

Did the perils of abdominal obesity affect depiction of feminine beauty in the sixteenth to eighteenth century British literature? Exploring the health and beauty link

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‘Good gene’ mate selection theory proposes that all individuals share evolved mental mechanisms that identify specific parts of a woman’s body as indicators of fertility and health. Depiction of feminine beauty, across time and culture, should therefore emphasize the physical traits indicative of health and fertility. Abdominal obesity, as measured by waist size, is reliably linked to decreased oestrogen, reduced fecundity and increased risk for major diseases. Systematic searches of British literature across the sixteenth, seventeenth and eighteenth centuries reveal that a narrow waist is consistently described as beautiful. Works in ancient Indian and Chinese literature similarly associate feminine attractiveness with a narrow waist. Even without the benefit of modern medical knowledge, both British and Asian writers knew intuitively the biological link between health and beauty.

Keywords: attractiveness; abdominal obesity; fecundity; health; literature; waist

1. INTRODUCTION

Health is beauty, and the most perfect health is the most perfect beauty.

British author William Shenstone (1714–1763)

Writers and artists have devoted immense time and effort to depicting feminine beauty (Thiessen & Umezawa 1998). Why does feminine beauty have such a strong, persistent and universal appeal? Evolutionary psychological theorists propose that beauty reliably advertises a woman’s good health and fertility (Symons 1979). Accordingly, laymen and artists alike should share evolved mental mechanisms that associate specific parts of a woman’s body with fertility and health, although not necessarily in a conscious fashion. For example, we now know that abdominal obesity, as measured by waist size, is reliably linked to decreased oestrogen, reduced fecundity and increased risk for major diseases (Kissebah & Krakower 1994; Yusuf *et al.* 2005). Collectively, these physical cues such as the waist size form the basis for an evolved standard of beauty (Grammer *et al.* 2003). Depictions of feminine beauty should therefore also emphasize those physical features that are indicative of good health and fertility.

Literature provides one window into the architecture of the human mind by revealing possible universal cognitions, motivations and emotions (Carroll 2004). It also provides information that would be difficult to obtain by any other means. For instance, it offers one means by which to test whether writers in pre-modern Europe—prior to mass media and modern medical knowledge—described a narrow waist as a component of feminine

beauty. The present study examined the sixteenth to eighteenth century British literature in order to determine how often writers described a narrow waist as beautiful. The study also examined whether romantic literature from India and China described a narrow waist as beautiful.

(a) *Narrow waist: an indicator of health and fertility*

In the past 50 years, clinical and epidemiological research has shown that the anatomical location of body fat affects risk factors for various diseases. Abdominal obesity, as measured by waist size and a ratio of waist to hip circumference (waist-to-hip ratio), is a key predictor of cardiovascular disorders, diabetes II, various cancers (breast, ovarian and endometrial) and gall bladder disease (Singh 2002). Moreover, changes in circulating oestrogen levels affect waist size (Jasienska *et al.* 2004); after puberty, as oestrogen levels increase, the waist narrows. Conversely, as women age, the production of oestrogen decreases and the waist enlarges. The current health guideline is that a large waist size (80 cm or greater) in women should be used as a marker of risk for various diseases, independent of overall body weight (Han *et al.* 1995; National Institute of Health 1998).

Waist size is the only scientifically documented visible body part that conveys reliable information about reproductive age, sex hormone profile and risk for major diseases. If universal mental mechanisms equating fertility and health with feminine beauty have indeed evolved, then artists and writers in past and present societies should describe narrow waists as beautiful. Although local conditions and cultural practices undoubtedly shape metaphors, similes and other literary devices, the current evolutionary hypothesis predicts that imaginative and

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Table 1. Frequency distribution of reference to body parts in romantic writings of British authors. (The numbers in parentheses denote the frequency of physical description (shape and/or size) of the body part.)

search term	sixteenth century (1501–1599)		seventeenth century (1601–1699)		eighteenth century (1701–1799)	
	no. of entries	no. of romantic references	no. of entries	no. of romantic references	no. of entries	no. of romantic references
waist	391	6 (6)	935	18 (15)	1547	63 (45)
breasts	89	14	683	98 (2)	736	107 (14)
buttocks	9	0	40	11	51	4 (2)
hips	23	1 (1)	83	7 (1)	88	5 (2)
thighs	45	1	270	27 (4)	261	29 (8)
legs	122	3 (1)	734	9	625	18 (1)
plump	5	0	114	7	135	8
slim	0	0	4	0	29	4

creative musings should emphasize the waist as a marker of feminine beauty.

