



Brief research report

Judging the differences between women's attractiveness and health: Is there really a difference between judgments made by men and women?



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ABSTRACT

Perceived weight in the face and body size have been shown to be significant predictors of both attractiveness and health. Studies looking at the relationship between attractiveness, perceived health, and perceived weight in faces have found that individuals prefer a lower weight for attractiveness than for apparent health. Here, a group of twenty-four Asian participants were allowed to manipulate the apparent body mass indices (BMIs) of full-length photographs of young Malaysian Chinese women to enhance their perceived healthiness and attractiveness. Results showed that both men and women differentiated between attractiveness and health by preferring a lower BMI for attractiveness than health, suggesting a consistency in the preferred ideal BMI for attractiveness and healthy appearance across both sexes. Results also suggested that BMI provides important cues to judgments of attractive and healthy appearance.

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Introduction

Evolutionary psychological explanations suggest that attractiveness indicates reproductive value and is, therefore, an important determinant of human mate choice decisions (Symons, 1979). Research has focused on several cues to attractiveness, such as symmetry, averageness, sexual dimorphism (Rhodes, 2006), body size (Swami & Tovée, 2005; Tovée, Maisey, Emery, & Cornelissen, 1999) and, recently, facial adiposity (Coetzee, Perrett, & Stephen, 2009).

It has been shown that weight scaled for height (body mass index or BMI, kg m^{-2}) is an important cue to the physical attractiveness of women (Tovée et al., 1999). This finding has been shown to be consistent across observers of both sexes (Tovée & Cornelissen, 2001). Changes in BMI also have a strong impact on real health. Heavier women and children have been found to report higher levels of respiratory diseases (Baik, Curhan, Rimm, Bendich, Willett, & Fawzi, 2000), while underweight individuals may end up with energy deficits resulting in weaker immune systems, which increases their vulnerability to diseases. Increased body weight is associated with increased mortality in middle-aged women (Manson, Willett, Stampfer, Colditz, Hunter, & Hankinson, 1995), while in early adulthood obesity correlates with reproductive health (Lake, Power, & Cole, 1997). A recent study by Coetzee

et al. (2009) showed that perceived facial adiposity was associated with perceived health and also correlated with measures of actual health, such as respiratory infections, antibiotic usage, and blood pressure.

BMI therefore appears to influence perceptions of both attractiveness and health, and is related to aspects of physiological health. Studies investigating the relationship between the two have found that people differ in their perceptions of the most healthy and attractive BMI. Tovée, Furnham, and Swami (2007) found that British participants preferred a lower BMI for perceived attractiveness than perceived health, while Swami, Miller, Furnham, Penke, and Tovée (2008) found that sociosexually unrestricted men prefer a lower BMI for attractiveness than do restricted men. Individual and cultural/ecological differences in the relationship between BMI and attractiveness have also been found, with men in areas of food scarcity or low socioeconomic status (SES) finding relatively heavier women attractive (Swami & Tovée, 2005).

More recently, Coetzee, Re, Perrett, Tiddeman, and Xiao (2011) asked participants to manipulate facial transforms to optimise attractiveness and health, and found that women, but not men, prefer a significantly lower apparent weight in the face as being optimally attractive than healthy. Their results were discussed in relation to women's greater sensitivity to media norms. Crossley, Cornelissen, and Tovée (2012) showed that both body shape and BMI were important contributors to the ideal body of both men and women. Using full body images, they found no difference between women's conceptions of their own ideal body and men's conceptions of their partner's ideal body, and vice versa. The use

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of interactive computer programs in these recent studies allows participants to make very subtle changes to various body features (BMI, shape, skin colour, etc.) and helps overcome most methodological limitations observed in previous studies, where participants are asked to rate bodies from a limited range of photographs or line-drawings differing in shape.

Most of these previous findings have been limited to Western populations. The influence of cultural and ecological factors in ideal weight preferences (Swami & Tovée, 2005), however, calls into question the generalizability of such findings. Therefore, in this study we utilise a similar methodology to investigate differences in perceived health and attractiveness, but using full body transforms in an Asian population. We predict that, in full-length photographs of young Malaysian Chinese women, a lower apparent BMI will be preferred for attractiveness than for healthy appearance. This study extends the findings of Coetzee et al. (2011) to an Asian population by asking a group of men and women to manipulate the apparent BMI of full length photographs of women to make them look as healthy and, separately, as attractive as possible. In accordance with Crossley et al. (2012) we expect there to be no significant difference between preferred BMI for men and women.

Method

Participants

A group of 24 participants (12 men, 12 women, age: range = 18–24 years, $M = 21.08$, $SD = 1.38$) from the University of Nottingham Malaysia Campus in Semenyih, Selangor, Malaysia were recruited. All verbally self-reported Asian ethnicity and nationalities, but were of differing backgrounds. The Faculty of Science ethics committee at the University of Nottingham Malaysia Campus approved all work, but did not allow detailed collection of ethnicity and nationality data.

