

Of Bugs and Boojums: Female Orgasm as a Facultative Adaptation

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Wallen (2006, 2007) joins Lloyd (2005) in arguing that data on women's orgasm frequencies contradict mate choice hypotheses for the evolution of female orgasm—and support the hypothesis that female orgasm is an evolutionary byproduct of male orgasm. I agree that female orgasm is not as reliable as male orgasm in the context of penile-vaginal intercourse, and that women's reported orgasm frequencies are highly variable. But Wallen misrepresents these data, and both Wallen and Lloyd misinterpret them.

Wallen and Lloyd cite evidence that women experience orgasms infrequently with penile-vaginal intercourse alone, compared to men and relative to masturbation or sex with manual or oral stimulation of the clitoris. Both take this as evidence that female orgasm is not well designed for consistent elicitation by penile-vaginal intercourse, and so is unlikely to be a mating-related adaptation.

Wallen (2006) claims that "...less than 20% and possibly as few as 6% of women [achieve] orgasm from penile stimulation alone. The rest require additional direct clitoral stimulation manually, orally, or mechanically to achieve orgasm." I cannot ascertain the source of the 6% figure, but Wallen (2007) attributes the 20% to Fisher (1973), who found that 20% of women reported *never* needing manual stimulation to achieve orgasm. According to Wallen, the other 80% of women *require* manual stimulation. By "require," then, Wallen can only mean "sometimes require." This is an odd meaning. If a woman more often has orgasms with manual stimulation but sometimes has them

without, one might say that she does not *require* manual stimulation, though it helps.

Regardless, Fisher (1973) found that 35% of women needed manual stimulation "50% or more of the time to attain orgasm" (p. 193). This means that 65% of women do not need manual stimulation 50% or more of the time. I wrote that, according to Fisher, "65% of women usually did not require manual stimulation of the clitoris to achieve copulatory orgasm" (Puts, 2006, p. 639). Wallen quotes me correctly, and then states that I "arrive at 65% [of women] *never* requiring manual stimulation for orgasm" (Wallen, 2007, my emphasis). To my mind, "usually did not" and "never" are different.

Further, Wallen (2007) insists that this 65% figure is impossible because "60% of Fisher's sample 'more irregularly or not at all' had orgasm in intercourse and 5–6% never had orgasm by any means." Here, Wallen confuses two different questions: (1) Given a copulatory orgasm, how often is manual stimulation required? Fisher found that 65% of women required manual stimulation less than half of the time, and 20% never required it; (2) Given copulation, how often does orgasm occur? Fisher found that 60% had orgasm "more irregularly or not at all" (the only choice besides always or "nearly always"). This confusion between data on the *mode* of copulatory orgasm and data on its *frequency* leads Wallen to believe that the data are contradictory, and that I must simply have "created" the 65% figure.

Claiming that Fisher's data were derived from only 85 women (the actual number is 285), Wallen suggests validating Fisher's results with the larger sample of nearly 3,000 recruited by Dawood, Kirk, Bailey, Andrews, and Martin (2005). Wallen then mistakenly compares Dawood et al.'s data on the frequency of copulatory orgasm with Fisher's data on its mode. Moreover, if Wallen was simply

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looking for a large sample of copulatory orgasm frequencies, it is conspicuous that he did not consult Tavris and Sadd (1977), by far the largest study cited by Lloyd with 100,000 subjects. Had Wallen done so, he would have noted Tavris and Sadd's finding that 63% of women reported usually having orgasm with intercourse. Or, perhaps, Wallen could have cited Lloyd's (2005) summary of all studies for which these data were available: "55% have orgasm more than half of the time" (p. 36). (A conservative reading of the data cited in Lloyd's Table 1 actually renders an unweighted mean greater than 57%, and a weighted mean greater than 60%. A more realistic reading puts these numbers at 63% and 61%, respectively.) Instead, Wallen cites Dawood et al.'s finding that 37.7% of women reported "usually" to "always" having orgasms with intercourse, although this represents only women reporting orgasms at least 60% of the time and so is not comparable to the studies above.

Frustrating though these inaccuracies may be, they are ultimately irrelevant. An example from entomology will help show why. Male soapberry bugs (*Jadera haematoloma*) possess "mating hooks," which they use to anchor themselves to the female during copulation. A male often remains hooked to the female for hours, despite sperm transfer taking only a few minutes (Carroll, 1991). Why do males waste time in this post-ejaculatory embrace instead of mating with other females, or eating? The answer lies in females' promiscuity. After copulation, a female soapberry bug will mate with other males, diminishing the first male's paternity over her eggs. A male's "mate guarding" increases the number of eggs that he fertilizes from a female's clutch.

Mate guarding, however, does not occur with every copulation. In some populations, mate guarding appears to depend on the relative costs and benefits of seeking additional mating opportunities. Males are likelier to mate guard when there are many males and few females around. With a male-biased sex ratio, the cost of lost matings would be low, and an unguarded female would quickly mate again. On the other hand, when females are abundant, males are less likely to guard. Few would doubt that mate guarding is an adaptation in soapberry bugs; it is a facultative adaptation designed by selection to track fitness-relevant changes in the environment (Williams, 1966).

If orgasm is an adaptation in women, it is similarly facultative—occurring not with every copulation but depending on context. It has been argued, for example, that female orgasm is a mate choice mechanism, and so the likelihood of orgasm should depend in part on the quality of a female's mate (Alcock, 1980; Smith, 1984; Thornhill, Gangestad, & Comer, 1995). There is some evidence for this (reviewed in Puts & Dawood, 2006). Indeed, the choosier women are about mates, the less frequent copulatory female orgasm should be. And there is every reason,

both theoretical and empirical, to think that women are quite choosy about mates (Daly & Wilson, 1983; Symons, 1979). Thus, even very low copulatory orgasm frequencies are not problematic for a mate choice (or other facultative adaptation) hypothesis.

Wallen also follows Lloyd in asserting that women are too varied in their reported orgasm frequencies for female orgasm to be an adaptation. The argument is that, except in special circumstances, selection tends to remove variability from populations. So traits that have experienced consistent selection tend to show a fairly narrow range of variation around an adaptive mean.

Unfortunately, this applies well to obligate traits, like height, but not nearly so well to facultative traits, like behaviors. This is because facultative traits change with the environment and so are not typically measurable by a single number that can be plotted in a frequency distribution. Instead, facultative adaptations can be described by their pattern of response to the environment—a male soapberry bug's changing probability of mate guarding as a function of the local sex ratio, for example. In fact, male soapberry bugs differ in their response to the sex ratio (Carroll & Corneli, 1995). But even if they varied little in their underlying response patterns, male soapberry bugs would vary substantially in mate guarding frequencies when exposed to different sex ratios.

In the same way, if female orgasm is facultative, women may differ in orgasm frequency for two kinds of reasons. First, they may differ in the propitiousness of their mating circumstances. Second, they may differ in the response pattern relating those circumstances to their tendency to orgasm during intercourse. Selection on female orgasm would tend to decrease (but not eliminate) only this latter source of variation, so females might still vary markedly in reported orgasm frequencies.

In sum, neither the relative infrequency of female orgasm nor the variation in orgasm frequencies constitutes evidence for the byproduct hypothesis (and against adaptive hypotheses). If this is "[t]he primary evidence supporting Lloyd's view" (Wallen, 2006, p. 633), then the case for this view is remarkably weak.

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