What is the significance of cross-national variability in sociosexuality?

Andrew Clark and Martin Daly

Department of Psychology, McMaster University, Hamilton L8S 4K1, Ontario, Canada. **clarkap@mcmaster.ca** **daly@mcmaster.ca**

Abstract: Schmitt finds that national sex ratios predict levels of sociosexuality, but how we should interpret this result is unclear for both methodological and conceptual reasons. We criticize aspects of Schmitt's theorizing and his analytic strategy, and suggest that some additional analyses of the data in hand might be illuminating.

Schmitt's most striking finding is the negative cross-national correlation between sex ratios and sociosexuality (Figure 1 of the target article). This is interpreted as support for "sex ratio theory," a set of insights that Schmitt attributes to Pedersen (1991) but that owe much to Emlen & Oring (1977), who first argued that operational sex ratio (OSR) largely determines mating systems. According to Schmitt, when males are scarce, females are sexually selected to succumb to male demands for promiscuous sex (and SOI increases), and when females are scarce, males are sexually selected to succumb to female demands for long-term monogamy (and SOI decreases). However, although the direction of these predictions is reasonable, the logic by which Schmitt justifies them is faulty.

Sexual selection favours traits that improve mating success for the individuals bearing them. This is not equivalent to pandering to the desires of the other sex; if it were, there would be no such thing as sexual conflict. In a female-biased population, women might indeed lower their threshold values of required commitment to avoid being abandoned for rivals offering better returns on male mating effort, but given that there is less male investment to go around, women may also resort to polyandrous mating to extract resources from multiple sources. Both these strategic shifts would increase average SOI scores, but the latter would run counter to the best interests of women's "first-choice" mates rather than pandering to them. Similarly, in a male-biased population, males may reduce SOI levels and forego the pursuit of multiple mates, but the reallocation of male effort need not take the form of compliance with female investment demands; instead, elevated mate guarding may actually impose costs on scarce women (a possibility that Schmitt does entertain, albeit briefly). Averaging male and female SOI scores to produce a single national score was a curious way to address the relevance of OSR. Why not assess how sex ratio is related to each sex's SOI level, particularly since Schmitt predicts that female scores should be more susceptible to variation?

Furthermore, sexual selection is not relevant as an immediate causal process, as Schmitt implies. For SOI to be correlated with sex ratio, it is enough that past sexual selection favoured those who employed mating strategies that respond conditionally as described above. Indeed, even this is unnecessary. If historical sexual selection created an unconditional sex difference in multiple partner preference (males high, females low), even that could produce a correlation between sex ratio and SOI, because there would be fewer unique sexual partnerships when females outnumber males than vice versa. Consider an extreme example where females only ever want one partner and males want many. In a population with 40 men and 60 women, there will be 60 unique sexual pairings, but in a population of 60 men and 40 women, there will only be 40 unique sexual pairings, and 20 males will go without sex. The average SOI score will be higher in the former population than the latter, though both mating systems are driven by the hypothesized female monogamy and strategies are unconditional. But in any event, the process of sexual selection is not a proximate force.

How sex ratios were computed for Figure 1 requires clarification. The *x*-axis is labelled "National Sex Ratio," but the caption says "operational sex ratio." These are not synonyms; OSR refers properly to the numbers of males or females simultaneously seeking mates, but Schmitt claims it is usually calculated as males or females in the 15–49 age range. Whether the sex ratios he used were age restricted in this way is inexplicit, but even if so, 15 to 49 may still be too broad, considering that most participants were university students occupying the lower end of this age range.

Schmitt addresses criticisms of the SOI's dual nature by dividing it into behavioural and attitudinal components and demonstrating that both exhibit sex differences. However, calling items 1 to 4 "behavioural" is problematic because only items 1 and 3 are self-reports of actual behaviour. Item 2 concerns expectations, which may or may not be fulfilled, while item 4 is about fantasy and self-monitoring cognitive activity and arguably belongs with "attitudinal" items 5, 6, and 7.

Schmitt claims to have affirmed the SOI's validity, but the ostensible validation concerns only consistency of self-report. Truthfulness is another matter. Whether lying varies cross-nationally cannot easily be determined, but Schmitt's data permit a partial test. Heterosexual contacts are constrained to be equal for males and females in toto, so if there are sex differences in responses to SOI items 1 and 3 in some samples, this may bespeak lying, although there could be other explanations such as variability in undergraduate use of prostitutes.

