FACE, CULTURE, AND JUDGMENTS OF ANGER AND FEAR: DO THE EYES HAVE IT?

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ABSTRACT: Three studies examine the contribution of the eyes to judgments of anger and fear. In Study 1, expressions of anger and fear posed by American and Japanese individuals were presented to American subjects, who judged *which* emotion was shown, and *how intensely* it was shown. In Study 2, the stimuli were judged by American and Japanese subjects, in order to test the effects of judging faces of another visibly different culture. In Study 3, the stimuli were shown to American subjects, who made judgments concerning degree of control and artificiality in the stimuli. The findings from all three studies indicated that the eyes play an important role in labelling emotion and judging its intensity, but do not provide information concerning control or artificiality. The findings also implicated effects of the eyes as a function of facial physiognomy.

Although the existence of universal expressions of emotion is well documented (cf., Ekman, 1972, 1973; Ekman & Friesen, 1971; Ekman, Sorenson, & Friesen, 1969; Izard, 1971), many other questions concerning facial expressions of emotion remain. The studies reported here examine two other important aspects of universal emotional expressions, and the meanings associated with them. The first concerns the contribution of different areas of the face in judgments of emotion. The second concerns the differential effects of facial physiognomy on judgments.

Relative Contributions of Different Areas of the Face in Judgments of Emotion

Ekman and Friesen (1975) specified three facial areas that contribute to emotional expression: the *upper face* above the eyebrows; the *eyes*, including the upper cheek; and the *lower face*, including the nose, mouth, and chin. Each of the universal expressions involves a distinct patterning in each of these areas. For example, anger involves drawing together and lowering the brows, raising the upper eyelids and tensing the lower eyelids, and tensing the lips while either pressing them together or raising the upper lip to bare the teeth. Fear involves raising and drawing together the brows, raising the upper eyelids and tensing the lower eyelids, stretching the lips horizontally and dropping the jaw.

No study has examined the contribution of each of the different facial areas to emotion messages. There are several ways to conceptualize their contribution. One way involves the contribution of the different areas *independent* of other areas. Studies testing this type of contribution would involve judgments of *partial* emotional expressions, where emotion is registered in only one area of the face. There are no data to suggest whether partial expressions can communicate emotion by themselves, or whether emotion is communicated only through action in all three areas.

A second way to conceptualize their contribution involves testing the effects of a single facial area embedded within universal expressions. Studies examining this contribution would involve judgments of full-face expressions of the same emotion that differed in the appearance of a single facial area. Single areas may enhance the emotion message, making the expression clearer and less ambiguous. Or, they may detract from emotion communication, rendering the expression uninterpretable.

A third way to conceptualize the contribution of different facial areas to emotion communication involves a consideration of the different types of messages that are communicated by different expressions. The most common message studied is the interpretation of *which* emotions are communicated. Recent studies have investigated the *intensity* of emotional expressions (Ekman et al, 1987; Matsumoto & Ekman, 1988). Different areas of the face may contribute differentially to these, and to other types of messages, including judgments concerning how much *control* people impose upon their expressions, or how *real* or *fake* the expressions are.

The studies reported here examine the contribution of the eyes in full-face expressions of anger and fear to judgments of which emotions are portrayed, and of intensity, control, and artificiality in the expression. The eyes were a natural area to study, because of their importance in the appearance of these emotions.

Facial Physiognomy and Judgments of Emotion

A second aspect of universal expressions addressed by this article concerns the effects of facial physiognomy on judgments. Ekman (1977) has specified four ways in which the face can influence emotion judgments: (a) *fast* signs, produced by patterning of the facial musculature (i.e., the expressions themselves); (b) *slow* signs, manifested by characteristic wrinkle patterns produced over time; (c) *static* signs, which refer to the effects of different facial structures (high cheek bones, protruding brows ridge, etc); and (d) *cosmetic* signs, which refer to the effects of cosmetics and other paraphernalia (e.g., glasses). For the most part, most studies to date have examined the effects of *fast* signs. But facial expressions are superimposed over the slow and static signs, and cosmetic signs may, in turn, be superimposed over the fast signs. Studies of the effects of these different signs are important, as they give information concerning the communication of emotion with more ecological validity.

The studies reported here examine the effects of physiognomic differences in the eyes on judgments of emotion. These differences were operationalized as differences in the eye structures between Caucasian and Japanese faces. This comparison lends itself to this study, given the structural differences in the eye cover fold between Americans and Japanese (the area immediately above the eyes and under the brows). Operationalizing differences in facial structure by nationality is problematic, and requires prior systematic work documenting consistent differences in facial morphology according to culture. But, the only work to examine the relationship between race and structure is that of Huber (1931), which now is dated and biased. A system measuring facial features would be an alternative, but unfortunately, such a system does not exist. While being our only pragmatic alternative, the use of American and Japanese faces also allows us to examine cultural similarities in judgments of these faces by testing subjects from both cultures.

