

Women's Appearance and Body Shape across the Menstrual Cycle: Heightened Attractiveness at Ovulation?

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Introduction

Among normally cycling women (those not on hormonal contraceptives), fertility status is tied to sexual desire and attitudes.* Researchers have documented that during the high fertile phase relative to the low fertile phase, women:

- Report stronger feelings of attractiveness¹
- Have a heightened desire to flirt and “meet men”¹
- Prefer the scent of symmetrical and masculine men^{2,3}
- Report more fantasy about sex outside their current union^{4,5}

Fertility status is also tied to differential perceptions of women's attractiveness:

- Among women going to a disco, those in the high fertile phase show more skin.⁶
- Lap dancers made significantly more tips during the high fertile phase than during the low fertile phase.⁷
- Men rate high fertile phase women's odor (as indicated by cotton swabs in the arm pits or t-shirt scent) as more attractive than low fertile phase women's odor.^{8,9}
- Judges select pictures of women in their high fertile phase (over their low fertile phase) as “trying to look more attractive.”¹⁰
- Judges select facial shots of women in their high fertile phase (over their low fertile phase) as more attractive.¹¹

*These effects are not observed among women on hormonal contraceptives (control group).

If women behave differently, feel different, and smell different at ovulation, it also is possible that they actually look different physically. The finding that judges select facial shots of women in their high fertile phase as more attractive is suggestive, but Roberts et al. (2004) did not control for time of day and the study has not yet been replicated and extended. We designed the current study to assess women's body measurements and facial appearance first thing in the morning, at high and low fertile phases of the cycle.

Method

A total of 79 women participated; 47 were not on a hormonal contraceptive and 32 were. Their ages ranged from 17-22, with a mean age of 19. No participants were pregnant, using tobacco, or using a prescription sleep aid.

Participants were recruited in two dorms at the University of Wisconsin-Eau Claire. At an initial meeting, participants reported on their typical cycle length and contraceptive use. Participants also reported their usual wake-up time and contact information for scheduling their two consecutive visits. Researchers then determined meeting times based on the number of days counted from the first day of the last period (days 8-14 for high fertile, days 17-25 for low fertile). Participants received two reminder emails prior to each visit with instructions for guidelines to follow, which allowed researchers to control for possible extraneous variables (see fig. 1).

For each session, participants went to a designated room in the basement of their dorm before washing or grooming in any way. Measurements were then taken of the circumference of their bust, waist, and hips. The reliability between the two raters for bust, waist and hip measurements were all above .99. A photo was then taken of their face. For each picture, the participant's hair was pulled back and they were asked to not show any facial expression. Photos were taken from a set distance under constant lighting. Finally, participants filled out a one-page questionnaire regarding their current mood, if they had followed the emailed guidelines for the night before, and if they currently had their period. Participants were then given a breakfast muffin and were offered extra credit upon completion of the two sessions.

