

Turkey; Marianna Supekova, Slovak Academy of Sciences, Slovak Republic; Tomasz Szlendak, Nicholas Copernicus University, Poland; Robin Taylor, University of the South Pacific, Fiji; Bert Timmermans, Vrije Universiteit, Belgium; William Tooke, SUNY Plattsburgh, USA; Ioannis Tsaousis, University of the Aegean, Greece; F.S.K. Tungaraza, University of Dar es Salaam, Tanzania; Ashley Turner, Bradley University, USA; Griet Vandermassen, Ghent University, Belgium; Tim Vanhooymissen, Vrije Universiteit Brussel, Belgium; Frank Van Overwalle, Vrije Universiteit Brussel, Belgium; Ine Vanwesenbeeck, Netherlands Inst. of Social Research, Netherlands; Paul L. Vasey, University of Lethbridge, Canada; João Verissimo, University of Lisbon, Portugal; Martin Voracek, University of Vienna Medical School, Austria; Wendy W. N. Wan, University of Hong Kong, Hong Kong; Ta-Wei Wang, Yuan Ze University, Taiwan; Peter Weiss, Charles University, Czech Republic; Andik Wijaya, Couple Clinic Indonesia, Surabaya, Indonesia; Liesbeth Woertman, Utrecht University, Netherlands; Gahyun Youn, Chonnam National University, Republic of Korea; Agata Zupanèè, University of Ljubljana, Slovenia.

NOTES

1. The SOI captures individual difference variation along a single dimension ranging from restricted (i.e., more monogamous) to unrestricted (i.e., more promiscuous) mating orientations. Actual mating behavior involving formal marriage systems; rules and norms of acceptable sexual conduct; and clandestine forms of sexual expression may or may not be represented by the terms *monogamous* and *promiscuous* mating orientations. Although nearly all forms of mating behavior are likely related to sociosexual variation in some way, throughout this article references to individual differences in monogamy versus promiscuity will be limited to variability as operationalized by the SOI.

2. In this article, an emphasis is placed on Pedersen's (1991) evolutionary logic of sex ratio and human mating. Other theories of sex ratio and sexuality may make similar predictions (e.g., Gutentag & Secord 1983). However, Pedersen's views are more consistent with what is known from decades of research on animal mating systems (Hardy 2002). Pedersen's sex ratio predictions are able to explain both human and nonhuman animal mating systems, making it the more parsimonious account of sex ratio and mating behavior.

3. One factor that may weaken support for this prediction is that men's variability in sociosexuality is generally greater than women's. This is true both within and across the cultures of the ISDP. As a result of these range-related differences, national levels of women's sociosexuality may have less potential for correlating with nation-level cultural factors than do the more variable levels of men's sociosexuality.

clusions might partly be a result of the composition of the Sociosexual Orientation Inventory and the sampled populations. Our own data suggest that correcting for both gives further support to the strategic pluralism model.

The evolution of evolutionary psychology. During the past 15 years, evolutionary psychology has made enormous progress toward becoming a widely accepted approach for the study of human behavior, especially in the sexuality domain (Okami 2004). This level of acceptance includes not only the endorsement of the neo-Darwinian theory of evolution as a tenable metatheory but also of midlevel evolutionary theories derived from that metatheory (see Buss 1995), such as Trivers' (1972) parental investment theory, on which most of the target article's reasoning is based. The arrival at this state is the true achievement of evolutionary psychology so far.

Comparing evolutionary models. According to Holcomb (1998), the next step of scientific maturation must include rigorous empirical testing of alternative evolutionary models and hypotheses deduced from these midlevel theories, in order to abduce the most predictive and explanatory one for a given issue. The International Sexuality Description Project (ISDP) is, as Schmitt impressively demonstrates, the first large-scale attempt capable of meeting the forthcoming challenge. Though he mourns that his results are not clear-cut enough to allow for the rejection of all but one of the competing models, the ISDP surely is a step in the right direction. We hope that many studies will follow this example. However, comparing models requires careful operationalization of the model parameters and testing them in a context where they will yield different predictions. Under this perspective, we see two problems with Schmitt's conclusion of universal sex differences.