Ideas about "cultural influences on sociosexuality" need refinement. It will rankle some readers that Schmitt uses "culture" to refer both to his national samples and to decidedly noncultural variables such as pathogen loads, but this is a relatively minor problem of word choice. More important is the absence of clear theoretical rationales for the target article's hypotheses about between-group variability. One example is Schmitt's claim that a female-biased sex ratio "may lead men to engage in greater intrasexual competition" (sect. 7.2). Surely, it is easier to argue precisely the opposite: Female scarcity exacerbates male competition. Similarly, the hypotheses about impacts of environmental stress on sociosexuality (sect. 3.2) lack clear derivations. A formal theory from which one could derive genuine predictions must distinguish resource scarcity from unpredictability, as well as distinguishing both from mortality, rather than conflating these distinct challenges in a vague construct of environmental "stress."

On sociosexual cognitive architecture

Thomas E. Dickins

School of Psychology, University of East London, London E15 4LZ, United Kingdom. **t.dickins@uel.ac.uk**
www.uel.ac.uk/psychology/staff/dickin_t.htm

Abstract: Schmitt has equivocated about the underlying psychology of sociosexuality, but from the data presented in the target article, it would appear that he has drawn out the underlying cognitive architecture. In this commentary, I describe this architecture and discuss two emerging hypotheses about heterosexual and homosexual male sociosexuality.

Schmitt's investigation of sociosexuality across 48 nations firmly embeds itself within an evolutionary perspective of human sexual behaviour and cognition. However, there appears to be some equivocation in Schmitt's use of evolutionary theory between the perspectives offered by human behavioural ecology and evolutionary psychology. The former position tends to analyse behavioural responses to contingent ecological demands and seeks evidence of optimality in the face of adaptive challenges. Such a position can lead either to no commitment about the underlying cognitive architecture that delivers optimal behaviours or to the view that aspects of cognition are somewhat global in their processing capabilities. Evolutionary psychology, however, explicitly argues for a cognitive architecture composed of domain specific modules, each selected to solve specific adaptive problems. Such modules deliver conditional algorithms that take particular inputs,

p, and deliver appropriate outputs, q, such that $p \rightarrow q$. While the two approaches can coexist at the level of describing the task demands that confront a particular agent, they can clash over psychological commitments.

Schmitt's equivocation becomes apparent toward the end of the target article:

> The current perspective, in which sociosexuality is seen as resulting from a collection of psychological adaptations, is quite limited in scope. Still, this evolutionary framework may have some use as a heuristic for the future theorising on the psychology of human sexual strategies (sect. 8, para. 6).

Prior to this, Schmitt discussed the notion of adaptive responsiveness to local ecologies and raised issues of socialization and experience with regard to Eagly and Wood's (1999) social structural theory. What is more, Schmitt's data partially support the predictions made by the social structural theory, demonstrating a reduction of magnitude in sex differences as a consequence of sociopolitical and relational freedom. It is possible to view such flexibility as contradictory to the view that human psychology consists of a suite of adapted cognitive mechanisms. Surely, responses would be rigid in the face of ecological change.

I see no reason to adopt an ecological perspective on the underlying psychology of sociosexuality, partly because of theoretical commitments. Not only can there be no selection for a general psychological mechanism, for there are no general psychological problems, but also modularity renders the numerous problems facing an agent computationally tractable (Tooby & Cosmides 1992). More important, in this case Schmitt's own evidence of sociosexuality shaping up differently under various local ecologies in fact lends itself to evolutionary psychology. This is because Schmitt has presented clear data that strongly suggest distinct patterning within the human sociosexual response, not infinite flexibility. Indeed, it would appear that Schmitt has isolated the conditional architecture of an aspect of sociosexual cognition, and that it looks something like this:

If (p: male-biased sex ratio), ***then*** (q: adopt monogamy, i.e., long-term single partner investment)
If (p: female-biased sex ratio), ***then*** (q: adopt (male) promiscuity and (female) tolerance of promiscuity)
If (p: high-stress local environment), ***then*** (q: adopt monogamy)
If (p: low-stress local environment), ***then*** (q: adopt unrestricted sociosexuality)

These conditional rules are, of course, to be taken as descriptions of the kinds of computation that are necessary for a sociosexual cognitive architecture to implement; they represent a functional decomposition. It can be further hypothesized that these conditional rules set the parameters for sociosexual behaviour. Such rules will have been selected for over long historical time, in response to adaptive demands, and the combined effect of these four rules accounts for the cultural variance and consistency described by Schmitt.

