

Sex differences in response to physical and social factors involved in human mate selection The importance of smell for women

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Received 22 October 2001; accepted 15 February 2002

Abstract

A survey study examining the relative importance of various social and physical traits in heterosexual attraction was conducted. Data from 198 male and female heterosexual college students revealed that women ranked body odor as more important for attraction than “looks” or any social factor except “pleasantness.” Moreover, in contrast to response to fragrance use, liking someone’s natural body odor was the most influential olfactory variable for sexual interest for both men and women. Men rated a woman’s good looks as most desirable and as more important than any other factor except pleasantness. Sex differences in the relative ranking of several social factors were consistent with prior research. © 2002 Elsevier Science Inc. All rights reserved.

Keywords: Heterosexual attraction; Sex differences; Parental investment theory; Social and physical traits; MHC; Olfaction

1. Introduction

Research on sex differences in human reproductive strategies describes males as chiefly motivated by cues to a woman’s youth and fertility strategies dominated by the visual search for “good looks.” In contrast, women have been described as seeking mates who are good providers and thus most interested in men of high social status and wealth. That is, their mate-

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search strategies are dominated by social analysis (Buss & Schmitt, 1993; Buss et al., 1990; Landolt, Lalumière, & Quinsey, 1995). The explanation given for these differences is based on *parental investment theory*, which states that males seek females high in perceived fertility to increase the probability of gene transmission, whereas females seek males who are most likely to secure offspring survival and thus increase the likelihood that her genetic contribution will be reproductively viable (Trivers, 1972).

The majority of data supporting these conclusions has been derived from self-report survey analysis. In one influential study, Buss (1989) compared the self-reports of male and female mate preferences along various physical and social factors in 37 different countries. Results demonstrated that good looks were the primary physical criterion in mate choice for both men and women. However, Buss and his colleagues did not measure all physical determinants of attraction as they relate to our sensory perception of one another. Among the sensory cues that we use to evaluate others, body odor is critical for mate selection, particularly for women selecting men, because it is a signal of immunological health (Herz & Cahill, 1997; Thornhill & Gangestad, 1999; Wedekind, Seebach, Bettens, & Paepke, 1995).

Several studies have shown that major histocompatibility complex (MHC) genotype influences mate choice in mice and that this choice is made on the basis of body odor (Potts, Manning, & Wakeland, 1991). Research with humans has also shown that MHC type and body odor play a role in the selection of heterosexual mates. For instance, Wedekind et al. (1995) found that females preferred the smell of T-shirts worn by men who were different in MHC alleles than themselves. Mate selection that favors different/complementary MHC is valuable because allele combinations in offspring would maximize disease protection and minimize recessive mutations. It has also recently been shown that women prefer the scent of physically symmetrical men, especially during ovulation, which supports the suggested relationship between “good” genes and body odor in women’s mate-selection strategies (Gangestad & Thornhill, 1998; Thornhill & Gangestad, 1999).

In a recent survey study examining the importance of various sensory–physical traits in mate selection, women ranked “how a man smells” as the most important physical characteristic when selecting a lover, while men ranked “how a woman looks” as most important (Herz & Cahill, 1997). Although this study and others support the notion that body odor is an important factor in women’s mate choices, a number of questions remain unanswered. For example: (1) How do physical factors compare with social factors when men and women select a lover? (2) Does body odor retain its importance for women when the male in question is at least average in all physical respects? (3) How do men and women evaluate body odor versus the use of personal fragrance? The goal of the present study was to answer these questions.

2. Methods

2.1. Materials

To assess how men and women would evaluate various sensory and social aspects of potential mates, we developed *The Romantic Interests Survey*. The survey consisted of 18

Likert items ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The items were grouped under three topics: Topic 1: “physical and social factors involved in selecting a potential lover”; Topic 2: “better-than-average physical qualities”; Topic 3: “natural versus artificial fragrance quality.” The survey also asked participants to indicate their age, sex, and sexual orientation.

2.2. Procedures

Surveys were distributed to several undergraduate classes in the Psychology and Cognitive Sciences departments at Brown University.

2.3. Participants

The completed surveys from 99 male and 99 female self-reported heterosexual students were analyzed. The average age of participants was 19.66 years.

3. Results

Mixed design analysis of variance (ANOVA) with item as the repeated factor and sex as the between subjects factor was performed on the responses from the three topics. Further data inspection involved within and between subject pairwise comparisons. Where differences are described, a minimum value of $P < .05$ was obtained.