(b) *Narrow waist: a marker of beauty*

Consider some of the specifications of feminine beauty as described by:

Her skin, and teeth, must be cleare, bright, and neat...
Large breasts, large hips, large space between
the browes,

A narrow mouth, small waste...

British poet Sir John Harington (1618)

Since the waist does not intuitively appear to be a sexually attractive body part (like the breasts or hips), it is strange to describe a narrow waist as an essential bodily feature of a beautiful woman. Despite a few studies reporting that some present tribes do not find a small waist attractive (Yu & Shepard 1998; Marlowe & Wetsman 2001), a small waist seems to have a near universal historical appeal. Could the poet 'know', without being consciously aware, that such a description would appeal to the readership due to a shared meaning of physical attractiveness? The oldest reference linking beauty and small waist size is the epithet of Queen Nefertari, the favourite wife of Ramses II, second millennium B.C.E. '...the buttocks are full, but her waist is narrow...the one for who[m] the sun shines...'

2. STUDY 1: BEAUTY AND THE NARROW WAIST

To test whether a narrow waist has historically been viewed as attractive, we examined the British literature (prose, poetry and drama) between the sixteenth and the eighteenth centuries. The literature spanning these centuries is readily accessible on the website Literature Online (LION; <http://lion.chadwyck.com>). This database contains over 345 000 British and American works of fiction, prose and drama from the sixteenth (1500–1599), seventeenth (1600–1699) and eighteenth (1700–1799) centuries. While LION is not necessarily exhaustive, it represents the largest collection of published British works.

(a) *Method*

We searched the literature for any reference to a female waist and examined every passage that contained each such reference. As a control, we also searched for the words breast, hip, buttocks (bum), leg, thighs, slim and plump and compared how often the authors referred to

these characteristics as attractive. For all terms, we searched for alternate spellings (e.g. waste, waiste) and plurals (e.g. breasts) and created an aggregate number of hits for each search item. Two independent raters other than the authors examined those passages containing target items to judge whether the reference was romantic or non-romantic (e.g. 'her hair came down to her waist' versus 'longing to hold her lovely waist'). There was high interrater reliability: out of 7019 entries, raters disagreed only in 190 cases. The probability that the raters were operating independently or randomly in their judgment (controlling for high rate of 'romantic' rating in both raters) is exceptionally low ($p < 1 \times 10^{-500}$).

After excluding the entries that the raters disagreed upon, the remaining romantic entries were divided into two categories: (i) those which have no reference to size or shape (e.g. 'better are thy breasts than wine'; 'beholden to her lovely waist') and (ii) those in which either the shape or size was actually described (e.g. pretty, round, heavy breasts; slim or tapered waist) or defined by analogy (e.g. 'thy breasts are like ripe pomegranates'; 'whose waste is little as a wand'). The raters did not disagree on any entries into these categories.

(b) *Result and discussion*

As evident in table 1, for every century, three body parts—breasts, waist and thighs—are more often referred to as beautiful than other body parts. Moreover, waist size was always described as narrow or small; there were 66 romantic descriptions of waist in these three centuries, and every one of them referred to narrow waist. In contrast, while breasts had the most romantic references (219 entries), there were only 16 instances describing breast shape or size. There was only one reference for large breasts and three for small breasts, whereas 12 descriptions referred to the roundness of the breasts (figure 1). Apparently, it is the shape (roundness—a sign of youthfulness; Grammer *et al.* 2003), rather than the size, of breasts that is judged to be beautiful. Furthermore, there were romantic references to various body sizes—15 references to plump women and 4 references to slim women—but none of these references describe an enlarged waist. There were four references admiring slim women. Thus, reference to body size is more variable, but there are no instances of thicker waists being described as attractive. The tendency among writers to consistently

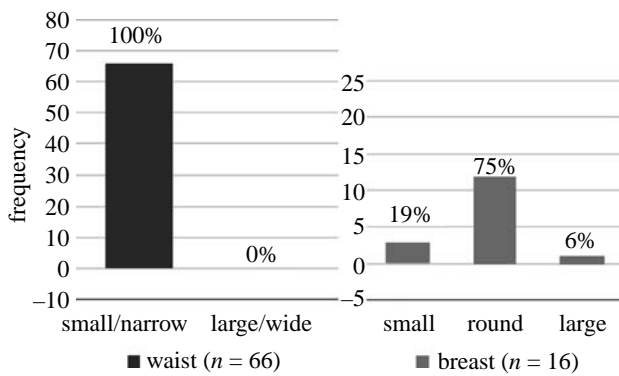


Figure 1. Total number of references summed across sixteenth to eighteenth century describing the shape/size of waist and breasts.

describe narrow waists as beautiful suggests that the narrow waist has a universal and timeless appeal.