Overview

Three studies were conducted, addressing the issues outlined above concerning the contribution of different facial areas to: (1) judgments of emotion; (2) the effects of facial physiognomy on judgment; and (3) the degree of cultural similarity or difference in these judgments. Several universal expressions of anger and fear were used, and these differed in two important ways. First, they differed in the degree of innervation of orbicularis oculi, the muscle surrounding the eyes, which raises the upper eyelid.

Variations of the degree of upper eyelid raise resulted in three different types of anger expressions, and two different types of fear expressions. Second, some of the photos portrayed American faces, while others were of Japanese faces.

Study 1

Overview

In Study 1, anger and fear expressions differing in the degree of upper eyelid raise, posed by American and Japanese individuals, were shown to American judges. The judges were asked first to label each expression. by choosing a single emotion term that best described the expression. These data allowed us to examine (1) whether differences in the degree of upper eyelid raise produced differences in the clarity of the overall emotion message; and (2) whether differences in the culture of the poser produced differences in judgments, implicating effects of facial physiognomy. On a second viewing, the judges were asked to rate the intensity of each of the expressions. These data allowed us to examine (3) whether differences in the degree of upper eyelid raise produced differences in judged intensity; and (4) whether these differences occurred for faces of both nationalities.

Method

Subjects. The sample included 70 US-born college students, excluding those of Asian descent. All subjects participated in partial fulfillment of class requirements. Of the 70, 35 were male, and 35 were female.

Facial stimuli. The facial stimuli included 10 photos of anger and 14 photos of fear. Photos differed in the degree of upper eyelid raise, and in nationality. The American posers were limited to US-born Caucasian-Americans, and for simplicity, they will be referred to as "Americans." The Japanese posers included only individuals of Japanese background; some were US-born Japanese Americans, while others were Japan-born nationals. All posers were college students, and thus were of comparable age to the subjects of this and following studies.

All the anger expressions portrayed the "closed-mouth" version of the emotion (cf., Ekman & Friesen, 1975; see Figure 1). The only respect in which the photos differed was in the varying degrees of upper eyelid raise. There was one photo each of an American and Japanese male and female that depicted anger with no upper eyelid raise; the eyes were tensed and narrowed. Another photo for each of these groups depicted anger with a moderate degree of upper eyelid raise, lifting the upper eyelid just above the iris, and giving the expressions a staring quality to them. Finally, one photo each of an American male and female portrayed anger

FIGURE 1

Samples of anger and fear poses. The top two are of Japanese males posing anger; the bottom two are of American females posing fear. Actual stimuli used were in color.
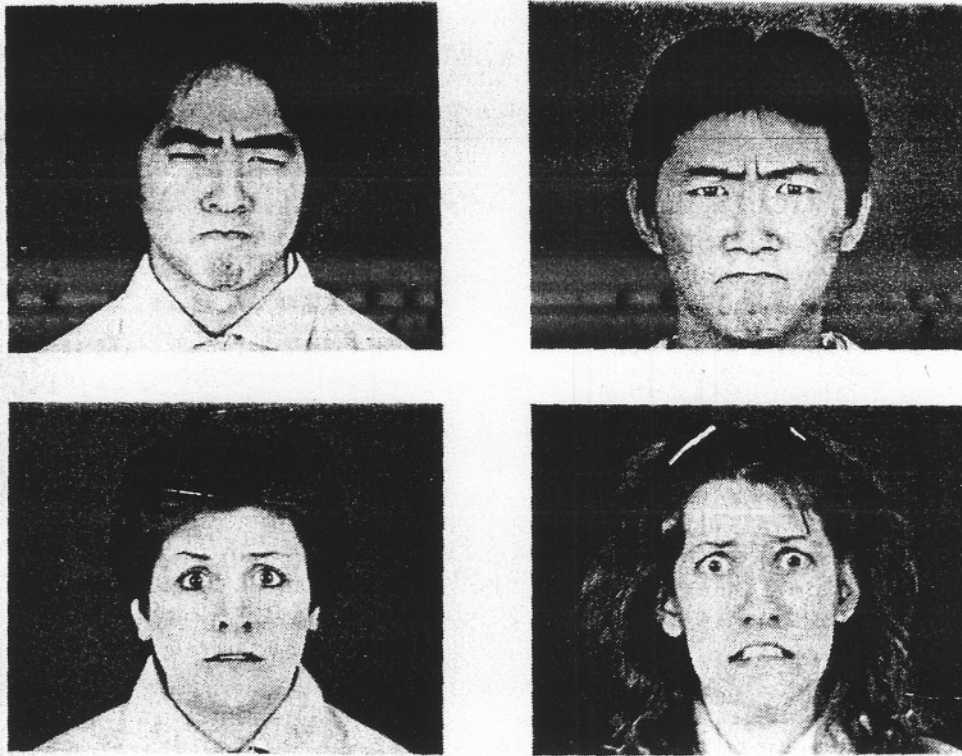
with a strong upper eyelid raise, pushing the upper eyelid well above the iris, exposing the sclera, and giving the expressions a staring, bulging quality to them. It was not possible to obtain Japanese photos with this degree of eyelid raise. All 10 expressions were posed by 10 different individuals.

