

THE CONTRIBUTION OF EMOTION PERCEPTIONS AND THEIR OVERGENERALIZATIONS TO TRAIT IMPRESSIONS

Joann M. Montepare and Heidi Dobish

ABSTRACT: This study tested the hypothesis derived from ecological theory that adaptive social perceptions of emotion expressions fuel trait impressions. Moreover, it was predicted that these impressions would be overgeneralized and perceived in faces that were not intentionally posing expressions but nevertheless varied in emotional demeanor. To test these predictions, perceivers viewed 32 untrained targets posing happy, surprised, angry, sad, and fearful expressions and formed impressions of their dominance and affiliation. When targets posed happiness and surprise they were perceived as high in dominance and affiliation whereas when they posed anger they were perceived as high in dominance and low in affiliation. When targets posed sadness and fear they were perceived as low in dominance. As predicted, many of these impressions were overgeneralized and attributed to targets who were not posing expressions. The observed effects were generally independent of the impact of other facial cues (i.e., attractiveness and babyishness).

KEY WORDS: ecological theory; emotion expressions; impression formation; overgeneralization effects.

Nonverbal person perception research has demonstrated that information provided by people's faces contributes to impressions of their traits that have far-reaching consequences. The fact that we form impressions on the basis of facial appearance is clear. However, knowing how we do so is a more complex matter. Several mechanisms have been identified to account for appearance-based trait impressions. Research on stereotyping has revealed that we attribute traits to people through the process of categorization into social groups prompted by facial cues such as skin color (Brewer, 1988; Fiske & Neuberg, 1990; Zebrowitz, 1996; Zebrowitz, Mon-

Address correspondence to Joann M. Montepare, School of Communication Sciences and Disorders, Psychology Program, Emerson College, 120 Boylston Ave, Boston, MA, 02116; e-mail:joann__montepare@emerson.edu.

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tepare, & Lee, 1993). Other research indicates that the association of certain facial features with particular functions or properties contributes to impressions. For example, because mouths are used for talking, people with thin or compressed lips are judged to be tight-lipped, reserved and uncommunicative (Berry & McArthur, 1986; McArthur, 1982; Secord, 1958; Secord, Dukes, & Bevan, 1954; Weir & Fine-Davis, 1989). In addition, some research has found that facial appearance provides an accurate cue to particular social traits and intellectual capacities (Berry, 1990; Berry & Brownlow, 1989; Berry & Finch-Wero, 1993; Borkenau & Liebler, 1992, 1993; Funder & Colvin, 1988; Zebrowitz, Hall, & Murphy, 2002).

The ecological approach to social perception suggests another means by which facial appearance contributes to trait impressions (McArthur & Baron, 1983; Montepare & Zebrowitz, 1998; Zebrowitz & Collins, 1997; Zebrowitz, 1990; 1997). According to ecological theory, social impressions serve adaptive functions, are guided by the typically accurate perception of people's traits, and are revealed by physical features associated with personal attributes such as age, sex, health, and emotional state. However, erroneous judgments do occur. One source of error is the overgeneralization of perceptions in which people with particular physical features are perceived to have particular traits because their appearance resembles that of others with those traits. The contribution of appearance-based perceptions and their overgeneralization to trait impressions has been most widely studied in the context of reactions to a babyish appearance. In particular, considerable research has found that babies' faces elicit accurate perceptions of their traits and abilities. Moreover, these perceptions are routinely overgeneralized to individuals whose faces resemble that of a baby in some way. Specifically, adult men and women with babyish facial features (e.g., large round eyes, small chin and nose) are perceived to have more childlike traits (e.g., be more submissive, vulnerable, naive, approachable, honest, helpless) than adults with more mature features (see Montepare & Zebrowitz, 1998 for an extensive review).

