

Original Article

Anthropometric correlates of human anger

Michael E. Price^{a,*}, James Dunn^a, Sian Hopkins^a, Jinsheng Kang^b

^aDepartment of Psychology, Brunel University, Uxbridge, Middlesex, UB8 3PH, United Kingdom

^bSchool of Engineering and Design, Brunel University, Uxbridge, Middlesex, UB8 3PH, United Kingdom

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Abstract

The recalibrational theory of human anger predicts positive correlations between aggressive formidability and anger levels in males, and between physical attractiveness and anger levels in females. We tested these predictions by using a three-dimensional body scanner to collect anthropometric data about male aggressive formidability (measures of upper body muscularity and leg–body ratio) and female bodily attractiveness (waist–hip ratio, body mass index, overall body shape femininity, and several other measures). Predictions were partially supported: in males, two of three anger measures correlated significantly positively with several muscularity measures; in females, self-perceived attractiveness correlated significantly positively with two anger measures. However, most of these significant results were observed only after excluding from the sample 27 participants who were older than undergraduate age, leaving a subsample of 40 males and 51 females. Evidence for relationships between anthropometric attractiveness indicators and anger measures was weak, but there was some evidence for relationships between anthropometric attractiveness indicators and self-perceived attractiveness measures. While our results support the recalibrational theory's prediction that anger usage and formidability are positively correlated in males and suggest that this formidability can be assessed via anthropometric measures alone, they also suggest that this prediction may not apply to populations older than undergraduate age. Further, our results suggest that while female anger levels relate positively to self-perceived attractiveness, they are unrelated to most anthropometric measures of bodily attractiveness.

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1. Introduction

According to the recalibrational theory of anger (Sell, Tooby, & Cosmides, 2009), the human psychological program that generates anger evolved to incentivize others to recalibrate upwards their valuation of the angry individual's welfare. Ancestral individuals used anger to convince others to treat them better, and the more power they had to harm and/or benefit others, the more convincing they would have been in this regard: "anger is more likely to be triggered when an actor is positioned to make the price of resisting recalibration high. This price is higher when the actor's formidability (ability to inflict costs on the target) or the actor's ability to confer/withhold benefits is greater" (Sell et al., 2009: 15 074).

The recalibrational theory predicts that certain traits would have been particularly important influences in ancestral environments on an individual's ability to impose costs or confer benefits. One of these influences, aggressive formidability, would have enhanced the ability to inflict costs. Because selection for traits promoting success in physical conflict is stronger in males than in females (Trivers, 1972), traits that enhance aggressive formidability (e.g., upper body muscle mass) should be more important as aspects of cost-imposition ability in males than in females. Another important influence on one's ability to impose costs/confer benefits is physical attractiveness, which, as an indicator of health and mate value in both sexes, would have enhanced the ability to confer benefits as an ally or mate. Attractiveness would have probably been a more significant aspect of benefit-conferral ability in females than in males because it is relatively more important in females as an index of both fertility and mate value (Grammer, Fink, Møller, & Thornhill, 2003). It should also be noted that some traits may enhance abilities to both inflict costs and confer benefits. For

* Corresponding author. Department of Psychology, School of Social Sciences, Brunel University, Uxbridge, Middlesex, UB8 3PH, United Kingdom.

E-mail address: michael.price@brunel.ac.uk (M.E. Price).

example, although Sell et al. focus on how strength could be used to impose costs, strength could also be used to provide benefits such as protection from crime (Snyder et al., 2011). Further, moderately high male upper body muscularity is itself perceived as attractive by females (Frederick & Haselton, 2007), which may help explain why men who are more muscular report having had more sex partners (Frederick & Haselton, 2007; Lassek & Gaulin, 2009).

Support for the predictions of the recalibrational theory is provided by Sell et al. (2009), who found significant positive correlations in males, but not in females, between upper body strength and the likelihoods of getting angry, of getting into physical fights, of believing in the utility of personal and political aggression, and of succeeding in conflict. (A related finding is that women perceive men with more muscular bodies as being more “volatile” [Frederick & Haselton, 2007].) Sell et al. also found significant positive correlations in females between self-perceived physical attractiveness and all of these anger measures, with the exception of likelihood of getting into physical fights. The correlations between attractiveness and anger measures were weaker in males, and most of these zero-order correlations became marginal or nonsignificant after controlling for the effects of strength.

