Mating behavior: Moves of mind or molecules?

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Buss deserves credit for quantifying cross-culturally an old saying that, in general, when it comes to mate preference, men value physical appearance more than women do, whereas women value resourcefulness more highly. We wonder, however, to what extent human mate preference is based on a rational choice, rather, mating behavior may have a molecular basis. Our point is that gonadal hormones, which exert quite specific and coordinated effects on the body and the brain and, accordingly, on behavioral traits, are the proximate causes of variations in mating behavior.

Buss is careful to admit that we know next to nothing about proximate mechanisms of mating behavior. His choice of terms indicates, nevertheless, that he embraces a traditional three-level psychoevolutionary explanation. Females and males are said to "seek," "prefer," and "select," whereas parents may "choose" and "wish" on behalf of their children. Thus at the psychological level, Buss refers to mental qualities such as desires and values as immediate causes of mating behavior. At the level of interaction, Buss further suggests that genes and culture exert a combined effect on phenotypic mating behavior by assuming that (1) cultural differences may exert powerful effects on desires and values, (2) small or inconsistent sex differences suggest a cultural influence at the expense of genetic influences, and (3) large cross-culturally robust sex differences indicate a considerable genetic influence. Finally, with respect to evolution, Buss assumes that (4) mating behavior of the day reflects adaptations during primitive times to harsh but different reproductive constraints. In other words, evolutionary pressures were the remote causes.

For reasons given elsewhere, we agree with Buss that evolutionary pressures probably shaped our present mating behavior (Nyborg 1983; 1984), but we disagree with respect to the explanatory power of the first two levels of his three-level explanation. For example, how can natural or sexual selection possibly work on nonphysical mental categories such as desires and values? What are their mechanisms of action? Genes are pieces of DNA; how do molecules relate to mental categories such as desires and values? Where do genetic mechanisms converge with culture? To say that they coevolve is not to answer the question, but to raise even more complex questions. Perhaps genes and culture work through brain modifications! How, then, does the material brain relate to the nonphysical mind? And when in the evolutionary timetable of the brain did mind evolve? We fear that these unsolved (unsolvable?) body–mind problems easily drag our understanding of mating behavior into an explanatory cul-de-sac.

In order to circumvent the body–mind problems while retaining the explanatory power of Darwinian sexual selection, we have proposed the General Trait Covariance–Androgen/Estrogen (GTC–A/E) model (Nyborg 1979; 1983; 1984; 1986; in preparation). All sexually differentiated traits (bodily, brain, and behavioral – including mating behavior) are, according to the GTC–A/E model, manifestations of the proximate effects of pre- and/or postnatal variations in gonadal hormones on body and brain development, and remote consequences of evolutionary pressures. We further envision that the organization of the proximate mechanisms can be elucidated only by natural science methods. In addition, learning, evolutionary pressures, and other systematic environmental constraints are seen by the GTC–A/E model as nothing but changes in the physical environment, which must be coped with by adequate body and brain equipment in a strictly lawful physicochemical way in order to survive. The GTC–A/E model, therefore, incorporates neither desires and values nor nonphysical "social" and "cultural" factors in the attempt to explain mating behavior.

Such a materialistic idea is, most certainly, not new. The many predictions of the GTC–A/E model can now be tested with the help of new techniques of modern neuroendocrinology. It has been shown, for example, that microscopic changes in fetal and/or postnatal gonadal hormones may produce tremendous variations in the mating behavior of animals, with accompanying variations in their survival rate. Human mating behavior is obviously not a simple matter, and ethics prohibits experimental studies of humans to see how controlled variations in gonadal hormones affect mating behavior. However, the evidence from small clinical groups and from psuedoexperimental settings suggests, for example, that bisexual and homosexual behaviors contain hormonal components (Meyer-Bahlburg 1984; Rohde et al. 1978). Women with the adrenogenital syndrome or women who have been exposed prenatally to progestin are at a risk of developing atypical sexual behavior. Some men with an extra Y chromosome, and possibly with increased plasma testosterone (e.g., Schiavi et al. 1984), exhibit unconventional mating behavior coupled with lack of control (Theilgaard 1984). Career-oriented women seem to have more testosterone than have housewives (Baucom et al. 1985; Purifoy & Koopmans 1981), and they give birth to fewer children (Vining 1984). The GTC–A/E model predicts that testosterone switches women off their "safety-first" approach and onto a more masculine approach; it also predicts particular relations between gonadal hormones, frequency of intercourse, number of children, carrier prospects, and dominance–submissiveness. It has been observed that androgen increased libido in surgically menopausal (Sherwin et al. 1985; 1987) and normal (Bancroft et al. 1983) women. Moreover, men with karyotype 46,XY, but who are insensitive to their own androgens, develop in most respects like normal women, and unequivocally direct their sexual approaches toward men (Money & Ehrhardt 1972). On the other hand, men who have been reared as girls because they were born with female genitalia and then develop male genitalia around puberty eventually direct their sexual behavior toward female partners despite their feminine rearing experience (Imperato-McGinley et al. 1974). Finally, not only are men less "choosey" than women in matters of sexual behavior, but there also seem to be surprisingly large cross-cultural differences in mating behavior (Rushton & Bogaert 1987) that, perhaps, can be explained by geographic variations in gonadal hormone secretion or sensitivity (Nyborg 1987; Soma et al. 1975). Taken together, these examples more than suggest that the proximate mechanisms behind Buss's interesting observations on mating behavior may be hormonal.

Researchers, realizing the complexity of studying the physicochemical basis of behavior, know that we are seeing only the tip of the iceberg. Yet this approach (which we call "physicology"; Nyborg, in preparation) seems more rewarding than the nonphysical, mentalistic approach, because mating behavior may be moves of molecules rather than of mind. The easily

observable coordination by hormones of body, brain, and behavior (individual as well as interindividual) makes sense only within such a framework. Just consider that mating behavior appears only after hormones have primed the fetal brain and later matured the body. There would be no attraction and no one to be attracted to without the actions of gonadal hormones. Your loved one most probably has an estrogen–androgen balance opposite yours, but all sorts of intermediate solutions seem possible. The GTC–A/E model explains much of the intrasex variability in Buss's data as follows: Men and women with a relatively high androgen status will be attracted predominantly by physical appearance, whereas others with relatively low androgen status will perceive the resourcefulness of a potential mate as well. It seems that Buss's call for more research on the proximate mechanisms of mating behavior echoes in the corridors of already very busy neuroendocrinological labs.

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