The present study examined the extent to which facial expressions of emotion contribute to trait impressions. What trait impressions might be derived from facial expressions? Consistent with the speculations of Darwin (1872/1965), McArthur and Baron's (1983) ecological theory asserts that facial expressions have the capacity not only to provide information about people's affective state, but also to convey adaptive and useful information about specific behavioral traits or propensities. Indeed, although current scholars may disagree about the experience of emotions, their non-verbal correlates, and the degree to which the information they provide is socially constructed, most concur with the ecological premise that overt

displays serve useful interpersonal functions insofar as they signal states, intentions, and potential reactions to perceivers (see Ekman & Davidson, 1994 and Scherer & Ekman, 1984 for discussions by various theorists, as well as Buck, 1991; Burgoon, Buller, & Woodall, 1996; Chovil, 1991; Chovil & Fridlund, 1991; Fridlund 1994; Knutson, 1996). According to ecological theory, displays of emotion may be regarded as expressions of approach, attack, or avoidance because they suggest how dominant or affiliative a person may behave rather than simply how happy, angry or afraid a person may feel (McArthur & Baron, 1983; Zebrowitz & Collins, 1997; Zebrowitz, 1990). For example, happiness may be viewed as an approach expression that suggests not only a person's positive affective state, but also a person's capacity to act in a confident, assertive, and friendly way. On the other hand, anger may be viewed as an attack expression that conveys a person's intention to act in a domineering, hostile, and unfriendly manner. Expressions such as sadness or fear may be seen as expressions of avoidance that suggest a person's reticence toward interaction, submissiveness, and timidity.¹

Several studies provide partial support for the proposition that people's emotional expressions fuel impressions of their dominance and affiliation. An early study by Friedman (1979) found that ratings of actors posing happiness, surprise, anger and sadness could be distinguished along the dimensions positive-negative and dominant-submissive consistent with our speculations. However, his research did not assess trait perceptions elicited solely by facial expressions. In a more direct test, Keating and colleagues (e.g., Keating, 1985; Keating et al., 1981) found that when targets lowered their eyebrows (as in facial displays of anger) they were viewed as dominant. In another study, Laser and Mathie (1982) showed that schematic faces in which the facial features were experimentally manipulated were perceived as having different affective states and traits. For instance, faces with thick, low eyebrows were judged to be angry as well as stern, determined, and stubborn, whereas those with thin, high eyebrows were judged to be cheerful, warm and friendly. Although informative, these latter studies suffer from two shortcomings. First, because they allowed judges to make emotion and trait ratings concurrently, it is possible that the emotion-trait relationships they found were artifactual. Second, because they focused on discrete facial features it is unclear whether the observed effects on trait impressions reflected reactions to distinctive facial gestures, to other facial qualities such as attractiveness or babyishness, or to emotion cues.

More evidence of associations between emotion expressions and trait impressions was provided by Knutson (1996) who asked perceivers to

make trait ratings of six trained actors posing happy, sad, angry, fearful, and disgust expressions. Consistent with our speculations, actors posing happy expressions were perceived to be high in dominance and affiliation. On the other hand, high dominance and low affiliation were attributed to actors posing angry and disgusted expressions, and low dominance was attributed to actors with fearful and sad expressions. Although Knutson's work is informative, it utilized a select sample of trained actors posing facial expressions which raises questions about the strength and extent of associations discernible in more ordinary faces. Also, a larger sample of more varied faces would make it possible to examine the extent to which other related appearance qualities might impact on associations between emotion expressions and trait impressions. To test the generalizability of his findings, the present study utilized a larger sample of more randomly selected faces in which emotion expressions were posed by untrained targets.

The present study also moved beyond Knutson's work by providing a test of the emotion overgeneralization hypothesis that people with facial features that resemble actual emotion cues will be perceived as having behavioral traits suggested by emotion expressions (Zebrowitz & Collins, 1997). In line with this effect, research has shown that the faces of people who are not intentionally displaying an emotion expression nevertheless vary in their emotion demeanor. That is, their faces appear to have an emotional quality about them (Malatesta, Fiore, & Messina, 1987). The present study predicted that if a person's non-emotion-posing face (typically described as being neutral) had a happy-looking demeanor, then that person would be perceived as high in dominance and high in affiliation. On the other hand, if a person's non-emotion-posing face had an angry-looking demeanor, then that person would be perceived as high in dominance and low in affiliation. To test these and other emotion overgeneralizations, we examined if the relationships between emotion perceptions and trait impressions observed in emotion-posing faces also held true in non-emotion-posing faces.