Results

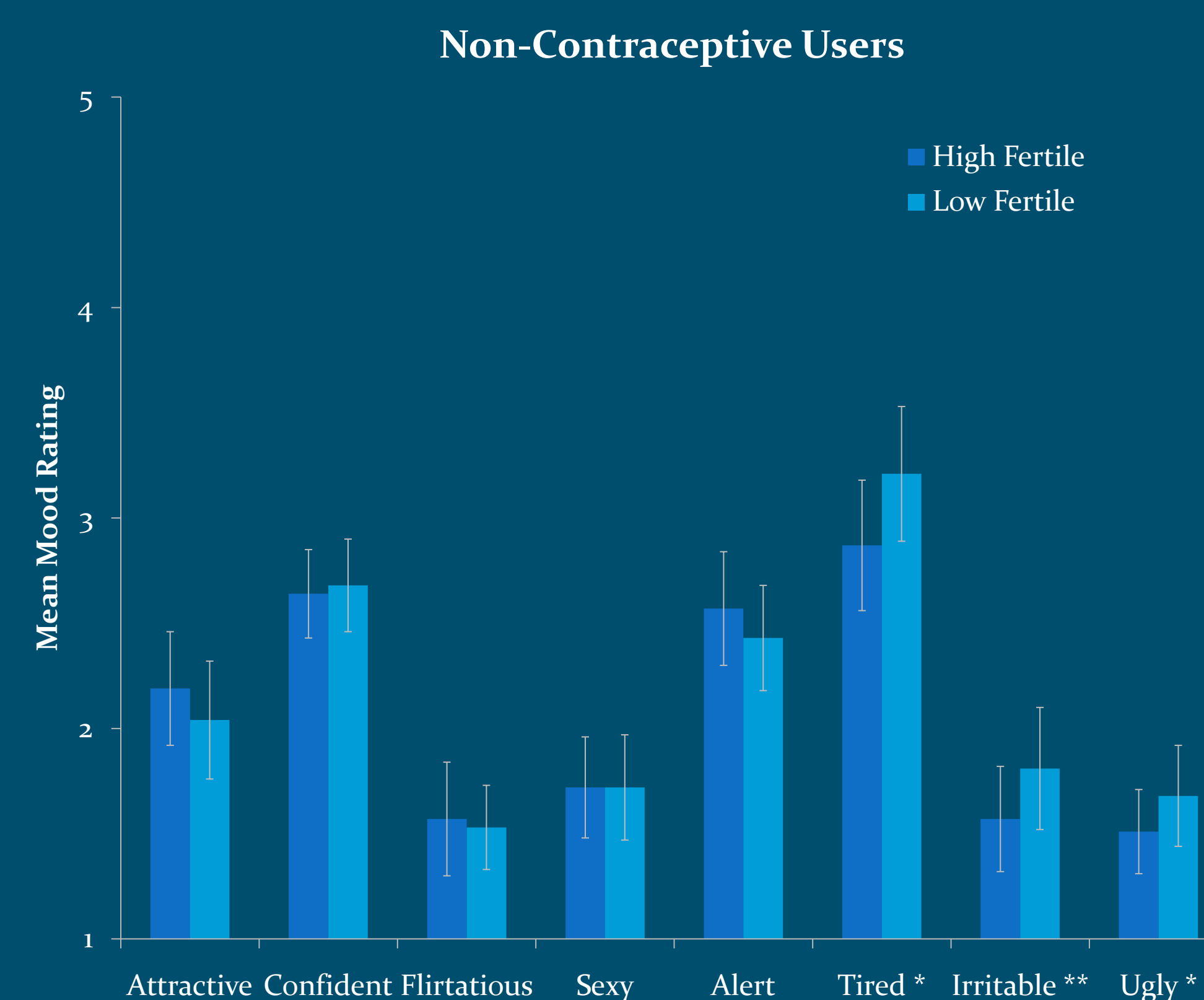


Fig 1. Self-reported mood for non-contraceptive users (normally cycling women) at the high and low fertile visits. Each mood was measured using a five point Likert scale. Women reported lower irritable feelings at the high fertile visit than at the low fertile visit ($p = .03$), as indicated by two asterisks. Women also reported marginally lower levels of ugliness and tiredness at the high fertile visit ($^*ps < .10$). Error bars represent 95% CI.