Problem 1: The heterogeneity of the Sociosexual Orientation Inventory (SOI). Although it is likely that the different reproductive challenges faced by men and women during phylogenesis channeled the evolution of sex-specific strategy dispositions (Buss & Schmitt 1993), socioenvironmental constraints prohibit the straightforward conclusion of behavioral sex differences (Gangestad & Simpson 2000). For example, as Schmitt notes, the number of sex partners reported by men should equal those reported by women in an unbiased heterosexual sample. The SOI is a heterogeneous measure of sexual strategies that blends attitudinal, affective, and behavioral aspects, with various extents of sex differences expectable for each. Even though Schmitt attempts to circumvent this problem by separately testing an attitudinal and a behavioral component, the items he aggregated to form the behavioral component are still quite heterogeneous. No overall sex differences can be expected for honest reports on the number of sex partners in the last 12 months (item 1) and the number of one-night stands (item 3). Thus, if they are not solely a consequence of sex-specific reporting biases (Alexander & Fisher 2003), the sex differences in Schmitt's behavioral component should stem exclusively from sex differences in the expected number of future sex partners (item 2) and the frequency of sexual fantasies with an uncommitted partner (item 4), aspects that are both arguably closer to his attitudinal component.

Problem 2: The homogeneity of the samples. In such encompassing projects as the ISDP, limitations of data quality are practically inevitable, a fact that Schmitt is well aware of. Still it cannot be overemphasized that his conclusions of universal sex differences in sociosexuality have only been proven for young college-linked populations. These samples show more or less severe range restrictions not only in age and sociodemographic variables but especially in life phase: An extended educational period goes hand in hand with prolonged dependence on parental support, delay of marriage and reproduction, and extensive identity exploration and self-selection into social niches (Arnett 2000). Such a state of change and confusion is very likely unsupportive for women to develop a subjective feeling of independence from paternal investment in any culture or environment, which, accord-

Open Peer Commentary

A mature evolutionary psychology demands careful conclusions about sex differences

Jens B. Asendorpf^a and Lars Penke^{a,b}

^aInstitut für Psychologie, Humboldt-Universität zu Berlin, 12489 Berlin, Germany; ^bInternational Max Planck Research School LIFE, 14195, Berlin, Germany. jens.asendorpf@rz.hu-berlin.de
lars.penke@staff.hu-berlin.de www.psychologie.hu-berlin.de/per

Abstract: By comparing alternative evolutionary models, the International Sexuality Description Project marks the transition of evolutionary psychology to the next level of scientific maturation. The lack of final con-

ing to Gangestad and Simpson's (2000) strategic pluralism model, is the prime determinant of women's conditional switch towards a more unrestricted sociosexual orientation. The different models Buss and Schmitt (1993) and Gangestad and Simpson (2000) derived from Trivers' (1972) parental investment theory would thus make the same predictions for sex differences in populations of college students. The critical studies of sociosexuality in the context of highly committed long-term relationships and especially marriages are grossly absent from the literature (Simpson et al. 2004).

Our data. To provide some clarification for these issues, Penke and Denissen (2005) studied a German community sample (over 1,000 sexually experienced heterosexuals aged 18 to 50). As expected, they found that sex differences were absent in self-reports of past behaviors but more pronounced in future expectations and especially unrestricted sexual fantasies. The latter aspect also showed a clear connection to the attitudinal, but not the behavioral component, the former being indifferent in between. In line with the conditional sexual strategies emphasized by the strategic pluralism model, but contrary to the sex-specific mixed sexual strategies proposed by Buss & Schmitt (1993), a lack of sex differences in the total sociosexuality score for married (but not for dating) participants emerged, which was the result of a greater number of reported unrestricted behaviors by married (vs. dating) women. Just as suggested by recent evidence on female strategy shifts conditional to their natural ovulatory cycle (Thornhill & Gangestad 2003), this effect was especially pronounced when controlling for hormonal contraceptive usage.

Conclusion. Schmitt has made a great contribution in proving conditional shifts in sexual strategies across cultural contexts and environmental conditions. Unfortunately, he drops this ecological sensitivity to argue for universal sex differences in sociosexuality based on national averages, without making an attempt to account for the large residual intranational variance in both sexes (even though he explored interactions with relationship status and sexual orientation in the ISDP article on the less controversial sex differences in the desire for sexual variety, Schmitt et al. 2003). Because different evolutionary models with concurring predictions exist, such claims can be misleading, even when restricted to college populations. Although demonstrating that mean (or median) sex differences in the human mating psychology was surely helpful for the initial establishment of modern evolutionary psychology, its current state demands a more differentiated perspective and more carefully designed empirical studies to give consideration to the full scope of possibilities the evolutionary metatheory has to offer.