The present study also examined if relationships observed between emotion expressions and trait ratings were independent of the impact of two significant and widely-studied facial qualities—attractiveness and babyishness. It is well-known that attractive people are perceived to have socially desirable traits such as being dominant and affiliative (Eagly, Ashmore, Makhijani, & Longo, 1991). Facial attractiveness has also been linked to emotional expressivity and the expression of positive emotions (DePaulo, Blank, Swaim, & Hairfield, 1992; Mueser, Grau, Sussman, & Rosen, 1984). Thus, it is possible that emotion-trait associations are fueled

by variations in facial attractiveness. For instance, happier faces may be perceived as more attractive and, in turn, attributed higher dominance and affiliation. A similar argument may be made in light of the babyface-overgeneralization effect (Montepare & Zebrowitz, 1998; Zebrowitz, 1997). For example, angrier faces may be perceived as more mature or less babyish and, in turn, attributed higher dominance and lower affiliation. To examine the potential influence of attractiveness and babyishness, we examined if observed relationships between trait impressions and emotion perceptions held true when variations in these appearance qualities were statistically controlled as other researchers have done to test for independence effects (e.g., Zebrowitz, et al., 1993).

To summarize, the goals of this study were to examine: 1) relationships between emotion expressions and trait impressions in a varied sample of target faces; 2) the contribution of emotion overgeneralizations to trait impressions; and, 3) the potential impact of facial attractiveness and babyishness on trait impressions associated with emotionally expressive faces. To achieve these goals, groups of independent judges made emotion, dominance, affiliation, attractiveness and babyishness ratings of 32 naive targets posing different facial expressions of emotion. It was predicted that targets posing happier expressions would be perceived as higher in dominance and affiliation. More surprised expressions also were expected to yield impressions of higher dominance and affiliation to the extent that they reflected positive emotional events. Targets posing angrier expressions were expected to be seen as higher in dominance and lower in affiliation. Based on existing data (Knutson, 1996), targets posing sadder and more fearful expressions were expected to be viewed as lower in dominance. However, in line with ecological theory, they may also be seen as lower in affiliation. Finally, these relationships were expected to overgeneralize to non-emotion-posing faces.

Method

Research Participants

A total of 233 undergraduate students, between the ages of 18 and 23 years, volunteered to participate in this research for partial course credit. Thirty-two participants (17 women and 15 men) served as targets in the creation of the facial stimuli. Seventy-three participants (45 men and 28 women) were divided into small groups and were randomly assigned to make trait ratings in one of the experimental conditions. Forty-eight participants (24 women and 24 men) were divided into small groups and were

randomly assigned to rate emotion expressions in one of the experimental conditions using bi-polar rating scales. Another group of thirty-two participants (16 men and 16 women) evaluated the expressions using a forced-choice format. Finally, forty-eight participants (24 men and 24 women) were divided into small groups and were randomly assigned to rate facial attractiveness and babyishness in one of the experimental conditions.

Facial Stimuli

The facial stimuli consisted of colored slides depicting targets' heads and shoulders and were generated using a procedure described by Mueser et al. (1984). To begin, targets were photographed when they were not posing an emotion expression. In this non-emotion condition, targets were instructed to close their eyes, imagine a blank wall, and to relax their facial muscles so that their facial expressions appeared as neutral as possible. When they were ready, the targets opened their eyes and their picture was taken. Each target was then photographed posing a happy, surprised, angry, sad, and fearful expression. In these emotion conditions, targets were told to close their eyes, think about something that made them feel very happy (surprised, angry, sad, fearful) and to express that feeling with their faces. When they were ready, targets opened their eyes and their expression was photographed. The order in which targets posed each of the emotions was counterbalanced.