3. STUDY 2: ALLURE OF NARROW WAIST IN NON-WESTERN CULTURES

If evolved psychological mechanisms equate health and beauty, one would expect these links to be universally shared. Selection of literature from non-Western cultures poses the problem of cultural diffusion; one could argue that exposure to Western culture influences the literary content and style of non-Western cultures. Additionally, local cultures and religious practices in many non-Western societies may not sanction description of various female body parts.

We therefore asked professors of Asian literature in two universities to nominate ancient erotic/romantic poetry describing beautiful women. Experts suggested two ancient Indian epics, Mahabharata and Ramayana (first to third century), and Chinese sixth dynastic Palace poetry (fourth to sixth century).

(a) Method

Following the procedure used in the first study, references to body parts were rated by two independent raters to determine whether the entry was romantic or non-romantic, and if romantic, whether it specified the shape and size of the body part. There was no disagreement on the classifications of any entries between the two raters.

(b) Results

Table 2 shows the number of entries, romantic references and references which described the size/shape of the body part for the literature from India and China. Indian literature contained the largest number of shape descriptions of the waist, followed by the hips, breasts and thighs. All the 35 references that described waist shape/size referred to slender waist. Hips and breasts were described as full and round and thighs as tapering. In Chinese literature, there were 17 shape references, and in every instance, the waist was defined as narrow or slender. We did not find any romantic references to the breasts, hips, buttocks or thighs. Neither Indian nor Chinese writers mentioned plumpness as beautiful, although a slim body was mentioned as attractive in a few Indian and Chinese references (two and four, respectively).

Table 2. Frequency distribution of reference to body part in romantic writings of Indian and Chinese authors. (The numbers in parentheses denote the frequency of physical description (shape and/or size) of the body part.)

	India		China	
	first to third century		fourth to sixth century	
search item	no. of entries	no. of romantic references	no. of entries	no. of romantic references
waist	44	37 (35)	22	19 (17)
breasts	34	11 (8)	12	0
buttocks	18	6 (3)	0	0
hips	40	21 (9)	0	0
thighs	12	7 (6)	0	0
legs	4	0	1	1
plump	0	0	0	0
slim	2	2	4	4

(c) Discussion

The difference between ancient Indian and Chinese descriptions of female body parts is probably due to differences in cultural practices. The ancient Indian artists created sculptures showing nude female bodies (sometimes in sexual acts) and literature which contained detailed descriptions of body parts and sexual acts. Ancient Chinese tradition, however, apparently did not sanction such depictions in literature.

It is remarkable that in spite of these cultural differences, both Indian and Chinese writers used a slender waist to convey ideal feminine beauty. Consider, for instance, the description by Chinese writer Xu Ling (507–583) ‘Beautiful women...in the palace of Chu, there were none who did not admire their slender waist; the fair woman of Wei’ (quoted by Wu 1998, p. 28). Similarly, the Indian epic Mahabharata contains the following description: ‘...accept this slender-waisted damsel for thy spouse’ (Ganguli 1893–1896). The probability that two ancient cultures opted to stress a slender waist as one of the hallmarks of feminine beauty by sheer chance is exceedingly miniscule.

4. CONCLUSION: LITERATURE—A WINDOW INTO HUMAN NATURE

The validity of the Darwinian notion that the cognitive structures we currently possess are adaptations to problems encountered in our phylogenetic past depends on demonstrating that (i) core cognitions are shared cross-culturally in spite of variations caused by ecological differences and (ii) such cross-cultural consensus is not due to shared, but novel environment. For cross-generational consensus, literature and art comprise a rich data source. The cognitions and motivation of our ancestors are enshrined in art and literature.

Recently, some scholars, known as ‘literary Darwinians’, have explored classical literature and tales from diverse societies to examine whether Darwinian concepts occur universally (Gottschall & Wilson 2005). References to beautiful women abound throughout human history and across cultures. Ancient Greek epics (Helen of Troy), Persian and Chinese poetry, Indian classics, mythology and even popular or folk stories glorify feminine beauty.

Feminine beauty is multifaceted, and poets and writers in different eras and cultures have freedom to describe feminine beauty. The common historical assumption in the social sciences has been that the standards of beauty are arbitrary, solely culturally determined and in the eye of the beholder. The finding that the writers describe a small waist as beautiful suggests instead that this body part—a known marker of health and fertility—is a core feature of feminine beauty that transcends ethnic morphological differences and cultures. Our study suggests that in spite of variation in the description of beauty, the marker of health and fertility—a small waist—has always been an invariant symbol of feminine beauty.

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