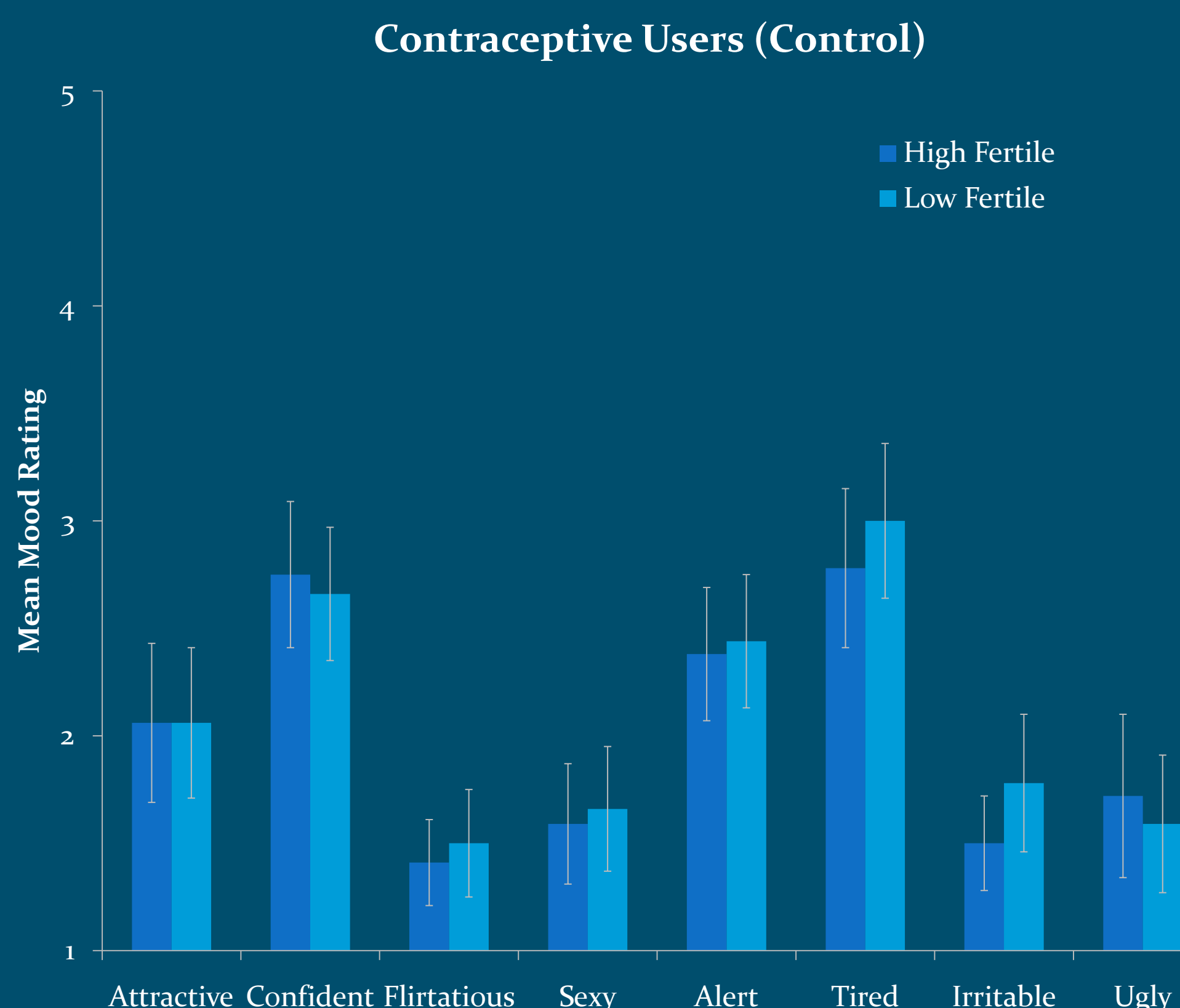


Fig 2. Self-reported mood for contraceptive users (control women) at the high and low fertile visits. Mood ratings did not differ by cycle phase ($ps > .10$). Error bars represent 95% CI.