Rating Materials

The trait measures were similar to those used by Knutson (1996) and consisted of items selected from the Interpersonal Adjective Scale that reflected dominance and affiliation (IAS-R; Wiggins, Trapnell, & Phillips, 1988). We did use fewer adjectives than Knutson (1996) to reduce the demands on judges given the number of faces to be rated, however, the selection criteria were the same. Sixteen trait adjectives were chosen from the IAS-R based on their high factor loadings and association with varying degrees of dominance and affiliation (see Appendix). Judges evaluated the extent to which they thought each adjective accurately described each target on scales with endpoints labeled (1) *extremely inaccurate* and (7) *extremely accurate*, and the midpoint labeled (4) *somewhat accurate*. The rating procedure was made more manageable by randomly dividing the ratings into groups of four traits. Judges rated all of the faces in the condition to which they were assigned on one group of trait scales and then reviewed the faces again and completed a second group of scales. This

procedure was repeated until all ratings were completed. The ratings were presented in counterbalanced orders and the faces were presented in one of two orders to minimize order effects. The first order was a random sequence, and the second order was the reverse of the first. Composite scores of dominance and affiliation were calculated from the formula described by Knutson (1996) and could range from -14.48 to 14.48 with higher scores representing greater dominance and affiliation.

Ratings of emotion expression (happy, surprised, angry, sad, and fear) and facial appearance (attractive and babyish) were obtained using seven-point scales. The endpoints of the emotion scales were labeled (1) *not at all happy (surprised, angry, sad, or fearful)* and (7) *very happy (surprised, angry, sad, or fearful)*. The endpoints of the appearance scales were labeled (1) *not at all attractive* and (7) *very attractive*, and (1) *maturefaced* and (7) *babyface*. Two different orders of presentation of faces were used with these ratings.

Evaluations of emotion expressions were also obtained using a forced-choice format so that the effectiveness of the emotion manipulation could be assessed. To this end, two groups of judges were asked to identify the intended facial expression of the 32 targets in the five emotion conditions. For the sake of efficiency, one group evaluated the 16 female faces and another group evaluated the 16 male faces. Both groups of judges selected whether they thought the expression on a target's faces was happy, sad, fearful, angry or surprised. Targets' faces were presented in blocks, one at a time, and were randomly ordered within each block. Although the judges were told that each emotion would appear only once for each target, they were told they could record the same emotion more than once if they felt it was applicable, but they could not change their answer once it had been recorded. This procedure was used to reduce the possibility that judgments were based on a process of elimination. A tally was kept for each emotion selected for each target and averaged across judges. Possible emotion identification scores could range from 0 to 16, with a chance level of 3.20.

Rating Procedures

The judges were seated on either side of a long table. An experimenter sat at one end of the table and slides of the targets' faces were projected onto the wall at the other end of the table. Each slide was shown for approximately 10 seconds while judges made their ratings. Prior to beginning their task, judges were shown some sample slides and rating scales. After the ratings were completed, the judges were debriefed and thanked for their time and effort.

Results

Data Base

The unit of analysis was *target face* ($n = 32$) and mean ratings for each face for each dependent measure were computed by averaging across judges' ratings in each condition. Prior to computing these scores, inter-rater agreement was assessed by computing Cronbach's alphas for each emotion, trait, and appearance rating. Overall, the ratings showed strong agreement in the non-emotion condition and in the happy, surprised, angry, sad, and fearful emotion conditions (Cronbach alphas = .73, .76, .74, .81, .81, .74, respectively).

Manipulation Checks

The emotion manipulation was evaluated in three ways. First, the experimenters reviewed the faces in the non-emotion condition to be sure that the targets were not displaying any obvious expressions (e.g., smiling, frowning). None were doing so. The second method used to evaluate the effectiveness of the emotion manipulation was to compare the mean number of correct emotion identifications made by each group of 16 judges to a mean chance level of 3.20 using one-sample t -tests. As shown in Table 1, with the exception of fear, the emotion expressions were correctly identified at better-than-chance levels with an overall correct mean score of

TABLE 1

Mean Number of Correct Emotion Identifications

Emotion condition	All	Male targets	Female targets
Happy	13.81**	12.59**	14.89***
Surprised	8.50**	6.75*	10.06***
Angry	8.24**	6.94*	9.39***
Sad	8.51**	8.69**	8.37***
Fearful	4.09	3.53	4.65
Overall	8.63**	7.47**	9.28***

Note. Possible number correct made by each judge ($n = 32$) could range from 0 to 16 with a chance level of 3.20 correct.