Topic 1 assessed how various physical and social characteristics are evaluated when men and women select a potential lover. Mixed-model ANOVA revealed significant main effects of sex [$F(1,196) = 5.89, P < .02$] and item [$F(9,1764) = 196.37, P < .01$], as well as a significant item by sex interaction [$F(9,1764) = 5.39, P < .01$]. Table 1 displays the results of t tests, which show that *smell* was significantly more important for women than men, whereas *looks* were more important for men than women. In addition, the within-subject item comparisons revealed that *smell* was the most important physical factor for women, whereas *looks* was the most important physical factor for men (see Table 1 for relative rankings).

The items in Topic 2 were directed towards determining how men and women evaluate the relative importance of smell and looks when the lover in question is at least average on the four physical factors of interest (looks, smell, voice, and skin feel). The mixed-model ANOVA revealed a significant main effect of item [$F(3,588) = 46.15, P < .01$] and a significant Item \times Sex interaction [$F(3,588) = 11.71, P < .01$]. Tests of simple effects revealed that men rated *better-than-average looks* as more important than women did, whereas women rated *better-than-average smell* as more important than men did.

The purpose of Topic 3 was to understand how the hedonics of body odor and the use of personal fragrance are evaluated by men and women. ANOVA revealed significant main effects for item [$F(3,588) = 47.14, P < .01$] and sex [$F(1,196) = 14.60, P < .01$]. The main

Table 1
Romantic interests survey: topic–item comparisons

	Women's responses		Men's responses		Sex difference	
	Mean ± S.D.	Item rank	Mean ± S.D.	Item rank	<i>t</i> (196)	<i>P</i>
<i>Topic 1: When initially choosing someone as a potential lover...</i>						
1. How they look can make a big difference to me.	5.26 ± 1.09	4	5.75 ± 1.03	2	3.21	< .01
2. How their voice sounds can make a big difference to me.	4.30 ± 1.36	6	4.51 ± 1.26	5	1.08	ns
3. How they smell can make a big difference to me.	5.59 ± 1.16	3	5.03 ± 1.38	4	3.07	< .01
4. How their skin feels can make a big difference to me.	4.17 ± 1.16	7	4.12 ± 1.38	6	0.28	ns
5. How much money they earn can make a big difference to me.	2.68 ± 1.44	10	2.18 ± 1.57	10	2.31	< .05
6. How many friends they have can make a big difference to me.	3.27 ± 1.44	9	2.72 ± 1.29	9	2.85	< .01
7. How ambitious they are can make a big difference to me.	4.85 ± 1.49	5	4.05 ± 1.53	7	3.39	< .01
8. How smart they are can make a big difference to me.	5.69 ± 1.01	2	5.29 ± 1.30	3	2.38	< .05
9. How pleasant they are can make a big difference to me.	6.31 ± 0.82	1	6.17 ± 0.93	1	1.14	ns
10. How athletic they are can make a big difference to me.	3.89 ± 1.42	8	3.96 ± 1.44	8	0.35	ns
<i>Topic 2: Imagine that a potential lover is at least average for looks, voice, body smell, and skin. How important it is to you that they be better than average on each specific trait listed below?</i>						
1. Being better than average in looks.	4.04 ± 1.58	2	4.82 ± 1.61	1	3.46	< .01
2. Being better than average in how nice their voice sounds.	3.32 ± 1.45	4	3.28 ± 1.50	4	0.19	ns
3. Being better than average in how good they smell.	4.35 ± 1.56	1	3.87 ± 1.61	2	2.15	< .05
4. Being better than average in how good their skin feels.	3.46 ± 1.50	3	3.56 ± 1.56	3	0.42	ns
<i>Topic 3: How much would it influence your sexual interest in someone if...</i>						
1. The person was clean but you did not like their natural body odor.	5.43 ± 1.33	3	4.90 ± 1.40	2	2.75	< .01
2. The person was clean and you really liked their natural body odor.	5.89 ± 2.34	1	5.11 ± 1.45	1	2.81	< .01
3. The person was clean but you did not like the fragrances they used (perfume, cologne, deodorant aftershave, etc).	4.23 ± 1.46	4	3.82 ± 1.57	4	1.92	.05
4. The person was clean and you really liked the fragrances they used (perfume, cologne, deodorant, aftershave, etc).	5.52 ± 1.39	2	4.88 ± 1.50	3	3.10	< .01

Seven-point scale items, where 1 = *strongly disagree* and 7 = *strongly agree*.

effect for sex showed that women (mean = 5.27, S.D. = 1.08) gave higher ratings to all of the items than men did (mean = 4.68, S.D. = 1.08).

