

M

Male Perception of Cycle-Related Fluctuations in Women's Attractiveness

Jan Havlíček¹ and S. Craig Roberts²

¹Charles University, Prague, Czech Republic

²University of Stirling, Stirling, UK

Synonyms

[Hormonal cues to attractiveness](#); [Male preferences](#); [Menstrual cycle changes](#)

Definitions

Men tend to perceive female appearance and behavior as slightly more attractive during the follicular phase of their cycle

Introduction

Women lack the conspicuous morphological and behavioral changes related to their menstrual cycle that are seen during estrus in some old-world monkeys, such as baboons, or in some apes, such as chimpanzees. In these species, changes in morphology and behavior – including genital swelling and active sexual solicitation – tend to peak in the fertile phase of the cycle and elicit elevated interest and sexual

activity in their male conspecifics. Although they are not as conspicuous, some cyclic fluctuations in physical appearance and behavior can nonetheless be observed in women.

Cyclic Change in Women's Appearance

Studies of cyclic fluctuations in attractiveness have focused on perception of individual attributes such as faces, body odor, and voice. Several studies have shown that facial images taken during the follicular phase are rated as more attractive when compared to images taken during the luteal phase of the cycle (e.g., Roberts et al. 2004). Attractiveness changes are associated with changes in skin color, skin texture, and facial shape, occurring perhaps due to cyclic fluctuation in fluid retention.

Similarly, axillary and vaginal odor is perceived to be most attractive during the follicular phase, and fluctuations are absent or attenuated in women using hormonal contraception (Kuukasjarvi et al. 2004). Exposure to female body odor collected during the fertile phase may elevate testosterone levels in men, although other studies did not confirm this effect (Roney and Simmons 2012). While the chemical compounds responsible for the aforementioned fluctuations in perception of female body odor are not yet fully characterized, they may include fluctuations in concentrations of short fatty acids.

Vocal attractiveness follows a similar pattern as observed in the perception of faces and body odor. Again, we also know something about the proximate mechanisms involved: the increase in perceived vocal attractiveness is at least partly related to elevated voice pitch during the follicular phase (Fischer et al. 2011).

Cyclic Changes in Behavior

Cyclic fluctuations in attractiveness are not restricted to physical cues; they can also be observed in various behavioral cues. For instance, it has been shown that women at mid-cycle prefer to dress in clothes that reveal more skin and are more likely to wear red and pink colors (Haselton et al. 2007), which are associated with higher attractiveness judgements. Women in the fertile phase also tend to use more cosmetic products. Cyclic fluctuations have also been observed in the perceived sexiness of dance (Fink et al. 2012) and gait, although in the latter case, the reported pattern varies across individual studies – some studies reported a peak during the follicular phase (Fink et al. 2012), while another study found the same peak during the luteal phase.

In contrast to available evidence gathered under controlled conditions, our understanding of how such cyclic effects are perceived in real life is rather limited. So far, only one study aimed to assess whether changes in appearance and/or behavior might have some real-life consequences. In a sample of lap dancers, women earned significantly more in tips during the fertile phase than other parts of the cycle, but again, no similar pattern was found in hormonal contraceptive users (Miller et al. 2007).

Menstrual cycle also appears to affect perceptions of coupled men toward their female partners. Similar to the studies reviewed above, all of which focused on cyclic fluctuations in perceived attractiveness of unfamiliar women, men perceive their partners as more attractive during the fertile window, but such fluctuations are not evident in men whose partners were using hormonal contraceptives. Furthermore, women report their partners as

being more possessive and attentive during their fertile phase (Thornhill and Gangestad 2008).

Methodological Considerations

Most studies interpret higher attractiveness judgements in the follicular phase as detection of ovulation. However, this is somewhat misleading as ovulation itself is a relatively short, internal physiological process which can be detected only by hormonal assays or ultrasonography. Furthermore, many of the published studies did not confirm whether an actual ovulation occurred using luteinizing hormone assays. This is an important issue as a not insignificant proportion of cycles in healthy women appear to be anovulatory – conservative estimates place this between 8 and 12% – although the actual proportion may vary extensively depending, for instance, on women's age, physical activity, and nutritional status. Furthermore, due to significant variation in cycle length and thus also in timing of the fertile window, counting methods only crudely estimate actual fertility. Together with small effect sizes, this might be a reason why cross-sectional studies often fail to find cyclic effects. To avoid these shortcomings, rigorous guidelines on methodology of menstrual cycle-related studies were recently provided and include, for instance, the use of within-subject design and employment of hormonal assays to better estimate the conception probability (Gangestad et al. 2016). Another methodological issue concerns stimulus presentation. Stimuli collected in different phases of the cycle are subsequently presented simultaneously. In principle, this never happens in real life and may thus overestimate actual effect sizes.

Evolutionary Interpretations

In general, effect sizes of the reviewed cyclic effects tend to vary from small to modest, and their evolutionary significance is currently hotly debated. The mainstream view tends to interpret male sensitivity to observable cyclic cues as an

adaptation (Thornhill and Gangestad 2008). According to this view, men more sensitive to such cues might increase their chances for conceptive sex and thus increase their fitness. Similarly, coupled men sensitive to cyclic cues in their partners may increase mate guarding to reduce the chances of their partners' infidelity. However, the predictive value of such changes appears to be relatively low. For instance, Fischer et al. (2011) note that the overall variation over the cycle precluded the unequivocal identification of ovulation. Also, there are currently no studies testing cross-modal integrations of the observed cycle-related effects.