The 14 photos of fear all corresponded to the universal appearance of fear (cf. Ekman & Friesen, 1975). These photos, like the anger photos, differed only in the degree of upper eyelid raise. For both American and Japanese males and females, two photos portrayed fear with a low upper eyelid raise, pushing the upper eyelid just above the iris. The remaining six photos (two American males and females, one Japanese male and female) portrayed fear with a strong upper eyelid raise, pushing the upper eyelid well above the iris and exposing the sclera. The 14 photos of fear included poses by 10 different individuals.

While it would have been optimal to have posers constant across each of the different levels of upper eyelid raise, it was impossible to build such consistency into the design. Hundreds of photos of approximately 80 individuals were inspected for possible inclusion in the study. While several individuals did produce

photos varying on the upper eyelid raise, most photos did not meet criteria according to Ekman and Friesen's (1975) criteria concerning the expressions, or by FACS coding (below).

All photos were independently coded by two laboratory assistants using Ekman and Friesen's (1978) Facial Action Coding System (FACS). Reliability was computed by doubling the number of times the two raters agreed on a FACS score, and then dividing by the total number of scores reported by both raters. Reliability was .91. FACS coding insured (1) that the photos included only the muscle movements relevant to anger and fear; (2) that the degree of upper eyelid raise varied systematically as described above; and (3) that the intensity of the other muscles in the expression did *not* vary across photos. Results could thus be interpreted as a function of the degree of upper eyelid raise, rather than of the intensity of other muscles involved in the expressions.

Judgment tasks. Subjects made two different judgments on two separate viewings. In the first task, subjects were requested to judge *which* emotion was being portrayed, by selecting the single emotion term from seven alternatives that they believed best described the expression. The seven alternatives were anger, contempt, disgust, fear, happy, sad, and surprise.

The second judgment was a 9-point intensity rating on the overall intensity of the expression, without emotion categories. The scale values were labelled NOT AT ALL (0), A LITTLE (1), MODERATE (4), and A LOT (8).

Procedures. All individuals were tested in groups, and viewed the facial stimuli twice. On the first viewing, subjects made the single choice judgments. The stimuli were presented through slide projection for 10 seconds each, in a random order. There was no pause between slides. When subjects completed their ratings of all the photos, they viewed the stimuli a second time. This time, they were instructed to complete the anchorless intensity ratings of the overall strength of the expression, without the use of affect labels.

Results

Emotion labelling. Differences in the percent of judges selecting anger and fear as a function of degree of upper eyelid raise were tested separately for each of the different posers. Differences in the proportions were expressed and tested as z scores, as explained in McNemar (1969).

Significantly more subjects judged the American male and female photos with upper eyelid raises as anger than the photos with no eyelid raise (95.0% vs. 87.1% for males, $z = 1.65$, $p < .05$; 95.7% vs. 71.4% for females, $z = 4.17$, $p < .05$). There was no such difference for the Japanese male photos (88.6% vs. 87.1%). For Japanese female photos of anger, more subjects judged the photo with no upper eyelid raise as anger than the expression with upper eyelid raise (94.3% vs 72.9%, $z = 3.43$, $p < .05$).

For fear, when two photos of the same poser type and degree of upper eyelid existed, the data were averaged in order to minimize the confound of individual physiognomy, in this and all remaining analyses for all three

studies. There were no differences in the proportion of judges selecting fear as a function of upper eyelid raise for any of the poser types (average percent for American males photos = 84.2%; for American females = 89.98%; for Japanese males = 88.57%; for Japanese females = 90.0%).

Intensity ratings of anger.[1] A three-way Analysis of Variance (ANOVA) was computed on the American photos of anger, using judge sex (2), poser sex (2), and eyelid raise (3) as the independent variables (see Figure 2). The only significant effect was a poser sex × eyelid raise interaction ($F(2,134) = 50.00$, $p < .001$).

Two one-way ANOVAs testing the effects of eyelid raise were computed separately for male and female posers, and were both significant ($F(2,136) = 5.85$, $p < .05$; and $F(2,136) = 58.37$, $p < .001$, respectively).[2] Analytic comparisons on the male photos revealed that the high eyelid raise photo was judged less intense than the low eyelid raise photo ($F(1,138) = 4.58$, $p < .05$). For females, the low eyelid raise photo was judged more intense than the no eyelid raise photo ($F(1,136) = 9.31$, $p < .01$), and the high eyelid raise photo was more intense than the low eyelid raise photo ($F(1,136) = 66.38$, $p < .001$).

A three-way ANOVA was also computed on the Japanese photos. None of the interactions, nor the main effect for judge sex, was significant. The main effect for poser sex was significant ($F(1,68) = 16.93$, $p < .001$), indicating that males were rated as more intense than females. The main effect for eyelid raise was also significant, indicating that the photos with low eyelid raise were rated as less intense than the photos with no eyelid raise ($F(1,68) = 32.80$, $p < .001$).