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$; one-tailed tests.

TABLE 2

Differences Between Emotion Ratings in the Non-Emotion and Emotion Conditions

Emotion rating	Non-emotion	Emotion	t	d
Happy	3.34	3.95	2.35*	.42
Surprised	2.99	3.35	1.32 +	.24
Angry	2.77	3.23	2.66**	.47
Sad	3.54	3.77	.86	.15
Fearful	3.12	3.57	2.47**	.44

Note. Effect size computed using procedure for correlated samples suggested by Rosenthal (1984).

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$; one-tailed tests, $n = 32$.

8.63. Although fear was not identified at a better-than-chance level, the judgments were in the predicted direction.

The third method used paired *t*-tests to compare mean emotion ratings in the non-emotion condition with their respective mean ratings in the emotion conditions. These analyses indicated that the emotion manipulation was generally successful. As shown in Table 2, the ratings in the emotion conditions were higher than those in the non-emotion condition. That is, ratings of happiness, surprise, anger, and fear in the emotion conditions were significantly higher than ratings of the same faces in the non-emotion condition. Although the ratings in the sad condition were not significantly higher than those in the non-emotion condition, the faces were still perceived as sadder than their non-emotion counterparts. One explanation for this is that the faces in the non-emotion condition appeared to have an overall sad demeanor which is reflected in their higher sadness ratings relative to other emotion ratings. This is consistent with research suggesting that purportedly neutral faces often have a negative expressive demeanor (Malatesta et al., 1987).

Taken together, the outcomes of the manipulation checks indicate that the emotion manipulation produced the intended expressions in the non-posing and posing conditions. Moreover, inspection of the distribution of emotion and other ratings observed within each condition indicated that a satisfactory range of individual variation was obtained to provide adequate tests of the experimental hypotheses.

Relationships Between Emotion Expressions and Trait Impressions

Correlational analyses were conducted to test the predicted relationships between posed emotion expressions and perceived trait impressions. Specifically, correlation coefficients were computed between ratings of the targets' emotion expressions and ratings of the targets' dominance and affiliation. Because no gender effects were predicted and within gender analyses had low statistical power given the small sample sizes of male and female targets, target gender was statistically controlled to reduce incidental variability.

As seen in Table 3, many experimental predictions were supported. Faces posing happier expressions were perceived as higher in dominance and higher in affiliation. Expressions of surprise were significantly corre-

TABLE 3
Zero-Order and Partial Correlations Between Emotion and Trait Ratings in the Emotion Conditions

Emotion Rating		Trait rating	
	Covariate	Dominance	Affiliation
Happy		.53***	.83***
	Attractive	.54***	.83***
	Babyish	.48***	.79***
Surprised		.53***	.59***
	Attractive	.54***	.64***
	Babyish	.49***	.65***
Angry		.37*	-.68***
	Attractive	.43**	-.67***
	Babyish	.40**	-.69***
Sad		-.58***	-.23
	Attractive	-.58***	-.22
	Babyish	-.60***	-.23
Fearful		-.37*	-.15
	Attractive	-.26 +	-.10
	Babyish	-.37*	-.13

Note. Zero-order coefficients appear in bold. All correlations were calculated while controlling for target gender. Partial correlations also controlled for babyishness or attractiveness. + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$; one-tailed tests.

lated with expressions of happiness, $r(29) = .46, p < .008$, as compared to expressions of anger, sadness, or fear, all $ps > .05$, suggesting that the targets' expressions of surprise were associated with positive emotional experiences and expressions as opposed to negative ones. In line with the positive underpinnings of surprised expressions, faces posing more surprised expressions were perceived as higher in dominance and higher in affiliation as predicted. Also consistent with predictions, faces with angrier expressions were perceived as higher in dominance and lower in affiliation. Faces posing sadder and more fearful expressions were perceived as lower in dominance. They also showed a small, nonsignificant relationship with lower affiliation.