Alternatively, behavioral and perceptual sensitivity to fertile phase cues may be by-products of an adaptation to discriminate ovulatory from anovulatory cycles or indeed as a by-product of more general preferences for women with high potential fertility (i.e., the overall likelihood of being able to conceive) (Havlíček et al. 2015). Male preferences for cues of potential fertility, such as estrogen-related facial cues or low waist-to-hip ratio, have higher effect sizes compared to those for within-cycle changes and are generally considered to be an adaptation. Both within-cycle fluctuations in attractiveness and between-individual differences in attractiveness appear to be based on a shared underlying hormonal mechanism (e.g., levels of estrogen and progesterone). It could therefore be possible that the former arose as an inevitable perceptual by-product (or spandrel) of the latter. This is supported by considerably higher between-individual variation as compared with within-individual cyclic changes. Thus, in future studies, there is a need for more focus on the comparison of cycle-related within-women fluctuations and between-individual differences, in conjunction with measurement of levels of circulating sex hormones.

Conclusions

Changes in menstrual cycle-related attractiveness have been observed in various modalities including facial appearance, body odor, voice, and some behaviors such as gait and appearance

enhancements. These fluctuations tend to be absent in women using hormonal contraception, indicating involvement of sex hormones, although exact mechanisms are currently not well understood. Nevertheless, the effect sizes of the cyclic changes are typically small to moderate. Cycle-related changes in attractiveness are often interpreted as men's adaptation to cues of current fertility which may increase probability of conception. Alternatively, perception of cyclic fluctuations in attractiveness may be a by-product of more general preferences for women with high potential fertility, as both within-individual cyclic changes and interindividual differences are based on a shared underlying hormonal mechanism.

Acknowledgments JH is supported by the Czech Science Foundation grant (P407/16/03899S).

Cross-References

- ▶ [Adaptation](#)
- ▶ [Attraction During Ovulation](#)
- ▶ [Birth Control](#)
- ▶ [Byproduct of Adaptations](#)
- ▶ [Dual Mating Hypothesis](#)
- ▶ [During Ovulation](#)
- ▶ [Evolution of Adaptations](#)
- ▶ [Facial Attractiveness](#)
- ▶ [Fertility](#)
- ▶ [Function of Odor](#)
- ▶ [Mate Value](#)
- ▶ [Men's Mate Preferences](#)
- ▶ [Menstrual Cycle](#)
- ▶ [Ovulatory Hormones](#)
- ▶ [Ovulatory Shifts in Psychology](#)
- ▶ [Sexual Signaling During Ovulation](#)
- ▶ [Sexual Strategies Theory](#)
- ▶ [Spandrels](#)
- ▶ [Women's Preferences During Ovulation](#)

References

- Fink, B., Hugill, N., & Lange, B. P. (2012). Women's body movements are a potential cue to ovulation. *Personality and Individual Differences*, 53(6), 759–763. doi:10.1016/j.paid.2012.06.005.

- Fischer, J., Semple, S., Fickenscher, G., Jürgens, R., Kruse, E., Heistermann, M., & Amir, O. (2011). Do women's voices provide cues of the likelihood of ovulation? The importance of sampling regime. *PloS One*, *6*(9), e24490. doi:10.1371/journal.pone.0024490.
- Gangestad, S. W., Haselton, M. G., Welling, L. L. M., Gildersleeve, K., Pillsworth, E. G., Burriss, R. P., et al. (2016). How valid are assessments of conception probability in ovulatory cycle research? Evaluations, recommendations, and theoretical implications. *Evolution and Human Behavior*, *37*(2), 85–96. <http://dx.doi.org/10.1016/j.evolhumbehav.2015.09.001>.
- Haselton, M. G., Mortezaie, M., Pillsworth, E. G., Bleske-Rechek, A., & Frederick, D. A. (2007). Ovulatory shifts in human female ornamentation: Near ovulation, women dress to impress. *Hormones and Behavior*, *51*(1), 40–45. doi:10.1016/j.yhbeh.2006.07.007.
- Havlíček, J., Cobey, K. D., Barrett, L., Klapilová, K., & Roberts, S. C. (2015). The spandrels of Santa Barbara? A new perspective on the peri-ovulation paradigm. *Behavioral Ecology*, *26*(5), 1249–1260. doi:10.1093/beheco/arv064.
- Kuukasjarvi, S., Eriksson, C. J. P., Koskela, E., Mappes, T., Nissinen, K., & Rantala, M. J. (2004). Attractiveness of women's body odors over the menstrual cycle: The role of oral contraceptives and receiver sex. *Behavioral Ecology*, *15*(4), 579–584. doi:10.1093/beheco/arih050.
- Miller, G., Tybur, J. M., & Jordan, B. D. (2007). Ovulatory cycle effects on tip earnings by lap dancers: Economic evidence for human estrus? *Evolution and Human Behavior*, *28*(6), 375–381. doi:10.1016/j.evolhumbehav.2007.06.002.
- Roberts, S. C., Havlicek, J., Flegr, J., Hruskova, M., Little, A. C., Jones, B. C., et al. (2004). Female facial attractiveness increases during the fertile phase of the menstrual cycle. *Proceedings of the Royal Society of London Series B-Biological Sciences*, *271*(Suppl 5), S270–S272. doi:10.1098/rsbl.2004.0174.
- Roney, J. R., & Simmons, Z. L. (2012). Men smelling women: Null effects of exposure to ovulatory sweat on men's testosterone. *Evolutionary Psychology*, *10*(4), 703–713. doi:10.1177/147470491201000404.
- Thornhill, R., & Gangestad, S. W. (2008). *The evolutionary biology of human female sexuality*. Oxford: Oxford University Press.