Previous research suggests, then, that there are significant sex differences in the traits associated with anger-related outcome variables: upper body strength is important in males but unimportant in females, whereas self-assessed physical attractiveness is relatively more important in females than in males. The main purpose of the current study was to test these predictions using predictor variables that were based on anthropometric data, as opposed to the kinds of data (mainly strength tests and self-report) collected in prior research. Sell et al. (2009) assessed male aggressive formidability via several measures of strength: weight-lifting ability, self-perceived strength, strength as perceived by others, flexed bicep circumference, and strength scores as recorded by a hand dynamometer. Their only anthropometric measure, flexed bicep circumference, was included as one item in a four-item composite variable, so they did not investigate the extent to which male anger measures could be predicted based on anthropometric variables alone, which is an issue that we examined in depth.

Further, Sell et al. used a measure of attractiveness that was based on self-report data, rather than on any anthropometric data that would be informative about bodily attractiveness. Because they did not collect this kind of anthropometric data, they could not test the hypotheses that females with more attractive bodies (as assessed anthropometrically) tend to use anger more and that self-perceived attractiveness accurately reflects anthropometrically measured attractiveness. Both of these hypotheses are relevant to the recalibrational theory because this theory assumes that attractive people (especially females) have greater power to confer benefits because other people think they are attractive. While Sell et al. are correct that human ancestors needed to

perceive their own attractiveness in order to assess the extent to which they could leverage it to their own advantage, it is also true that their perceptions needed to have been rooted in reality in order to be used adaptively (otherwise, they would have miscalculated the actual extent of their benefit-conferral advantage and would thus have used anger either less or more frequently than would have been optimal for them). However, good evidence for a positive relationship between anthropometrically measured attractiveness and female anger levels has apparently not yet been produced, and some evidence suggests that there is no relationship between self-perceived attractiveness and anthropometric attractiveness in females (Brewer, Archer, & Manning, 2007). We tested for both of these types of relationships.

We used two kinds of variables as indicators of male formidability. First, as explained above, we predicted that measures of upper-body muscularity such as chest, shoulder, and bicep circumference would correlate positively with anger use in males. Second, we expected leg–body ratio (LBR) to correlate negatively with anger use in males. LBR appears to correlate inversely with male fighting ability in a variety of primate species, perhaps because males with lower LBR are harder to knock down (Carrier, 2006) and/or because as a sexually dimorphic trait (Brown et al., 2008), LBR is associated with other testosterone-dependent traits that influence formidability.

We used a variety of variables as indicators of female attractiveness. First, we predicted that LBR would relate positively to anger in females: LBR appears to be associated positively with body-shape femininity and attractiveness in females (Brown et al., 2008; Rilling, Kaufman, Smith, Patel, & Worthman, 2009; Swami, Einon, & Furnham, 2006), although some research suggests that a moderate LBR is most attractive in females (Frederick, Hadji-Michael, Funham, & Swami, 2010; Swami, Einon, & Furnham, 2007). Second, a lower female waist–hip ratio (WHR) is regarded as more attractive by males in a wide variety of cultures (Singh, 1993, 2002), so we expected WHR to relate negatively to anger in females. (However, some evidence suggests cross-cultural variation in WHR preferences; for reviews, see Sugiyama [2005] and Swami & Salem [2011].) Third, waist circumference was found by Rilling et al. (2009) to be a particularly significant inverse correlate of female attractiveness, so we predicted it would relate negatively to female anger. Fourth and fifth, we predicted that body mass index (BMI) and volume height index (VHI) would relate negatively to female anger: Tovee, Hancock, Mahmoodi, Singleton, and Cornelissen (2002) emphasized the importance of BMI as a predictor of female attractiveness, while Fan, Liu, Wu, and Dai (2004) found VHI to be a better predictor. Sixth, we predicted that bust–underbust ratio (BUR) would relate positively to female attractiveness, based on work by Brown et al. (2008) which identified this relationship. Finally, because a more sex-typical (i.e., feminine) female body shape is regarded as more attractive (Brown et al., 2008), we

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