Roney and colleagues, who do their work in the home of the putatively hyperadaptationist "Stanta Barbara School," have taken these nonadaptationist hypotheses seriously and made them a research focus (e.g., Roney and Simmons 2013).

In sum, the claim by HCBKR that researchers working in this area consider only a narrow range of hyperadaptationist hypotheses is simply wrong.

It is also puzzling that HCBKR advocate so strongly for the between-cycle by-product hypothesis. As Gangestad and Grebe (2015) note, this hypothesis raises vexing phylogenetic questions. Moreover, it predicts positive associations of women's sexual interests and attractiveness with progesterone. But, the evidence is for precisely the opposite—negative associations with progesterone.

HCBKR note small effect sizes in a meta-analysis of cycle shifts in women's mate preferences (Gildersleeve et al. 2014a) and interpret this as consistent with their by-product view. However, assessments of fertility in this literature are typically based on counts from recalled menstrual onset—which have modest validity and attenuate estimates of effect sizes by 50% or more (Gangestad et al. 2015). Corrections for low validity indicate that true effect sizes may be in the medium to large range (Gangestad et al. 2015). HCBKR also cast doubt on the robustness of cycle shifts by claiming that 2 different meta-analyses reached "widely contrasting results" (p. 6), but they fail to note that a properly powered reanalysis of Wood et al.'s (2014) data (Gildersleeve et al. 2014b) produced evidence of cycle shifts consistent with those initially documented by Gildersleeve et al. (2014a).

Notably, these meta-analyses detect effects when women evaluate men's sexiness, attractiveness, or desirability as a short-term mate, but not when women evaluate men as long-term mates (Gildersleeve et al. 2014a). HCBKR's notion that shifts across the cycle in women's mate preferences are by-products of more general hormone effects facilitating partner choice is difficult to reconcile with the fact that these shifts are absent when women evaluate men as long-term mates.

It is premature, then, to claim that the between-cycle perspective is the most "parsimonious" explanation for estrous-like shifts (HCBKR, p. 8).

With respect to issues concerning ovulation cues, there are indeed large between-woman differences in attractiveness. This is why we have been careful to note that the men most likely to detect subtle ovulation cues are male partners who see their female partners frequently (Haselton and Gildersleeve 2011). A recent study demonstrated one such effect: male partners responded to the threat of attractive rivals with an increase in testosterone more so in their partner's fertile than nonfertile cycle phase (Fales et al. 2014).

It seems likely, then, that both sets of effects exist: men's preference for attractive female features that index general fertility and men's responses to subtle cues of ovulation in the context of romantic partnerships characterized by frequent contact. I agree with HCBKR that the former set of effects is likely to be larger than the latter—but it does not logically follow that the latter do not exist.

In conclusion, the compelling evidence of estrous-like states in women offers the prospect of revolutionizing our understanding of human sexuality. However, the key question remains: how do we understand these from a theoretical perspective? The proposals outlined by HCBKR, although more problematic than they acknowledge, deserve research attention, as do others.

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A between-women account of cycle-phase shifts is probably wrong: a comment on Havlíček et al.

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Havlíček et al. (2015) argue that cycle-phase shifts in women's attractiveness and mate preferences are by-products of hormonal mechanisms that calibrate these variables to between-women differences in reproductive potential. Here, we focus on the mate preference component of their position and argue that their between-women theory is seriously flawed. We conclude with discussion of Havlíček et al.'s (2015) unsupported assertion that evolutionary psychologists from the "Santa Barbara school" often fail to test competing hypotheses, which we argue is demonstrably false.

Havlíček et al. (2015) pattern their between-women theory after the between-cycle theory proposed by Roney and colleagues but

argue that between-women calibrations better account for the available data. The between-cycle theory (see Lukaszewski and Roney 2009; Roney 2009; Roney and Simmons 2008, 2013) proposes hormonal mechanisms that calibrate attention away from markers of men's genetic quality during periods of low fecundity—as during lactational amenorrhea or other causes of energetic stress—in order to shift attention and motivation toward more pressing adaptive problems. The theory hypothesizes estradiol as an efficient signal to regulate these calibrations given its association with cycle fecundity (see Ellison 2001); however, because estradiol also peaks near ovulation within-cycles, this mechanism may also generate small ovulatory shifts in some measures of women's mate preferences.

Havlíček et al. (2015) incorporate the idea that estradiol may regulate cycle-phase shifts in mate preferences but argue that such shifts arise as by-products of linkages between estradiol, reproductive potential, and mate preferences across different women. The general argument seems to be that it is functional for more attractive women to have stronger preferences for more masculine traits in men (though this is never defended), estradiol is an internal signal of women's attractiveness that calibrates such mate preferences, and thus any within-women shifts in preferences—whether within- or between-cycles—are by-products of between-women linkages between attractiveness and preferences as mediated by estradiol (at least, we think this is the argument; Havlíček et al. 2015 are quite vague).

This between-women argument is unlikely to be correct. The main problem is that estradiol is a poor internal signal of women's long-term attractiveness relative to other women. First, even within ovulatory cycles, correlations between average estradiol and physical attractiveness are small (e.g., Grillot et al. 2014). More importantly, women in natural fertility populations thought to be similar to human ancestral environments have spent most of their lives under anovulatory conditions with very low estradiol and have only rarely experienced high fertility cycles between births (see Strassmann 1997). As such, at most times, estradiol would not have reliably differentiated between women who differed in long-term reproductive value due to differences in age or health. (Note also that reproductive value peaks just after puberty during a period of adolescent subfertility that is associated with *lower* ovarian hormones than found in the ovulatory cycles of older women with lower reproductive value; see Ellison 2001.) Havlíček et al. (2015) argue that between-women differences in estradiol are larger than within- or between-cycle differences (see their Figure 3), but they focused on comparisons of ovulatory cycles in modern environments and failed to accurately account for conditions in natural fertility populations.

The lack of temporally stable relationships between estradiol and attractiveness under ancestral conditions challenges the position that within-cycle shifts in preferences arise as by-products of between-women links between attractiveness and estradiol. If Havlíček et al. (2015) argue that women's preferences are designed to change with the large changes in estradiol associated with transitions between ovulatory and anovulatory time periods, then their position reduces to a variant of between-cycle theory and cycle-phase shifts can no longer be explained as by-products of stable differences between women. Alternatively, if they argue that preferences do not track changes in estradiol across ovulatory and anovulatory time periods (and instead track more stable individual differences in physical attractiveness), then they lose the linkages between estradiol and preferences that are necessary to explain within-cycle preference shifts. Either way, their theory faces serious challenges.

Finally, we would like to comment briefly on Havlíček et al.'s (2015) claim that "empirical work too rarely pits competing hypotheses against each other" and that this is "especially true" of evolutionary psychologists within the "Santa Barbara school." This unsupported assertion is false. In fact, our colleagues John Tooby and Leda Cosmides—who probably exemplify any such "Santa Barbara school" better than anyone (indeed, the articles cited by Havlíček et al. 2015 identify them with this approach by name)—have produced remarkably detailed empirical tests between adaptationist and by-product accounts of many phenomena (for review of a research program dedicated to such tests, see Cosmides and Tooby 2005). Furthermore, given how vaguely Havlíček et al. (2015) specified both the logic of their proposed between-women adaptation and the empirical means of distinguishing it from other positions, their criticisms of evolutionary psychologists seem somewhat ironic.

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Greater precision, not parsimony, is the key to testing the peri-ovulation spandrel hypothesis: a response to comments on Havlíček et al. 2015

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We welcome the wide range of comments provoked by the introduction of our alternative theoretical perspective on the