To determine if the observed relationships were independent of the effects of facial attractiveness and babyishness, partial correlations were computed between trait and emotion ratings in all experimental conditions controlling for facial attractiveness and babyishness. As seen in Table 3, all of the relationships seen in the emotion conditions continued to hold true when the effects of attractiveness and babyishness were statistically controlled suggesting that the traits associated with those two facial qualities were not driving the observed emotion-trait relationships.²

Emotion Overgeneralization Effects

The test of the overgeneralization effect rests on the assumption that faces which are not intentionally posing an emotion may nevertheless have an emotional demeanor. Such demeanors could derive from one or more sources. They could reflect facial attributes that resemble facial cues to emotion, traces of actual emotion, or persistent expressive habits. Although the present study presumed that the non-emotion-posing faces would vary in their emotional demeanor, it did not attempt to determine the specific source(s) of these variations. It did, however, assess the extent to which perceivers agreed about the emotional demeanor of the faces as one way of validating the demeanor assumption. To this end, interrater agreement coefficients were computed for the emotion ratings made of the faces in the non-emotion condition. Judgments showed good reliability for ratings of happiness, surprise, anger, sadness, and fear (Cronbach's alphas = .92, .63, .76, .82, .57, respectively) indicating that the raters agreed as to which faces were happy-looking versus sad-looking versus angry-looking, and so forth, even when they were not intentionally posing an emotion expression.

Correlation coefficients were computed between trait and emotion ratings controlling for targets' gender (see Table 4) in the non-emotion condi-

TABLE 4

**Zero-Order and Partial Correlations Between Emotion and Trait Ratings
in the Non-Emotion Condition**

Emotion rating		Trait rating	
	Covariate	Dominance	Affiliation
Happy		.39*	.45**
	Attractive	.14	.52***
	Babyish	.40**	.42**
Surprised		-.05	-.03
	Attractive	.02	.04
	Babyish	-.05	.02
Angry		.25 +	-.78**
	Attractive	.45***	-.79***
	Babyish	.26 +	-.77***
Sad		-.48**	-.06
	Attractive	-.34*	-.02
	Babyish	-.49***	-.04
Fearful		-.02	-.37*
	Attractive	-.01	-.37*
	Babyish	-.02	-.39*

Note. Zero-order coefficients appear in bold. All correlations were calculated while controlling for target gender. Partial correlations also controlled for babyishness or attractiveness. + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$; one-tailed tests.

tion to test for the predicted overgeneralizations. Consistent with predictions and paralleling the trait impressions observed in the emotion conditions, happier-looking faces were perceived as higher in dominance and higher in affiliation whereas angrier-looking faces were perceived as higher in dominance and lower in affiliation. Contrary to previous effects, no trait attributions were associated with surprised-looking faces. Sadder-looking faces were perceived as lower in dominance as they had been in the emotion condition; however, they were not perceived as less affiliative. As well, more fearful-looking faces were not perceived as lower in dominance as they had been although they were perceived as lower in affiliation which was consistent with the trend found in the emotion condition.

Partial correlations testing the potential effects of attractiveness and babyishness indicated that, with one exception, the relationships observed

in the non-emotion condition also continued to hold true (see Table 4). The one exception was that the relationship between a happier-looking demeanor and greater perceived dominance was reduced when the effects of attractiveness were controlled. In short, observed relationships between variations in emotional demeanor and trait impressions are not linked to variations in facial attractiveness and babyishness.

Discussion

This research tested the hypotheses that emotion expressions fuel trait impressions and that emotion-trait associations overgeneralize to non-emotion-posing faces. Using a broad sample of faces of untrained targets posing a variety of emotions, strong support was found for both claims. When targets posed happier and more surprised expressions they were perceived to have traits reflecting higher dominance and higher affiliation. On the other hand, when targets posed angrier expressions, they were seen as having traits reflecting higher dominance and lower affiliation. However, when targets posed sadder and more fearful expressions they were perceived as having traits reflecting lower dominance and somewhat lower affiliation. Moreover, parallel associations between impressions of targets' traits and their emotional demeanor were generally found even when they were not posing any particular emotion expression. Finally, the present study showed that relationships between emotion expressions and trait impressions were generally independent of the impact of facial attractiveness and babyishness.