Intensity ratings of fear. A four-way ANOVA was computed on the intensity ratings for the fear photos, using judge sex (2), poser sex (2), poser culture (2), and eyelid raise (2) as the independent variables. The only significant effect was the poser culture × poser sex × eyelid raise interaction ($F(1,66) = 9.64$, $p < .01$). The data were then separated by poser culture, and two separate two-way ANOVAs were computed. The interaction for American photos was not significant, but both main effects were, indicating that female photos were rated more intense than male photos $F(1,68) = 59.46$, $p < .001$), and that photos with high eyelid raise were rated more

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[1] The American and Japanese photos of anger were analyzed separately in all three studies, because there were three levels of eyelid raise for American photos, but only two levels for the Japanese.

[2] The error term for these and all subsequent analytic comparisons is the residual error term used in the overall analyses.

FIGURE 2

Mean intensity ratings on anger and fear photos, Study 1.

Anger Photos

Fear Photos
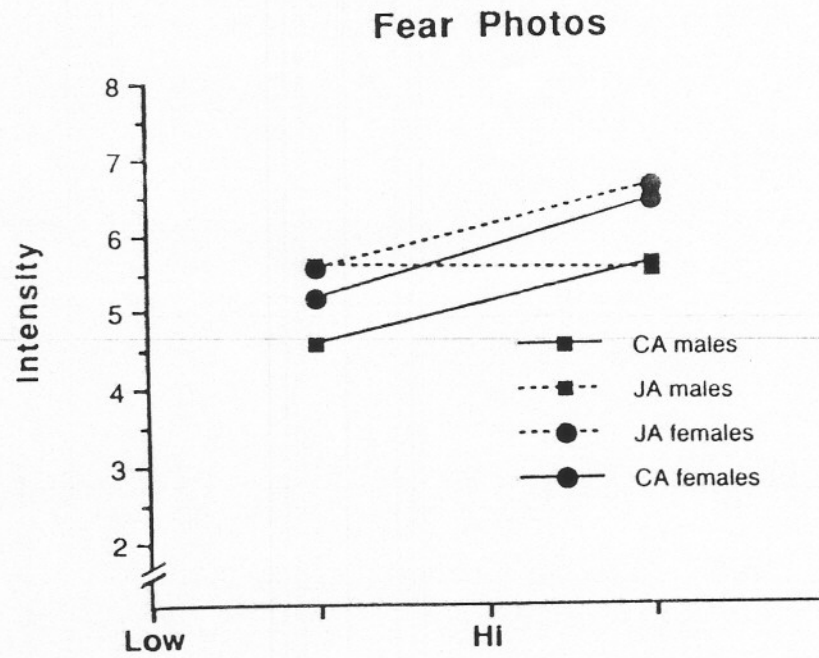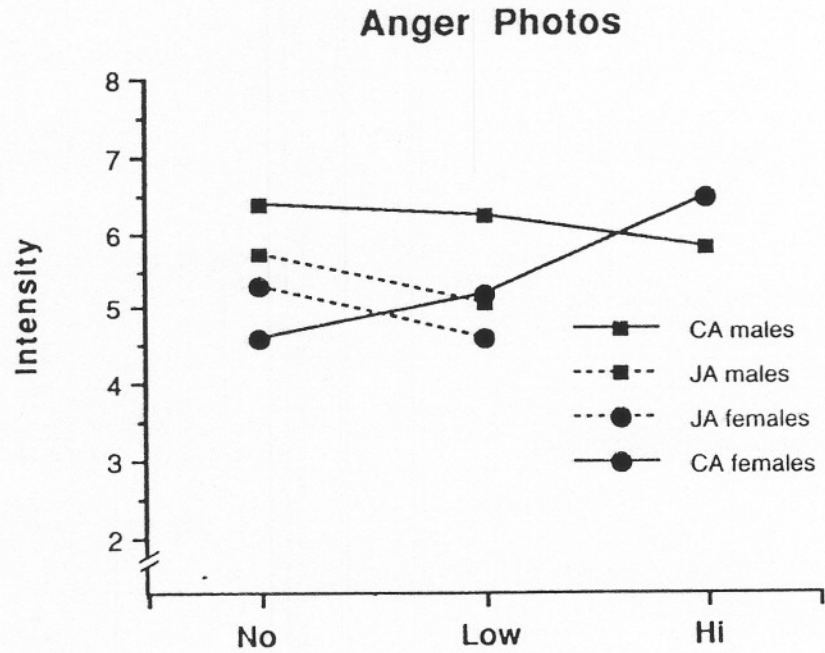
intense than photos with low upper eyelid raise ($F(1,68) = 115.33$, $p < .001$).

The two-way interaction for the Japanese photos was significant ($F(1,68) = 22.72$, $p < .001$). Subsequent one-way ANOVAs indicated that for females, the high upper eyelid photos were rated as more intense than the low eyelid raise photos ($F(1,68) = 65.71$, $p < .001$), while there was no difference for male photos.

Discussion

The results of Study 1 indicate that the degree of upper eyelid raise did produce a difference in the clarity of the overall message of anger, but not for fear. For American faces of anger, the upper eyelid raise produced less ambiguous expressions, resulting in higher percentage of judges agreeing that these expressions were of anger. The findings were different, however, for Japanese faces, implicating the effects of facial physiognomy on judgments of anger.

