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## Invited Commentary

### Comment on Havlicek et al. (2015): Is their perspective really new (or truly parsimonious)?

Martie G. Haselton

Department of Psychology, University of California, Los Angeles,  
1285 Franz Hall, Box 951563, Los Angeles, CA 90095-1563, USA

A surge of recent research has documented effects of reproductive hormones on human sexual behavior. And it now appears that human females—like their mammalian counterparts—experience estrous-like changes in sexual interests and attractiveness to males during the fertile phase of the ovulatory cycle.

Although not all purported effects may be robust (see Gildersleeve et al. 2014a), it is clear that some estrous-like shifts exist. But how do we understand these shifts theoretically? Havlicek and colleagues claim that researchers have been *hyperadaptationist* in their approach and have neglected by-product explanations (Havlicek et al. 2015; henceforth HCBKR). *Is this true?*

Recently, Gangestad and I outlined 10 theoretical proposals concerning women's estrous sexual interests (see Table 1 in Gangestad and Haselton 2015). These include the notion that estrus is a vestigial holdover and therefore nonfunctional in ancestral (or modern) humans. We also describe a proposal close to that favored by HCBKR—that within-cycle shifts in sexual interests are by-products of adaptations for mate choice during fertile cycles.

We also outlined 3 proposals concerning estrous shifts in women's attractiveness. One of these is that within-cycle shifts are a by-product of selection on women to display more general reproductive capacity (e.g., signaling overall estradiol level). These alternatives echo those described in earlier publications (Thornhill and Gangestad 2008; Haselton and Gildersleeve 2011).

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. forthcoming). Corrections for low validity indicate that true effect sizes may be in the medium to large range (Gangestad et al. forthcoming). 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.

Address correspondence to M.G. Haselton. E-mail: [haselton@ucla.edu](mailto:haselton@ucla.edu).

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