4. Discussion

The present study showed that women considered a man's smell to be more important than "looks," "voice," or "how his skin feels" when selecting a lover. The influence of smell also outranked all social factors, except pleasantness, and was valued considerably more highly than money or ambition (resource potential). These findings support previous results showing that body odor is a critical signal in female mate choice (Herz & Cahill, 1997). Also in accord with previous studies (Buss, 1989; Buss & Schmitt, 1993; Buss et al., 1990; Landolt et al., 1995), women gave higher ratings than men did to variables related to status and resource potential and men gave higher ratings to good looks (Buss, 1989; Herz & Cahill, 1997). For men, the only factor to outrank good looks was the social factor, pleasantness.

The present study illuminated the relative importance of smell in comparison to other physical factors in mate selection. The results from Topic 2 showed that when a potential lover was at least average in all physical characteristics, women believed that better-than-average smell was more important than superiority in other physical traits, whereas men thought they would prefer a woman to be above average in looks. This suggests that for women, a man's smell, more than merely establishing a baseline of acceptability, is preferred over other physical features.

The present research also elucidated how the hedonics of body odor and the use of personal fragrance are evaluated by men and women. The data from Topic 3 showed that women had a more intense response to odor cues overall than did men. This is not surprising given that women evaluated odor as more important in their mate choice responses than men did. Further inspection of the data also showed that women discriminated their olfactory responses and reported more varied reactions to different odor sources than men did. This suggests that women have a more complex response to odor source and hedonics than men do. It should be noted that in Topic 1 of our survey the term "lover" was used to refer to the romantic candidate in question. This term may have suggested short-term rather than long-term mate-selection criteria to the respondents, and therefore we caution against over-interpretation of our findings.

Issues remain for further research including the following. How do age and sexual experience influence the appreciation of body odor in mate attraction? What aspect(s) of male body odor are women most influenced by? Most studies of body odor have focused on evaluating axillary (armpit) odor. However, it is quite possible that other areas of the body that convey unique body odor such as scalp/hair, forehead, forearms, torso, and genitalia are involved in women's evaluations of male scent as well (Wysocki & Preti, 2000). Finally, how does MHC complementarity affect evaluation of physical characteristics other than body odor? Answers to these questions together with the existing data will greatly advance our understanding of the biology and psychology of human mate selection behavior.

References

- Buss, D. M. (1989). Sex differences in human mate preferences: evolutionary hypotheses tested in 37 cultures. *Behavioral and Brain Sciences*, *12*, 1–49.
- Buss, D. M., & Schmitt, D. P. (1993). Sexual strategies theory: an evolutionary perspective on human mating. *Psychological Review*, *100*, 204–232.
- Buss, D. M., Abbott, M., Angleitner A., Asherian A., Biaggio A., & Blanco-Villasenor A., et al. (1990). International preferences in selection mates. A study of 37 cultures. *Journal of Cross-Cultural Psychology*, *21*, 5–47.
- Gangestad, S. W., & Thornhill, R. (1998). Menstrual cycle variations in women's preferences of the scent of symmetrical men. *Proceedings of the Royal Society of London, Series B: Biological Sciences*, *265*, 927–933.
- Herz, R. S., & Cahill, E. D. (1997). Differential use of sensory information in sexual behavior as a function of sex. *Human Nature*, *8*, 275–286.
- Landolt, M. A., Lalumière, M. L., & Quinsey, V. L. (1995). Sex differences in intrasex variations in human mating tactics: an evolutionary approach. *Ethology & Sociobiology*, *16*, 3–23.
- Potts, W. K., Manning, C. J., & Wakeland, E. K. (1991). Mating patterns in seminatural populations of mice influenced by MHC genotype. *Nature*, *352*, 619–621.
- Thornhill, R., & Gangestad, S. W. (1999). The scent of symmetry: a human sex pheromone that signals fitness? *Evolution and Human Behavior*, *20*, 175–201.
- Trivers, R. (1972). Parental investment and sexual selection. In: B. Campbell (Ed.), *Sexual selection and the descent of man* (pp. 1871–1971). Chicago: Aldine-Atherton.
- Wedekind, C., Seebeck, T., Bettens, F., & Paepke, A. J. (1995). MHC-dependent mate preference in humans. *Proceedings of the Royal Society of London, Series B: Biological Sciences*, *260*, 245–249.
- Wysocki, C. J., & Preti, G. (2000). Human odors and their perception. *Japanese Journal of Taste and Smell Research*, *7*, 19–42.