Differences in the degree of upper eyelid raise produced differences in attributions of intensity, and suggested differential effects as a function of physiognomy. Upper eyelid raises in American faces of anger and fear produced higher ratings of intensity. This was also true of fear expressions posed by Japanese females. But, the findings for anger expressions posed by both Japanese males and females indicated that subjects attributed less intensity to expressions with upper eyelid raise.

One possible interpretation of the findings concerning differences as a function of facial physiognomy may be related to the degree of familiarity associated with making judgments of faces of one's own culture. That is, the American subjects may have made different ratings for Japanese faces because of politeness in not knowing whether to characterize these faces in the same way as the American faces. Or, the differences may result from actual differences in emotional expressiveness of Japanese perceived by non-Japanese. Data were gathered from Japanese subjects in Study 2, in order to test these hypotheses. Additionally, the American-Japanese comparison allowed us to test for cultural similarities or differences in judgments of these expressions.

Study 2

Overview

In this study, American and Japanese subjects viewed the facial stimuli, and were asked to make two separate intensity ratings. This study was

designed to examine whether or not the Japanese subjects judge the stimuli differently, testing the effects of familiarity when making ratings of individuals of another visibly different cultural background.

Method

Subjects. The American sample included 124 US-born college students (80 males, 44 females) and excluded those of Asian descent. The Japanese sample included 110 native Japanese students (55 males, 55 females) enrolled in a public university in Osaka, Japan.

Facial stimuli. The facial stimuli were exactly the same as those used in Study 1.

Judgment tasks. Subjects made two different intensity judgments on two separate viewings. Translation accuracy from English to Japanese of both the instructions and the emotion terms was verified using a back-translation procedure. In the first judgment task, subjects were requested to use a 9-point scale (0-8) to rate the intensity of seven emotion categories in terms of whether it was absent (0) or present, and if present to indicate its strength from slight (1) through moderate (4) to strong (8). The seven emotion categories were anger, contempt, disgust, fear, happy, sad, and surprise.

In the second judgment task, subjects were requested to make a second 9-point intensity rating on the overall intensity of the expression, without emotion categories. The scale values were labelled neutral (0), weak (1), moderately strong (4), and strong (8). This task was included to in order to control for possible cultural differences in intensity in the affect lexicons that might affect the first judgment task.

Procedures. The procedures and instructions were the same in Japan as in the US. All individuals were tested in groups, and viewed the stimuli twice. On the first viewing, subjects were instructed to complete the first multi-scalar judgment on each of the seven emotion categories. The stimuli were presented on slides for 10 seconds each, in a random order, with no break between slides. When subjects completed their ratings of all the photos, they viewed the stimuli a second time. This time, they were instructed to complete the anchorless intensity ratings of the overall strength of the expression, without the use of affect labels.

Results

The data were analyzed first using the target intensity ratings from the first multi-scalar judgment task. The target ratings were the ratings given to the emotion term corresponding to the emotion portrayed in the photo (e.g., anger rating for anger photo). With only one exception, the data from the second judgment task produced exactly the same results; thus, we report below only the analysis for the target intensity ratings.

American anger photos. A four-way ANOVA was computed, using judge culture (2) and judge sex (2) as between subjects factors, and poser sex (2) and eyelid raise (3) as within-subjects factors (Figure 3). The judge culture × eyelid raise interaction, ($F(2,458) = 19.88$, $p < .001$), as well as the poser sex × eyelid raise interaction ($F(2,458) = 177.52$, $p < .001$) was significant. No other effects were significant. Differences between the photos were tested separately for male and female photos, and for American and Japanese judges.

The findings for American male photos were inconsistent. American judges rated the low eyelid raise photo as more intense than both the photo with no eyelid raise ($F(1,122) = 18.01$, $p < .001$) and high eyelid raise ($F(1,122) = 58.79$, $p < .001$). Japanese judges did rate the low eyelid raise photo as more intense than the no eyelid raise photo $F(1,109) = 8.75$, $p < .01$), but there was no difference between the photos with low and high eyelid raises.

The findings for American female photos were the same for American and Japanese judges. The low eyelid raise photo was judged more intense than the no eyelid raise photo ($F(1,123) = 68.80$ for Americans, $F(1,109) = 17.54$ for Japanese, $p < .001$), and the high eyelid raise photo was judged more intense than the low eyelid raise photo $F(1,123) = 25.44$ for Americans, $F(1,109) = 133.32$ for Japanese, $p < .001$).

Japanese anger photos. A four-way ANOVA was also computed on the Japanese anger photos. The only significant effect was the judge culture × poser sex × eyelid raise interaction ($F(1,229) = 4.83$, $p < .05$). A poser sex × eyelid raise ANOVA was significant for American judges $F(1,122) = 4.99$, $p < .05$), and subsequent analytic comparisons indicated that the no eyelid raise photo was rated as more intense than the low eyelid raise photo $F(1,122) = 3.66$, $p < .05$ for male photos; $F(1,122) = 23.74$, $p < .001$ for female photos).