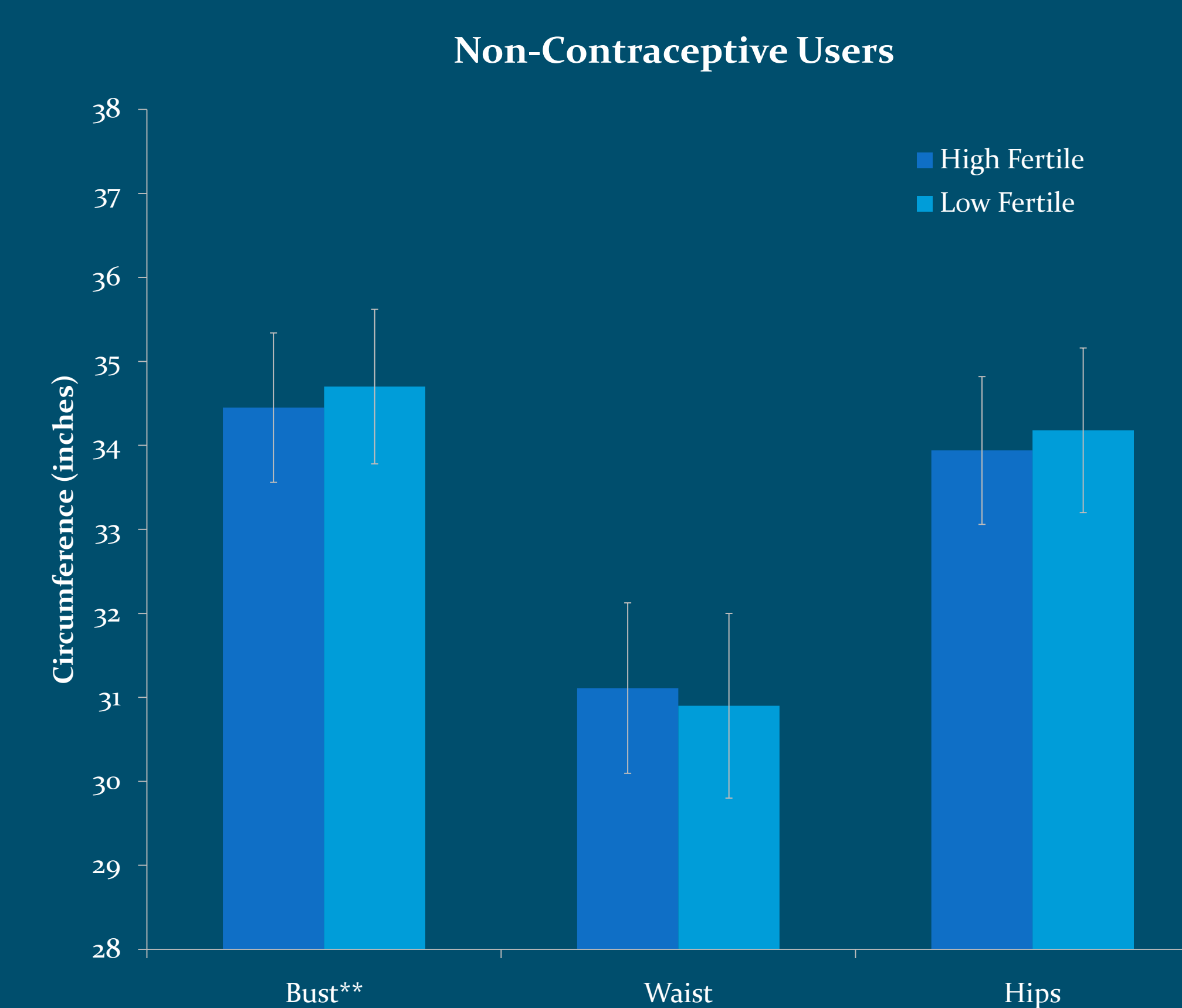


Fig 3. Normally cycling women's mean bust, waist, and hip measurements at the high and low fertile phase visits. The double asterisks indicate that women's bust (across the middle) was larger at low fertility ($p = .046$). Error bars represent 95% CI.

