression is in fact determined by an underlying emotion or rather by the social situation (Buck, 1991; Fridlund, 1991, 1994; Fridlund, Kenworthy, & Jaffey, 1992; Hess, Kappas, & Banse, 1995).

Regarding the second issue, decoding accuracy varied largely with the physical intensity of the expressions for all emotions except happiness. Specifically, expressions of joy were recognized at close to 100% at very low levels of intensity (for female actors' expressions at the 20% level). These findings are in accordance with the happy face advantage reported in the literature, showing higher accuracy for the decoding of happy faces in a variety of conditions (e.g., Ekman & Friesen, 1971; Kirita & Endo,

1995; Kirouac & Doré, 1983). While at very low levels of physical intensity of the expression some important elements of a happy expression such as the wrinkles around the eyes are not visible, previous research suggests that observers tend to base their ratings of the intensity of the underlying happiness of the sender on the activity of the mouth region alone (Hess, Kappas, McHugo, Kleck, & Lanzetta, 1989; Kappas, Hess, & Kirouac, 1995). Further, one should note that male actors' expressions of disgust and sadness are accurately decoded at relatively low levels of both perceived and manipulated physical intensity.

The pattern of results does not support the notion of a categorical decoding process for all emotions. However, high levels of decoding accuracy can be found at very low levels of intensity for some emotions. In particular, the findings for happiness are in accordance with the suggestion that the decoding of this expression may be categorical rather than dimensional as suggested by Katsikitis et al. (1990) based on line drawings. However, for anger expressions decoding accuracy varied linearly with both perceived and physical intensity. This latter finding is especially interesting given the importance of anger displays, and of components of anger displays, as threat signals (e.g., Keating, 1985). For expressions of disgust and sadness no clear trend towards either form of decoding process emerged.

A particularly interesting finding was that the gender of the sender influenced the decoding of emotional facial expressions. Specifically, male actors' expressions of disgust and sadness were better recognized than were female actors' expressions of these emotions. For expressions of joy the reverse was the case.

It may be argued that these findings are due to gender differences in encoding ability, which have been well documented in the literature. A large body of research shows that women are generally more facially expressive (e.g., Brody & Hall, 1993; Hall, 1984; Wagner, Buck, & Winterbotham, 1993). Thus one may speculate that the differences found are due to differences in encoding ability with women being better encoders of happiness while men are better encoders of negative affect.

However, a number of factors suggest that this is not the case for all the differences observed. First, contrary to what may be expected based on the above account, male actors' expressions of anger were not found to be better recognized than female actors' expressions. Second, and more importantly, analyses of covariance, controlling for the ambiguity of the expression as well as for differences in the intensity of the expressed target emotion, suggest that differential encoding ability accounts only for differences in decoding accuracy for male and female actors' disgust expres-

sions. Thus, the present data suggest clearly that raters evaluate the emotional expressions of men and women differently.

In summary, the present findings suggest that the perceived intensity of the underlying affective state of the sender is linearly related to the physical intensity of the emotional facial expressions. Further, the findings are congruent with the notion that decoding accuracy may not be linearly related to physical intensity for all emotions and may be better conceptualized as categorical, at least for expressions of happiness. Finally, the findings point to the presence of a decoding bias suggesting that observers decode women's and men's low to mid-intensity emotional facial expressions differently.

Two points need to be noted in this context. First, the majority of studies investigating decoding accuracy have employed high-intensity full-blown emotion expressions, for which less bias was found in the present study. Second, most spontanous everyday-life expressions tend to be low- to mid-intensity (e.g., Motley & Camden, 1988). Thus, the possibility of systematic decoder bias for these emotional expressions could be of specific importance to everyday interactions. More research is needed to assess to what degree decoding biases correspond to stereotypes and emotion norms regarding appropriate emotion expression for men and women. As Brody and Hall (1993) and Fischer (1993) point out, such gender stereotypes regarding emotionality tend to be pervasive and are socialized early in life (see Haugh, Hoffman, & Cowen, 1980). Thus, it is likely that decoding rules exist which can be linked to display rules and that social norms exist not only for the displaying emotional expressions but also for perceiving and interpreting emotion displays of others.

Notes

1. Full details of the procedure for creating stimuli and printed images of them are available from the authors.
2. This scale format was chosen because pre-tests had shown that participants could not quickly and reliably use the mouse to make a judgment of exactly 0 on the continuous 200 pixel scale.
3. The mean intensity ratings on the target scale for the neutral expressions are for anger expressions $M = 2.02$, $SD = 3.42$; $M = 1.69$, $SD = 4.11$; for disgust expressions $M = 5.73$, $SD = 8.36$; $M = 2.48$, $SD = 6.34$; for sadness expressions $M = 26.85$, $SD = 14.25$; $M = 14.25$, $SD = 27.69$; and for happiness expressions $M = 1.00$, $SD = 2.99$; $M = 34.63$, $SD = 27.69$ for male and female actors respectively.
4. With the exception of the difference in rated intensity for the expressions of disgust at 60% and at 80%, for which $p = .082$.

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