The same two-way analysis was computed for the Japanese judges. Only the main effect for eyelid raise was marginally significant ($F(1,109) = 3.65$, $p < .06$), indicating that the no eyelid raise photo was rated as more intense than the low eyelid raise photo.

Fear photos. A five-way ANOVA was computed, using judge culture (2) and sex (2) as the between-subjects factors, and poser culture (2), poser sex (2), and eyelid raise (2) as within-subjects factors (Figure 4). The judge culture × poser culture × poser sex × eyelid raise interaction was significant ($F(1,222) = 13.05$, $p < .001$); no other effects were.

Two three-way ANOVAs computed separately for American and Jap-

FIGURE 3

American subjects' mean intensity ratings on anger and fear photos, Study 2.
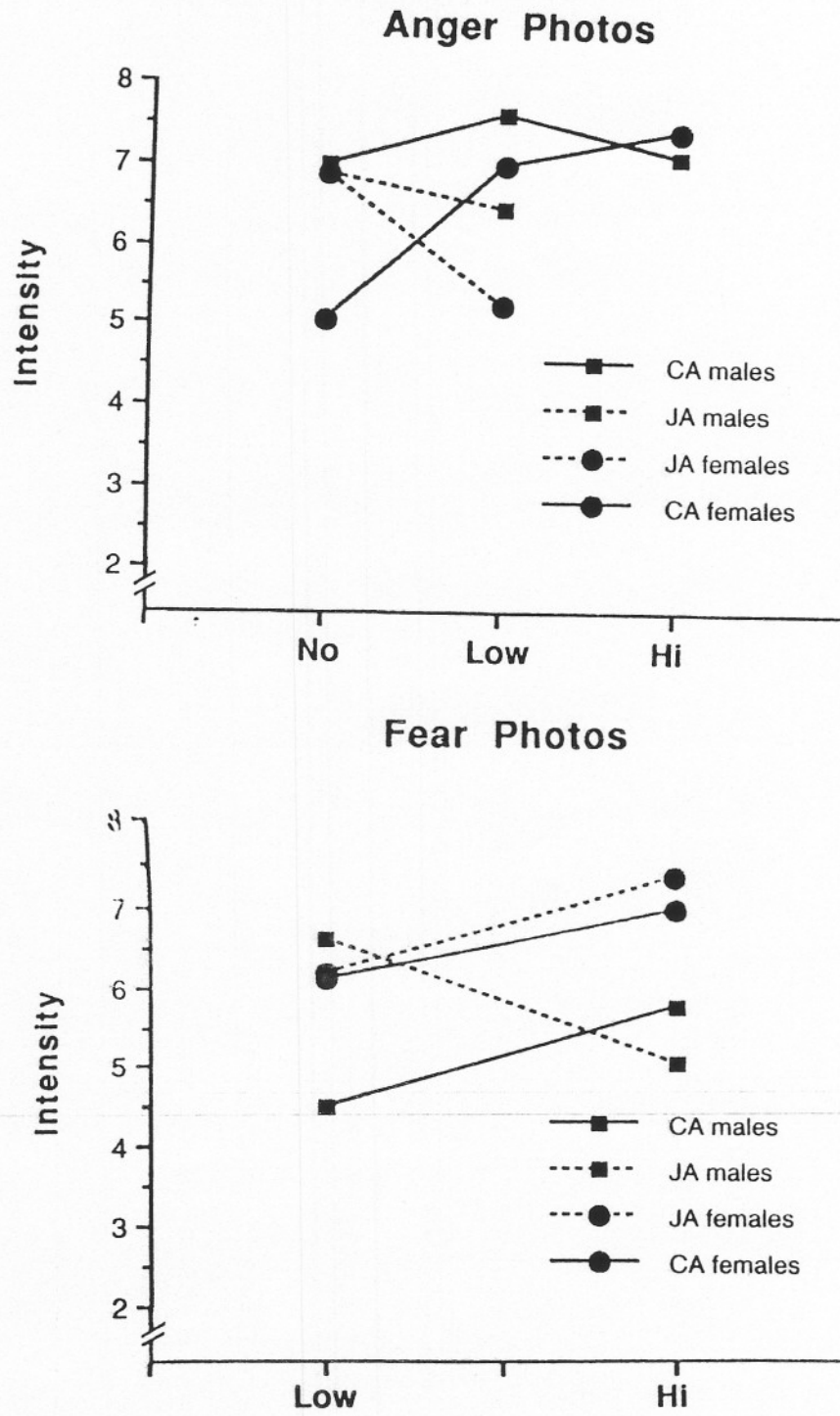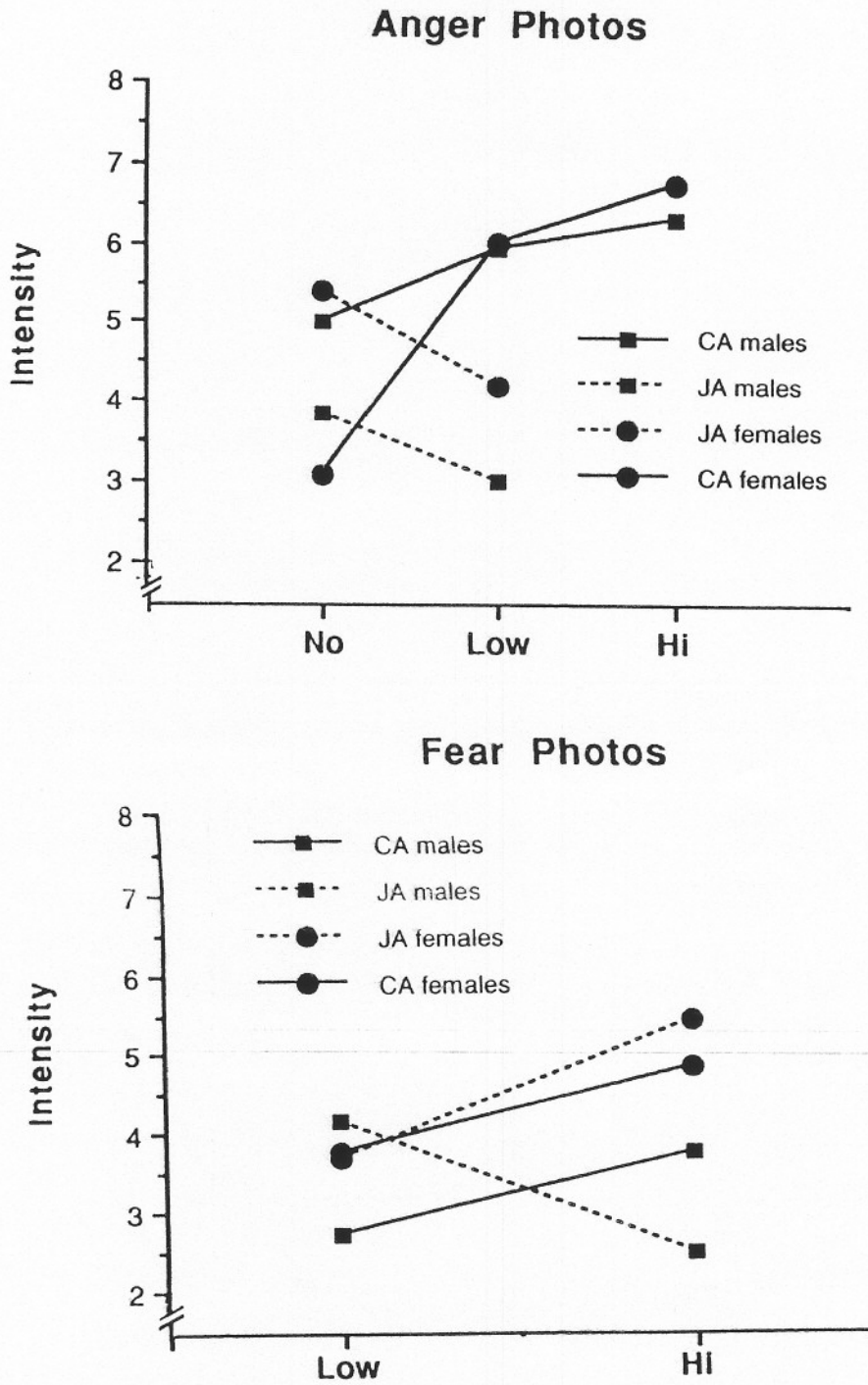