The observed pattern of emotion-trait associations is consistent with predictions derived from ecological theory reflecting adaptive responses to emotion expressions and with previous empirical observations (Knutson, 1996). More specifically, trait impressions of dominance and affiliation associated with the positive expressions of happiness and surprise are consistent with their characterization as approach expressions.³ On the other hand, impressions of high dominance and low affiliation associated with displays of anger are consistent with their characterization as attack expressions. Impressions of low dominance tied to sad and fearful expressions are in line with their distinction as expressions of avoidance. Consistent with their characterization as expressions of avoidance that signal a person's distress or apprehension and reluctance to interact, sad and fearful expressions elicited modest impressions of low affiliation.

An alternative explanation for the emotion-trait associations that were observed is that they reflected demands or artifacts of the experimental

situation. However, the design that was used guarded against this possibility by utilizing different, independent groups of raters to make emotion and trait ratings in each experimental condition. It should also be noted that the observed effects cannot be accounted for by the interpretation of emotions along general dimensions such as those suggested by Russell and colleagues (e.g., Carroll & Russell, 1996; Russell, 1980). According to such a framework, perceptions of anger and fear would be expected to be associated with similar trait impressions given that they are presumed to fall along similar affective dimensions. In contrast, anger and fear were associated with distinctly different overall trait impressions.

The present research documented several emotion overgeneralization effects whereby trait impressions associated with emotion expressions were overgeneralized to faces that were not posing emotion expressions, yet nevertheless varied in their emotional demeanor. In particular, systematic associations were found between emotion and trait ratings of non-emotion-posing faces that paralleled those found in faces posing happy and angry expressions. The predicted trait associations with surprised-looking demeanors were not found, which may reflect something about the facial features that are involved in surprised demeanors. For example, it may be more common to observe variations in facial qualities that mirror facial cues to happy or angry expressions in non-emotion-posing faces (e.g., up-turned lips, high cheeks, lowered brows, droopy eyes) than it is to observe facial qualities that give rise to surprised or fearful emotional demeanors (e.g., wide-opened mouths or eyes). Perceptions of fearful faces as low in dominance and sad faces as high in affiliation did not overgeneralize to non-emotion-posing faces which may also reflect something about the availability of facial cues if not simply spurious effects that await further validation.

As stated beforehand, although the present study presumed that the non-emotion-posing faces would differ in their emotional demeanor, it did not attempt to determine the sources of these variations. Future research is needed to identify the basis for the perceived emotional demeanor of purportedly neutral faces. Variations in demeanor may derive from structural cues such as feature and face shape or from affective cues such as current traces of emotion or previous expressive habits. Thus, future research should utilize multiple strategies to determine the sources of variations in emotional demeanor (e.g., measuring facial features, coding expressive cues, assessing facial movements).

In general, the relationships between emotion and trait ratings held true independently of variations in the perceived attractiveness or babyishness of faces. However, the relationship between a happier-looking de-

meanor and greater perceived dominance was reduced when variations in attractiveness were controlled in the non-emotion condition. While this may simply reflect a sporadic effect, it is also possible that happiness and attractiveness share qualities that impact similarly on impressions of dominance. It is left for future research to examine more closely the reliability, basis and implications of this finding.

Although the present study was successful in achieving its goals, several interesting questions remain. For example, researchers might question the extent to which people's neutral and expressive faces provide valid cues to their dominance and affiliativeness. Malatesta et al. (1987) found significant relationships between personality traits and targets' ability to encode particular emotions. Moreover, accurate judgments about targets' dominant personality traits were linked to the emotional demeanor of their neutral faces. These findings suggest that the overgeneralizations found in the present study may indeed be accurate reflections of people's behavioral capacities.