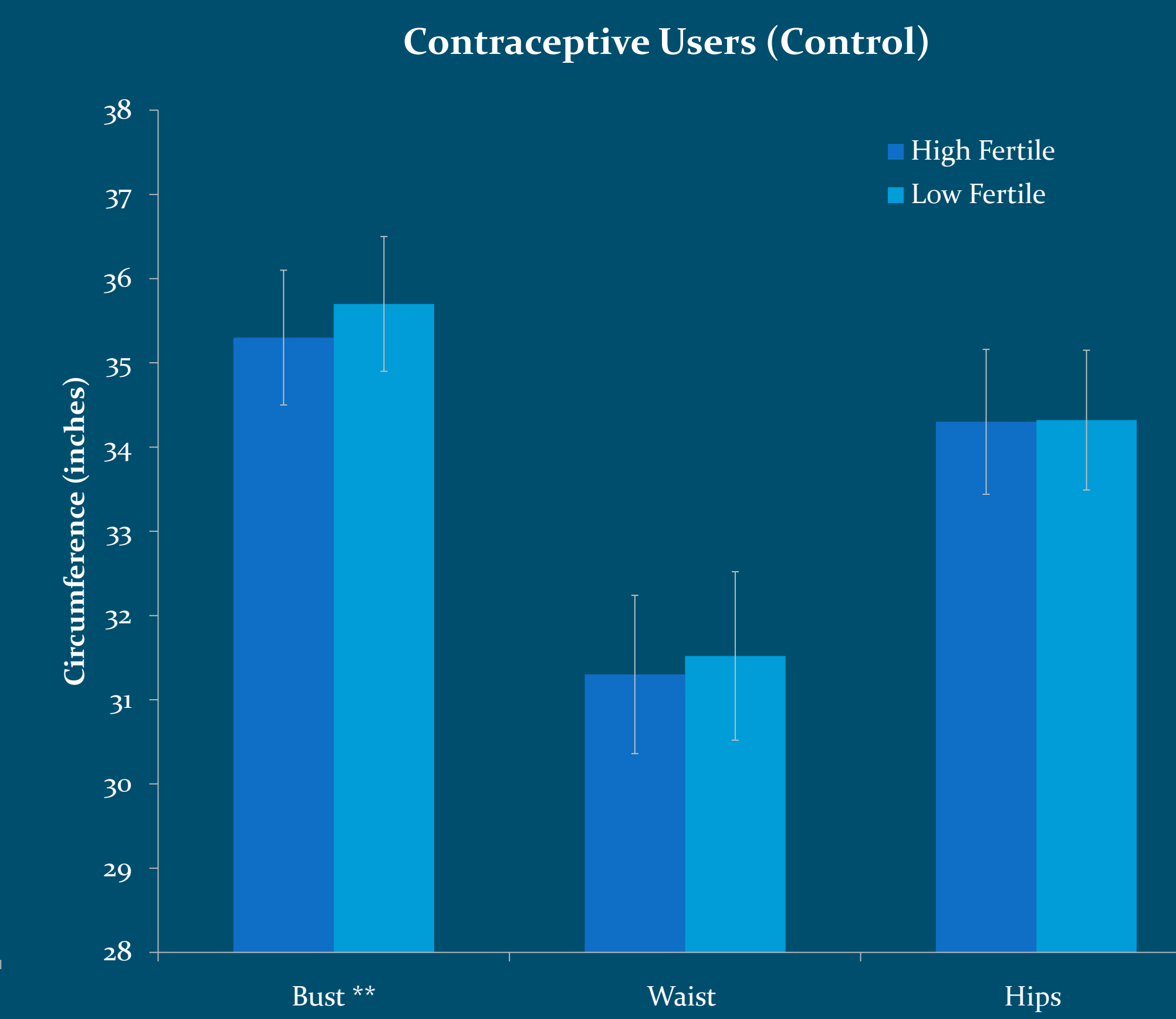


Fig 4. Contraceptive users' mean bust, waist, and hip measurements at the high and low fertile phase visits. Women's bust (across the middle) was larger at low fertility ($p = .003$). Error bars represent 95% CI.

High fertile phase visits occurred between days 8-14., with a mean of day 11, with only one on day 14. Low fertile phase visits occurred between days 17 to 25, with one woman coming on day 17, and one on day 25. The mean day was 21. Five of the women reported tanning, with three of the five tanning prior to both visits. The remaining two women who tanned reported tanning more than 5 days prior to the photo/msmt visit.

There was no significant difference between contraceptive and non-contraceptive groups for mean hours of sleep, for either low fertile or high fertile visits. Mean hours of sleep for both groups was 7 hours, for both low fertile and high fertile visits.

The reliability coefficients for two raters' measurements of waist, bust and hip measurements (xx cases) were all above .99.

Normally cycling women (those not on contraceptives) reported significantly lower levels of irritability ($p=.033$, $n=47$) when in the high phase, and marginally lower feelings of being “tired” ($p=.055$) and “ugly” ($p=.088$). There were no significant cyclic effects for the contraceptive users.

For non-contraceptive users, bust measurements were significantly lower in the high fertile phase than the low fertile phase ($p=.046$, $n=47$). The same effect was found for contraceptive users ($p=.003$, $n=32$).

Waist to hip ratio was also significantly higher in high fertile phase than low fertile phase for the non-contraceptive group ($p=.029$, $n=47$).

Discussion

We designed this study to assess whether changes in sexual desire and attitudes across the menstrual cycle coincide with actual and measurable physical changes in women's bodies and faces. In order to detect possible physical changes disconnected from women's attention to their body and face (washing, makeup, etc.), we measured waist, hips, and bust circumference and photographed participants first thing in the morning. In conducting this research we controlled for lighting, camera distance, location, time of day, and participant clothing. To control for other extraneous variables such as hours of sleep, co-sleeping, and substance use, we asked participants to agree to guidelines for the night before each of their two sessions.

Contrary to expectation, we failed to find smaller waist and wider hips during the high relative to low fertile phase. The significant increase in bust size for the low fertile phase is consistent with previous findings on changes in women's breast size over the menstrual cycle.¹² Specifically, medical researchers have previously shown that water content in the bust noticeably increases from the high fertile phase to the low fertile phase.¹² Our results for self-reported mood (e.g., lower levels of felt ugliness) coincide with previous findings on women's feelings of heightened attractiveness during the high fertile phase.¹

Overall, we attempted to rule out as many extraneous variables as possible to investigate whether women actually look different physically over the menstrual cycle. Though body measurements did not confirm this hypothesis, photo ratings are still pending. Based on previous research, we expect that participants' faces will be rated as more attractive when in the high fertile phase.¹¹

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