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A female advantage in the recognition of emotional facial expressions: test of an evolutionary hypothesis

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Abstract

A set of computerized tasks was used to investigate sex differences in the speed and accuracy of emotion recognition in 62 men and women of reproductive age. Evolutionary theories have posited that female superiority in the perception of emotion might arise from women's near-universal responsibility for child-rearing. Two variants of the child-rearing hypothesis predict either across-the-board female superiority in the discrimination of emotional expressions ("attachment promotion" hypothesis) or a female superiority that is restricted to expressions of negative emotion ("fitness threat" hypothesis). Therefore, we sought to evaluate whether the expression of the sex difference is influenced by the valence of the emotional signal (Positive or Negative). The results showed that women were faster than men at recognizing both positive and negative emotions from facial cues, supporting the attachment promotion hypothesis. Support for the fitness threat hypothesis also was found, in that the sex difference was accentuated for negative emotions. There was no evidence that the female superiority was learned through previous childcare experience or that it was derived from a sex difference in simple perceptual speed. The results suggest that evolved mechanisms, not domain-general learning, underlie the sex difference in recognition of facial emotions.

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1. Introduction

The ability to decode facial expressions of emotion is fundamental to human social interaction. Elements of facial decoding, including the immediate preverbal detection of a facial signal, are believed to represent evolved mechanisms that enable the receiver to predict another individual's emotional state and anticipate future actions (Ekman, 1997; Izard, 1994; cf. Russell, Bachorowski, & Fernández-Dols, 2003). Ekman and others (Ekman, 1994; Ekman and Friesen, 1971; Izard, 1994) have argued that a limited set of facial expressions is innate and universally recognized as signals for happiness, sadness, anger, fear, disgust, and surprise. While the verbal labels and cultural rules governing the expression of these emotions may vary, the expressions themselves have a universal signal value. Thus, both the production of specific facial expressions and their interpretation by a receiver are thought to be innate.

It is often claimed that women are superior to men at recognizing facial expressions of emotion (see below). Explanations for the sex difference range from sexual inequalities in power and social status (e.g., see Hall, 1984; Henley, 1977; Weitz, 1974) to evolutionary perspectives based on women's near-universal responsibility for child-rearing (e.g., Babchuk, Hames, & Thompson, 1985). The primary caretaker hypothesis proposed by Babchuk et al. (1985) contends that females, as a result of their evolutionary role as primary caretakers, will display evolved adaptations that enhance the probability of survival of their offspring. In humans, these adaptations are hypothesized to include the fast and accurate decoding of facial affect, an important means of communication especially in preverbal infants.

The child-rearing hypothesis is more complex than it first appears. It gives rise to two different predictions. According to one interpretation of the theory, the "attachment promotion" hypothesis, women should display across-the-board superiority, relative to men, in decoding all facial expressions of emotion because mothers who are highly responsive to infants' cries, smiles, and other nonverbal signals are likely to produce securely attached infants (Ainsworth, 1979; Hall, Lamb, & Perlmutter, 1986), and secure infants display optimal long-term health and immune function and social outcomes (Goldberg, 2000). A second interpretation of the theory, the "fitness threat" hypothesis, assigns a special status to negative emotions. It predicts a female superiority that is limited to expressions of negative emotion including fear, disgust, sadness, and anger.¹ Because negative emotions signal a potential threat to infant survival (e.g., threats to safety, loss, pain, or the ingestion of a toxin) that calls for action on the caretaker's part—whereas positive expressions carry no such imperative—it is specifically facility in the recognition of negative expressions that may have been selected in the primary caretaker and in which a female superiority may therefore be found. By tying the sex difference to parental roles, the fitness threat hypothesis offers an alternative to theories based on

¹According to Babchuk et al. (1985), anger calls for a response from the mother because it signifies frustration on the part of the infant, a form of distress that may signal a survival issue.

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