Anger Photos

Fear Photos

FIGURE 4

Japanese subjects' mean intensity ratings on anger and fear photos, Study 2.

Anger Photos

Fear Photos

anese judges produced the same findings for both judge cultures. Both three way interactions were significant ($F(1,115) = 93.01$ for Americans, $F(1,109) = 33.89$ for Japanese, $p < .001$). Two-way ANOVAs (poser sex x eyelid raise) were then computed separately for both poser cultures.

The interactions for the American photos were not significant. The main effects for eyelid raise, however, were significant ($F(1,118) = 215.21$ for Americans, $F(1,109) = 235.28$ for Japanese, $p < .001$), indicating that the high eyelid raise photos were more intense than the low eyelid raise photos. The poser sex main effects were also significant ($F(1,118) = 140.43$ for Americans, $F(1,109) = 114.07$ for Japanese, $p < .001$), indicating that female photos were rated as more intense than male photos.

The two-way interactions computed on Japanese photos were significant ($F(1,120) = 139.03$ for Americans, $F(1,109) = 61.96$ for Japanese, $p < .001$). Analytic comparisons revealed that for Japanese male photos, American judges rated the low eyelid raise photo as more intense than the high eyelid raise photo ($F(1,122) = 39.44$, $p < .001$). The ratings on these photos by Japanese judges were in this direction, but not significant. For Japanese female photos, both judge cultures rated the high eyelid raise photos as more intense than the low eyelid raise photos ($F(1,122) = 136.63$ for Americans, $F(1,109) = 122.36$ for Japanese, $p < .001$).