Sex Differences: Empiricism, hypothesis testing, and other virtues

David P. Barash

Psychology Department, University of Washington, Seattle, WA 98195.
 dpbarash@u.washington.edu
<http://faculty.washington.edu/dpbarash/>

Abstract: "Sociosexuality from Argentina to Zimbabwe: A 48-nation study of sex, culture, and strategies of human mating" delivers on its title. By combining empiricism and careful hypothesis testing, it not only contributes to our current knowledge but also points the way to further advances.

David Schmitt is to be congratulated. There is undoubtedly a great need for a "cross-culturally validated measure of human mating strategies," and it is quite likely that the Sociosexual Orientation Inventory (SOI) fills the bill. In addition to filling this near-vacuum, Schmitt has succeeded in putting together what appears to be the most comprehensive worldwide study of its sort, ever. And in the politically reactionary, antiscience environment fostered by

the George W. Bush Administration – in which research into human sexual behavior has been woefully inhibited – such efforts should be especially applauded.

Male–female differences in preferences for multiple partners and in thresholds for sexual activity (a more "unrestricted" sexuality, in this study's terms) generally have emerged as among the most robust aspects of evolutionary theory applied to human behavior, and Schmitt's research – which also represents a notable and perhaps unique degree of international, cross-disciplinary collaboration – may well provide the final nail in the coffin of the doctrine of male–female sexual indistinguishability. If not, then this will be testimony to the persistence of ideology over empirical science, not unlike that of theologians clinging to a geocentric universe in the decades after Copernicus and Galileo.

Schmitt's research is particularly notable not only in further documenting the increasingly well established patterns of male–female differences but also in testing specific, closely formulated hypotheses, finding impressive support for two ("sex ratio theory" and "strategic pluralism theory") along with disconfirmation of a third ("developmental-attachment theory").

In a research environment increasingly polarized into two seemingly irreconcilable camps, namely, evolutionary psychology on the one hand and the traditional social science model on the other, Schmitt's work is also important in helping to construct a much-needed bridge. (Or, looked at alternatively, it comprises a needed blow against simplistic *either/or* theories, whether they mistakenly focus only on biology or on culture.) Thus, despite his clear predilection for the importance of evolutionary considerations, Schmitt points unambiguously toward a substantial role for environmental factors, notably operational sex ratio and resource plenitude. As with earlier and unproductive debates about whether human aggression is instinctive, researchers need to refocus their thinking from the question of whether male–female differences in sociosexuality are instinctive to more productive avenues. Given that sociosexual inclinations, like inclinations toward aggression and violence, are almost certainly the adaptive consequence of natural selection, one question, at least, is this: Under what circumstances are women and men likely to embrace more sexually restrictive (or unrestrictive) behavior patterns? Not only is this matter theoretically important, but in a world beset with sexually transmitted diseases, sexually linked violence (especially toward women), and unwanted pregnancy, as well as the profound socioeconomic consequences of each of these, a deeper understanding of human sociosexuality is not only desirable but desperately necessary.

On a narrower note, *contra* Schmitt, I have not argued that with regard to sexual inclinations, "both men and women are naturally unrestricted (Barash & Lipton 2001), with sex roles in certain cultures causing large sex differences by suppressing women's innate tendency toward sexual promiscuity." Rather, I maintain that female inclinations toward extra-pair copulations have in the recent past been underestimated by too-facile generalizations on the part of sociobiologists – myself included (e.g., Barash & Lipton 2002). To clarify: There is little doubt that various cultures suppress female (and male) sexual inclinations to varying degrees, but as Schmitt's work demonstrates – and my own has supported – there is no reason to think that men and women are "naturally unrestricted" (or restricted) to the same degree. Certainly, some cultures repress female sexuality more than do others; the same can be said, doubtless, for men, although anecdotally at least, the amount of such repression appears less in the latter case. The reasons for this, incidentally, are not intuitively obvious, because given the salience of male–male competition, we might expect that cultural traditions, however patriarchal, might be structured – by powerful men – to limit the sexual opportunities of other men who are potential competitors. Alternatively, perhaps males tend to recognize the potentially destabilizing social effect of going too far in directly restricting the reproductive opportunities of other men, and they have typically opted instead to achieve greater control of female sexuality.