

# The relative importance of the face and body in judgments of human physical attractiveness<sup>☆</sup>

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## Abstract

A number of traits have been proposed to be important in human mate choice decisions. However, relatively little work has been conducted to determine the relative importance of these traits. In this study, we assessed the relative importance of the face and body in judgments of human physical attractiveness. One hundred twenty-seven men and 133 women were shown images of 10 individuals of the opposite sex. Participants rated the images for their attractiveness for either a short-term relationship or a long-term relationship. Images of the face and the body were rated independently before participants were shown and asked to rate the combined face and body images. Face ratings were found to be the best predictor of the ratings of combined images for both sexes and for both relationship types. Females showed no difference in ratings between short- and long-term conditions, but male ratings of female bodies became relatively more important for a short-term relationship compared with a long-term relationship. Results suggest that faces and bodies may be signaling different information about potential mates.

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## 1. Introduction

Over recent years, an extensive literature concerning possible physical traits involved in human mate choice decisions has developed. These traits include such features as waist-to-hip ratio (WHR) (Singh, 1993), body fat (Smith, Cornelissen, & Tovee, 2007), symmetry (see Rhodes & Simmons, 2007, and references therein), breast size (Manning, Scutt, Whitehouse, & Leinster, 1997), volume-to-height index (Fan, Dai, Liu, & Wu, 2005), and foot size (Fessler et al., 2005). Few studies have looked at the relative importance of these traits, however. This is an important

issue as preferences that may be revealed in tightly controlled experimental conditions may be of little or no importance in actual human mate choice decisions. On the other hand, studying preferences under experimental conditions can reveal important aspects of mate choice behaviour that are masked under natural conditions due to the constraints of time and availability of mates. Analysing more than a single trait at a time can shed light on why multiple cues have evolved and how these cues are integrated to produce real mate choice behaviour.

Although a number of attributes have been implicated in human mate choice decisions, there are a number of theoretical issues concerning the use of multiple cues that have not been fully appreciated in the human mate choice literature. First, there may be costs attached to using more than one cue to assess members of the opposite sex (e.g., increased amount of time) (Candolin, 2003). Furthermore, several studies have proposed different traits to be indicators of the same underlying aspect of quality. For example, in his work on cross-cultural mate preferences, Buss (1994)

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described female preferences for older men, high status men, and industrious, ambitious men because these indicate a man's ability to acquire resources. Symmetry in the breasts (Manning et al., 1997) and that in the face (Grammer & Thornhill, 1994) have been proposed to be an indicator of the same 'good genes' in females. Correlations between facial symmetry and facial sexual dimorphism have also been taken as evidence that both traits signal some common underlying value (Gangestad & Thornhill, 2003; Little et al., 2008). However, if one trait reliably indicates the presence of a certain aspect of quality, what drove the evolution of the other cues?

Several theoretical models have been developed to explain the evolution of multiple preferences in mate choice decisions. The 'multiple messages' hypothesis states that multiple preferences evolve because they index different mate qualities. These qualities may be the result of 'good genes' selection for different aspects of quality (e.g., resource acquisition and immunocompetency), sensory bias, or 'Fisherian' selection. Different preferences can also evolve for different traits that are important on different time scales (e.g., one trait may signal current health status, while another signals the long-term quality of the immune system). The different traits may be evaluated together to indicate the general quality of the mate. There may also be individual variation in the use of different cues (Candolin, 2003). Mathematical models indicate that although multiple Fisherian cues are likely to evolve together, only a single indicator of genetic quality is stable (with or without additional Fisherian cues) (Iwasa & Pomiankowski, 1994; Pomiankowski & Iwasa, 1993). Although it is unclear how widely applicable these models are, in a comparative analysis, Moller and Pomiankowski (1993) found evidence for multiple Fisherian cues in bird species under the most intense sexual selection.

Another explanation for the evolution of multiple preferences is the 'back-up signal' hypothesis, which states that multiple preferences have evolved to more accurately assess a single aspect of mate 'quality' (Johnstone, 1996; Moller & Pomiankowski, 1993). This is likely to occur if a single trait is not a reliable indicator of mate quality. Traits may also indicate the same aspect of quality but are used in different contexts (e.g., close-up or from a distance) (Candolin, 2003).

Receiver psychology may be important in determining the evolution of multiple cues (Rowe, 1999). What at first may appear to be separate signals may in fact be a single signal made up of several components. Use of several components may elicit greater responses in individuals making the choices, and multicomponent signals may evolve because they aid reception of the signal in the opposite sex (Candolin, 2003).

Holland and Rice (1998) have proposed one further theory for the evolution of multiple cues based on an antagonistic co-evolution between the sexes, or 'chase-away' selection. Males may evolve signals that tap into preexisting

female sensory biases. If such sensory exploitation causes females to mate in a suboptimal manner, females can in turn be expected to evolve resistance to these signals. This may lead to males developing new signals. The previous signals, although no longer able to manipulate female behaviour by themselves, may be required to achieve stimulus levels above a certain threshold, thus leading to males adorned with multiple display traits.

If multiple cues are used in mate choice decisions, it raises further questions about how information from those cues is integrated. Representing this integration as a simple weighted linear model [such as the Brunswick lens model (Brunswick, 1955)] is unlikely to be accurate because (a) cues may interact non-linearly, (b) cues may not be available for assessment simultaneously, or (c) cues might not be traded off against one another (i.e., a deficiency in one cue may not be compensated for by other cues) (Miller & Todd, 1998). Alternatively, multiple cues may be assessed additively (Kunzler & Bakker, 2001; Smith & Belk, 2001), sequentially, or hierarchically (Gibson, 1996). The attention paid to one cue may be dependent on the expression of another (Kodric-Brown & Nicoletto, 2001; Moller, Saino, Taramino, Galeotti, & Ferrario, 1998). Also, one cue may influence the cost of another (Candolin, 2003).

As yet there has been little theoretical and experimental work on assessing multiple cues in humans. Singh (1993) has proposed that men could use women's WHR as a 'wide first-pass filter,' screening out those women who may be unhealthy, have low reproductive capability, or be pregnant. However, Furnham, Lavancy, and McClelland (2001) found no evidence for such a role. Kenrick, Sadalla, Groth, and Trost (1990) found that the minimum acceptable levels for a number of traits increased with the length of relationship sought, but each trait was different in the way it increased and was different for each sex.

The purpose of our study was to examine whether facial or body attractiveness is more important in determining assessments of overall physical attractiveness in both sexes. Most studies have looked at facial and body cues in isolation, but some research has been done on the relationship between facial and body attractiveness.

Thornhill and Grammer (1999) found a correlation between independent male ratings of nude photographs of the face and those of both front and rear views of the body of 92 females. From these results, they concluded that the body and face of a woman represent one ornament of genetic quality. However, the correlations between face and body photographs were not particularly high (face and front,  $r=.30$ ; face and back,  $r=.33$ ), suggesting that although some aspects of facial and bodily attractiveness are linked, by no means all aspects are. A recent study by Hönekopp, Rudolph, Beier, Liebert, and Muller (2007) found that male physical fitness attractiveness correlates with body attractiveness but not with facial attractiveness and that physical fitness is related to self-reported mating success. The results suggest that one of the functions of body

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