Future research might also explore the extent to which emotion-trait associations and their overgeneralizations hold true for vocal and bodily cues. Research has shown that people's voices and body movements influence perceptions of their affective state as well as their traits (Addington, 1968; Davitz & Davitz, 1959; Montepare, Goldstein, & Clausen, 1987; Montepare, Koff, Zaitchik, & Albert, 1999; Montepare & Zebrowitz-McArthur, 1988; Scherer, 1986). Whether links also exist between perceptions of emotion derived from vocal and bodily information and impressions of dominance and affiliation is an empirical question worth asking. Work by Friedman (1979) also points to the need to examine the interactive effects of facial and other expressions of emotion on trait perceptions especially because these effects may not be simply additive. Another issue to consider is the extent to which individual characteristics and contextual factors influence the perception of social traits and their interpersonal consequences. In the present study, the perception of traits was framed in a manner that did not distinguish among different perceivers or contexts. However, the ecological theory (McArthur & Baron, 1983; Montepare & Zebrowitz, 1998) makes clear that a comprehensive understanding of social perception requires attention to how perceivers' abilities, goals, and experiences, as well as the nature of stimulus information and situational demands, influence attunements to particular social traits. Thus, although the present research argued on theoretical grounds that emotional faces provide information about a person's likely dominance and affiliation, the extent to which perceivers arrive at these judgments inevitably depends on factors such as their attention, motivation, and social goals.

Appendix

The measures of dominance and affiliation adapted from the IAR-S (Wiggins, Trapnell, & Phillips, 1988) were based on Knutson's (1996) measures and included the following trait adjectives: (assertive + dominant)/2 (PA); (shy + unaggressive)/2 (HI); (cunning + sly)/2 (BC); (uncunning + unsly)/2 (JK); (unsympathetic + warmthless)/2 (DE); (tender + sympathetic)/2 (LM); (unsociable + introverted)/2 (FG); (friendly + outgoing)/2 (NO). The formula used to compute the dominance composite scores was: $PA - HI + .707(NO + BC - FG - JK)$. The formula used to compute the affiliation composite scores was: $LM - DE + .707(NO - BC - FG + JK)$.

Notes

1. Thanks are extended to Alan Fridlund for the points he raised from a behavioral ecology perspective. An ecological framework is similar in a number of ways to Fridlund's (1994) behavioral ecology view of faces. For example, both hold that emotional displays have the capacity to signal social-behavioral traits. In addition, both recognize the capacity for learning and experience to impact on the perception of these traits. Moreover, both argue that the perception of these traits depends on a variety of factors such as perceivers' social goals, behavioral capabilities, perceptual experiences, and situational demands. However, in contrast to the behavioral ecology perspective, an ecological framework considers emotions basically categorical in nature and distinguished by directly perceptible stimulus-based physical information. At the same time, the present authors would argue that current descriptions of this information are incomplete and more research is needed to discover the invariant configural nature of physical information that reveals emotions and their social traits.
2. Interestingly, the zero-order correlations between appearance ratings (attractiveness, babyishness) and trait ratings were not as strong and consistent as typically seen in research designed around these appearance qualities (Eagly et al., 1991; Montepare & Zebrowitz, 1998). One difference between this and past research was that the faces in this research were fashioned to contain emotion cues. Thus, one possible explanation for the weak relationships is that reactions to emotion information undermined or overrode reactions to attractiveness (babyishness). To test this possibility, research is needed that compares the relative contribution of simultaneous sources of facial information to trait impressions.
3. Expressions of surprise manifested in the present study appeared to be positive ones. However, as Ekman and Friesen (1975) explain, expressions of surprise can be triggered by negative as well as positive events, which in turn can change their overall character. To the extent that a surprised expression is provoked by angry, fearful, or disgusted reactions to events, one may expect to find a different pattern of trait impressions. Thus, for example, expressions of surprise indicative of angry reactions should yield impressions of higher dominance and lower affiliation. On the other hand, expressions of surprise indicative of fearful reactions should yield impressions of lower dominance. The extent to which these predictions hold true is an empirical question for future research to address.

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