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Discussion

The data from Study 2 for American judges replicated the intensity data from Study 1. For American faces of anger and fear, and for Japanese female faces of fear, expressions with greater upper eyelid raises are rated as more intense than expressions with less upper eyelid raise. For Japanese faces of anger, as well as for Japanese male faces of fear, expressions with higher upper eyelid raises are rated as less intense. These findings indicate the differential effects of facial physiognomy between the American and Japanese faces on these ratings.

The ratings of the Japanese judges were in agreement with the ratings of the Americans, and suggest that differences among the photos cannot be explained by degree of familiarity with faces of either culture, nor by ignorance of emotionality of either culture. Further, these data suggest a fair amount of cultural similarity in attributions of intensity.

Study 3 was designed in order to examine whether the degree of upper eyelid raise affected other types of judgments, specifically, in the degree to which the posers were perceived as *controlling* their expression, or in the degree to which the expressions are judged artificial. If the photos are different on these dimensions, then these differences may explain differences among the photos found in the first two studies.

Study 3

Overview

American subjects made two judgments for each expression. The first concerned the degree to which judges believed the expression was controlled; the second concerned the degree to which judges believed the expressions were artificial.

Method

Subjects. Subjects were 40 US-born college undergraduates, who participated in partial fulfillment of class requirements. The sample excluded those of Asian descent. Of the 40, 18 were male and 22 were female.

Facial stimuli. The facial stimuli used were exactly the same as those used in Studies 1 and 2.

Judgment tasks. Two judgment tasks were used. The first was a rating of the degree of *control* that subjects believed the poser was exerting over the expression. The second was a rating of the degree to which subjects believed the expression was *artificial.* For both, subjects indicated their ratings using a 9-point intensity scale (0-8), labelled from NOT AT ALL (0) through MODERATE (4) to A LOT (8).

Procedures. All subjects were tested in a single group. Subjects viewed all photos once, and made their ratings on both scales when viewing each photo. Each photo was presented on slide for 10 seconds, in an random order, with no pause between slides.

Results

A three-way Multivariate Analysis of Variance (MANOVA) was computed on the control and artificiality ratings for American photos of anger, using judge sex (2), poser sex (2), and eyelid raise (3) as the independent variables. No effects were significant. The same analyses for Japanese photos of anger produced the same results. The mean control and artificiality ratings were 4.41 and 4.48 for American photos, and 3.71 and 4.26 for Japanese photos, respectively.

A four-way MANOVA was computed on the ratings for the fear photos, using judge sex (2), poser culture (2), poser sex (2), and eyelid raise (2) as the independent variables. The only significant finding was a two-way interaction between poser culture and poser sex ($F(2,36) = 11.82$, $p < .05$). Because this effect did not include the eyelid factor, we concluded that eyelid raise did not affect ratings of control or artificiality for anger or fear photos. The mean ratings were 3.49 and 4.01 for American photos, and

(1982) has suggested that the control of anger in particular is associated with a closing of the mouth, which restricts verbal aggression. Also, the area around the mouth has a greater density of cortical representation, because of multiple activities such as talking and eating.

The Effects of Facial Physiognomy

The data for the Japanese faces do implicate differences in the emotion messages as a function of facial physiognomy. When labelling anger expressions, the raising of the upper eyelid had no effect on judgments for Japanese males. For Japanese females, the results were opposite those found for American faces. Differences in the judgment of Japanese faces were also found for the intensity ratings. With one exception, all photos of Japanese faces with no or low upper eyelid raise were rated as more intense than photos with high upper eyelid raise.

In almost every case, the judgments of Japanese subjects were the same as the judgments of American subjects. Thus, differences in the emotion messages attributed to the Japanese faces cannot be attributed to unfamiliarity or ignorance in judging individuals of different cultures. These findings are contrary to those of Wolfgang and Cohen (1988), who found that accuracy in judging emotions does differ depending on the racial congruence between poser and judge. It is difficult to interpret the difference between their study and ours, however, given the differences in the facial stimuli used in the two studies.

The results of Study 3 also indicated that there were no differences among Japanese as well as American faces on ratings of control or artificiality. These findings suggest that differences between Japanese and American faces cannot be attributed to differences in the attributions of these variables as well.

The upper eyelid appears to affect judgments only when their contraction produces *markedly visible differences* in the appearance of the expression. These differences are more easily perceived in American faces, given the roundish feature of most American eyes. In the case of Japanese faces, however, the raising of the upper eyelid does not produce such marked changes in appearance. In fact, the tensing of the upper eyelid in Japanese faces may produce a more visible difference in intensity, which accounts for the differences we observed.

Conclusion

These studies have provided us with the first information available concerning the effects of the upper eyelids in judgments of anger and fear,

and concerning the effects of differences in facial physiognomy on these judgments. These studies were conducted with some methodological limitation, especially concerning the confounding of individual poser with expression, and the lack of objective substantiation of structural differences between American and Japanese faces. But, they do provide us with clear answers to questions concerning the type of information that can be gathered from single components of facial expressions, and the possible influence of facial physiognomy on emotion messages.

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