Materials

We recruited 30 Malaysian Chinese participants (age: range = 18–23 years, $M = 20.22$, $SD = 1.21$) from the University of Nottingham Malaysia Campus. All participants were asked to wear standard, tight fitting, grey tank-tops and bicycle shorts so that the body shape of each individual was clearly visible, while preserving appropriate modesty for the cultural setting. Each participant's height and weight were measured and used to calculate BMI (weight in kg/height in m^2), using a Tanita SC-330 body composition analyser (BMI range: 16.40–27.67 kg/m^2 , $M = 20.41$, $SD = 2.54$). A full-length body photograph of the front-view of each individual was then captured. Photography took place within a booth painted with Munsell N5 grey paint, illuminated with nine D50 fluorescent tubes in high frequency fixtures (Verivide, UK) to reduce the effect of flicker. No other lighting was present in the room. The camera (Nikon d3100) settings (exposure, white balance, ISO) were held constant. Participants wore no makeup, had their hair pulled back and maintained a neutral expression when their photograph was taken.

Images were resized to 466 × 699 pixels, and aligned on the eyes using Adobe Photoshop CS and Psychomorph software, respectively. Images were delineated by defining 252 feature points on the face and body. Ten composite images, each comprising 3 individuals (selected pseudorandomly so that each identity appeared in only one composite image) were produced. Producing these composite images masked participant identity and reduced the possibility of them being recognised. Two prototype images were then created by averaging images of individuals with the 10 lowest and 10 highest BMIs separately. These two images were used

to create transforms in 13 frames, in which frame 0 was reduced in apparent BMI by 5.73 units, frame 6 was the original image and frame 12 was increased in apparent BMI by 5.73 units. Only shape was manipulated while colour and texture were kept constant (following Coetzee et al., 2011; Re, Coetzee, Xiao, Buls, Tiddeman, & Boothroyd, 2011, but using full-length photographs) (Fig. 1).

Differences in preferred BMI for attractiveness and apparent health were examined by presenting the images (10.5 cm × 16.0 cm) in an applet in which moving the mouse horizontally cycled through the frames and changed the apparent BMI. The direction of the transform was randomised, such that in some trials moving the mouse left reduced the apparent BMI, and in other trials, moving the mouse left increased the apparent BMI of the stimuli. The location of the midpoint was randomised, and the order looped so that it was not possible to easily identify the midpoint.

Procedure

Participation was voluntary and all participants gave written informed consent prior to taking part in the study. Participants were recruited via an online participation system as well as through personal contacts of the second author. Each testing session took place in a quiet classroom and lasted approximately ten minutes. At the end of each testing session participants were debriefed and given the opportunity to ask any questions and clarify any doubts regarding the aims and objectives of the study. Participants were rewarded with sweets following participation. The height and weight of participants carrying out the manipulations were measured and used to calculate BMI. The BMI transforms previously created were then presented once in the attractiveness condition and once in the health condition. Attractiveness and health trials were presented in separate blocks. The order in which attractiveness and health judgments were made were counterbalanced across participants such that half of them made attractiveness judgments first and the other half made health judgments first. Within blocks, trials were presented in random order.

Results

Data from one participant were removed from the analysis, as her chosen BMI to optimise attractiveness was more than 3 standard deviations from the mean. Twenty-three participants' data were included in the final analysis.

Mean BMI values chosen to maximise health and, separately, attractiveness were computed for each participant. Participants' own BMIs were found not to correlate with ratings of attractiveness (men, $r = .32$, $p = .309$; women, $r = .21$, $p = .537$) and health (men, $r = .01$, $p = .975$; women, $r = .31$, $p = .358$).

Linear mixed modelling was performed to examine the difference between the BMIs chosen for attractiveness and healthy appearance, using the non-averaged data (dependent variable = BMI chosen; fixed factors = rating, participant sex; random factor = participant ID). All main effects (rating, participant sex) were included in the model. Participant ID was nested within participant sex to avoid pseudo replication. The interaction between rating and participant sex was also included in the model. Participants chose a significantly lower apparent BMI for the attractiveness than the health (see Table 1) condition, $F(1, 435) = 54.49$, $p < .001$, $\eta_p^2 = .111$). We found no main effect of participant sex, $F(1, 21) = 1.51$, $p = .232$, $\eta_p^2 = .067$. The interaction between rating and participant sex was found not to be significant, $F(1, 435) = 0.58$, $p = .449$, $\eta_p^2 = .001$), suggesting that men and women showed similar trends in their preference for the most attractive and healthy BMI.

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