If the four rules I have outlined capture human sociosexual cognition, then we can begin to extend Schmitt's analysis in the hope of further refining our knowledge. One obvious question to ask is how sociosexual cognition interacts with other related cognitions such as mate preference or targeting systems. Would mate preferences be different if there were a male-biased sex ratio compared with preferences under female-biased sex ratios? For example, you might expect to see male monogamy leading to much choosier males, but under Schmitt's analysis, rather than seeing this as an expression of an individual difference, it might actually be the best choice under the circumstances. If the same males are put in a different situation, where the sex ratio is female biased, you might see a change in behaviour. It would be interesting to map this potential dynamic.

Another route to understanding sociosexuality is through studying homosexual behaviours. One might speculate that homosexual males share a basic sociosexual cognitive architecture with heterosexual males; all that differs is the targeting or preference cognitions. However, homosexual exposure to sex ratios is somewhat hard to define, and it is not immediately clear how to understand the operation of sociosexual cognition in homosexual males. On the one hand, it could be that functionally speaking, although homosexual males are operating in an all male "mating" environment, it is equivalent to existing in a situation with a female-biased sex ratio. In heterosexual males, this leads to promiscuity, according to Schmitt, and in many groups of homosexual males, we see promiscuity. On the other hand, it is not always clear in some cultures which men are homosexual, and this might actually lead to a situation that is functionally equivalent to male-biased sex ratios. In this case "monogamy" would emerge. Homosexual promiscuity can also be explained in terms of the absence of a possible pregnancy – where no offspring can result, sexual psychology is freed from investment calculations. This might be a sufficient explanation; however, long-term partner investment also occurs within homosexual populations, and this is not so readily explained. Schmitt's analysis may help us to explain this.

Universal sex differences across patriarchal cultures ≠ evolved psychological dispositions

Alice H. Eagly[a] and Wendy Wood[b]
[a]*Department of Psychology, Northwestern University, Evanston, IL 60208-2710;* [b]*Department of Psychology: Social and Health Sciences, Duke University, Durham, NC 27708.* **eagly@northwestern.edu**
www.psych.northwestern.edu/psych/people/faculty/eagly/
wwood@duke.edu
www.psych-shs.duke.edu/faculty/facultywood.html

Abstract: Schmitt's findings provide little evidence that sex differences in sociosexuality are explained by evolved dispositions. These sex differences are better explained by an evolutionary account that treats the psychological attributes of women and men as emergent, given the biological attributes of the sexes, especially female reproductive capacity, and the economic and social structural aspects of societies.

Schmitt's research is an ambitious attempt to evaluate evolutionary and cultural theories of mating within a multination study. The research raises basic questions about the evidence required to demonstrate "fundamental differences in the evolved reproductive strategies of men and women" (sect. 2.1). We argue that Schmitt's cross-national evidence for a more promiscuous mating pattern among men than women is better explained by biosocial mechanisms that take into account the social structural context of sexual behavior than by evolved sex-typed psychological dispositions. As we show, the superiority of our alternative account becomes apparent when researchers consider the full spectrum of cross-cultural evidence and carefully scrutinize Schmitt's data.

Although Schmitt acknowledges that evidence of men's greater promiscuity across societies "does not mean that sex differences must be the result of evolved reproductive strategies" (sect. 6.7), he then ignores this insight. He concludes that the cross-cultural consistency of his data provides evidence for sex-typed evolved reproductive strategies that emerge across all contexts (sect. 7.5). We agree that sex differences that emerge across societies despite diversity in societal attributes suggest fundamental biological and psychological attributes of humans. However, the evolutionary origins of these sex differences are not revealed by their wide distribution.

If the greater promiscuity of men than women across cultures does not require explanation in terms of evolved psychological dispositions, what other mechanisms explain this effect? In our theory, psychological sex differences, including differences in sexual promiscuity, derive from the distribution of men and women into social roles within a society (Eagly & Wood 1999; Wood & Eagly