



Waist to hip ratio and facial attractiveness: a pilot study

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Abstract

The aim of this study was to evaluate the influence of facial attractiveness and waist to hip ratio (WHR) on five judgements of attractiveness (attractiveness, sexiness, healthiness, fertility and pregnancy). It was hypothesised that facial attractiveness would be more important than WHR for all measures except for pregnancy. Four levels of WHR were matched with two levels of facial attractiveness to produce eight individual stimuli based on the same figure. These were rated on a seven point bi-polar scale for each measure by 100 male subjects. A correlation matrix revealed that attractiveness was most highly correlated with sexiness; healthiness was most highly correlated with fertility, and pregnancy was independent of all other measures. Results revealed that both facial attractiveness and WHR were highly significant in influencing the five judgement measures. Facial attractiveness seems more important than WHR for all measures except pregnancy. Following overall linear trend analysis for all measures it was suggested that WHR is the best predictor of perceived pregnancy. The results are discussed in the context of evolutionary theory. Limitations of the study, particularly reliance on limited stimuli, are acknowledged. © 2001 Elsevier Science Ltd. All rights reserved.

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1. Introduction

In evolutionary terms selection of an appropriate mate is largely dependent on that mate's perceived ability to reproduce and take good care of its young. Owing to the cryptic nature of human ovulation, it had been suggested that the male uses more observable body cues such as physical attractiveness and health in order to deduce a female's capability for reproduction (Buss, 1989; Kenrick, 1989; Symons, 1979).

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Researchers have recently questioned whether there is a cross-cultural standard for attractiveness which is universally understood by potential mates as a major cue for fertility. This has been proposed in the form of body fat distribution as measured by the waist to hip ratio (Singh, 1993a,b, 1994; Singh & Luis, 1995). The waist to hip ratio is dependent on sex hormones which become active at puberty. A high waist to hip ratio which is typical of males is maintained by testosterone which stimulates fat deposits in the abdominal region and inhibits fat deposits in the gluteofemoral region. By contrast the lower waist to hip ratio of the female is maintained by oestrogen which inhibits fat deposits in the abdominal region and stimulates deposits in the gluteofemoral region (Bjorntorp, 1987; Rebuffe-Scrive, 1987, 1988, 1991).

The influence of these sex hormones give rise to an android or gynoid body fat distribution which can be accurately measured by the waist to hip ratio (WHR). The WHRs of males and females are similar before puberty and in old age but it is during the reproductive period that a woman's ratio lowers to between 0.67 and 0.80 (Lanska, Lanska, Hartz & Rimm, 1985) whilst a man's is maintained between 0.85 and 0.95 (Jones, Hunt, Brown & Norgan, 1986). It has been reported that married women with high waist to hip ratios and low body mass index (BMI) (weight in proportion to squared height) report more difficulty in becoming pregnant and have their first live birth at a later age than married women with a low WHR (Kaye, Folsom, Prineas, Potter & Gapstur, 1990). Another study in Holland found that there is a negative correlation between WHR and probability of conception in an artificial insemination programme (Zaadstra et al., 1993). With regard to general health it has been found that particular fat distribution in the body (i.e. belly fat), rather than total fat is a major risk factor in diabetes, heart attack and stroke (Bjorntorp, 1988, 1991). It would thus seem that as an indicator of good health and fertility it would be advantageous for the male to select a female mate with a low WHR. If such a selection process were to be present in males it would be logical to assume that perceived attractiveness is not an arbitrary concept but one which is related to fertility and health so that females who are perceived as most attractive are also perceived as most healthy and fertile.

A recent Swedish study found WHR was a good predictor of pregnancy rate in in-vitro fertilisation and embryo transfer (Wass, Waldenstrom, Rössner & Hellberg, 1997). Thus women with a WHR of between 0.70 and 0.79 had a pregnancy rate of 29.9% compared to 15.9% for those with a WHR of >0.80 . There was no relationship between BMI and pregnancy rate. The authors were able to show that the relationship between WHR and pregnancy is not due to hormonal imbalance or egg fertilisation. Indeed few clinical studies show any relationship between BMI and fertility.

Indeed, several experiments by Singh (1993a,b, 1994) have shown a marked preference for females presenting a low WHR (0.7). In both Singh experiments, 12 line drawings were created to represent females of four different WHRs (0.7, 0.8, 0.9, 1.0) and three different weight categories: normal, underweight, overweight. When these figures were presented to subjects of both sexes who were asked to rank them on the following attributes: attractiveness, youthfulness, healthiness, sexiness, and capability of and desire for reproduction, it became apparent that stimuli with higher WHRs were attributed lower ranks whilst stimuli with WHR 0.7 were ranked most highly. Further, females of normal weight were ranked most highly. Weight also had a bigger effect (determined by effect size) on rankings than WHR. There are two types of limitations related to this study; stimuli and method. With regards to the format of the stimuli it can be argued that the presentation of line drawings is detrimental to the ecological validity of such experiments in that

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