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Effects of perceived physical attractiveness on females' facial displays and affect

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Abstract

This study used facial electromyographic (EMG) techniques to investigate the effects of perceived physical attractiveness of a target on female viewers' facial muscle activity and self-reported emotion. Female subjects viewed slides of adult males and females that varied in attractiveness. When these female subjects viewed same-sex stimuli, the highly attractive targets evoked greater mean corrugator muscle (brow lowering muscle) EMG and greater reported arousal than the less attractive targets, while reported pleasure was not affected by perceptions of same-sex-stimulus attractiveness. When the female subjects viewed males, ratings of felt pleasure, arousal, and to a lesser extent zygomatic EMG were all greater in response to the highly attractive males than the less attractive. The greater corrugator EMG to highly attractive same-sex targets is interpreted as evidence of a defensive reaction to viewing a high-status competitor, and several explanations for the lack of a self-reported increase in negative affect to these targets are considered. © 2000 Elsevier Science Inc. All rights reserved.

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Since Darwin (1872), human facial display has been thought to be both a reflection of the individual's current emotional state and a means of communicating social and emotional information. In the social negotiation process that occurs when people first meet, cues about the other's social status, dominance standing, and mate potential should be particularly important variables that influence the receiver's behavior and emotions, and specifically his or her facial displays. One individual characteristic that has been found to be associated with perceptions of social success, social competence, and mate potential is physical attractiveness (Bassili, 1981; Buss, 1989; Dion, 1986; Eagly et al., 1991).

If physical attractiveness is the most important characteristic that males use for evaluating the mate potential of females (Buss, 1989; Buss and Schmitt, 1993; Singh, 1993), then females' perceptions of the physical attractiveness of other females should reflect their signifi-

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cance as competitors, promote intrasexual competition, and probably result in critical self-comparison and altered mood. There is some evidence for such effects. Viewing pictures of attractive opposite sex individuals has been found to result in greater reported pleasant affect (Kenrick et al., 1993; Lang et al., 1993), whereas viewing attractive same-sex pictures has been found to result in lowered reported mood (Kenrick et al., 1993) and lowered self-ratings of attractiveness in females (Cash et al., 1983). Also, highly physically attractive people were found to be more likely than less attractive people to be rejected by peers of the same sex (Krebs and Adinolfi, 1975), suggesting that same-sex attractiveness can evoke a defensive or competitive response.

The facial muscle activity that underlies changes in facial expressions seems a particularly promising behavior to study in investigations of the effects of physical attractiveness. Facial displays have been described as lying along a continuum from behavior that is more or less purely expressive of emotion to behavior concerned primarily with a process of social negotiation or communication (Hinde, 1985; Kraut and Johnston, 1979). Like other animal displays, facial expressions have evolved to communicate information about the probable future behavior of the displaying individual (Andrew, 1963). For example, eyebrow lowering, which involves the corrugator muscle, has evolved into one component of the threat display used by many primate species, including humans, in conflicts over social dominance standing (Andrew, 1963; Ohman, 1986). Zygomatic activity during smiling in response to pleasurable stimuli seems to have originated as part of vocalization and laughter, and the infant's smile is selectively directed at the mother from an early age (Andrew, 1963).

Electromyographic (EMG) techniques have been found to provide a sensitive and precise measurement of facial muscle activity, and facial EMG is capable of measuring facial muscle activity to weakly evocative emotional stimuli even when no changes in facial displays are detectable by an observer (Cacioppo et al., 1986). Facial EMG activity has been found to be related to several factors. First, a number of studies using various emotional stimuli have demonstrated that corrugator EMG activity varies inversely with the pleasantness (emotional valence) of presented stimuli and is positively related to reports of negative mood state, whereas zygomatic (smile) EMG activity has been found to be positively (albeit less strongly) associated with pleasant emotional stimuli and positive mood state (Cacioppo et al., 1986; Dimberg, 1982, 1986, 1990; Lang et al., 1993; Sirota and Schwartz, 1982; Witvliet and Vrana, 1995). Not only has it been demonstrated that emotional stimuli lead to characteristic EMG changes, but EMG changes, at least for the corrugator muscle, can predict emotional state (Cacioppo et al., 1988).

Other factors besides emotional state also affect these EMG measures. Pope and Smith (1994) found that motivational incongruence and perceived obstacles were specifically predictive of corrugator activity, while subjective pleasantness significantly predicted zygomatic activity. Fridlund (1991) and Fridlund et al. (1992) demonstrated that both real and imagined audiences can have an augmenting effect on both positive and negative emotion facial displays. Hess et al. (1995) demonstrated that emotional state, social context, and the expressor-audience relationship can all affect the intensity of facial displays. Zygomatic activity is not always associated with felt emotion, for the zygomatic muscle also is recruited during fake social smiles and the appeasement smiles of embarrassment (Ekman and Friesen, 1982; Ekman et al., 1988), as well as in grimacing in response to shocking and repelling

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