

# Menstrual Cycle Effects on Consumption Desires, Product Usage, and Purchasing Behaviors

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## 1) Research Question

• Can a woman's food and appearance-related consumption desires, product usage, and purchasing behaviors be influenced by her menstrual cycle?

## 2) Theoretical Foundation

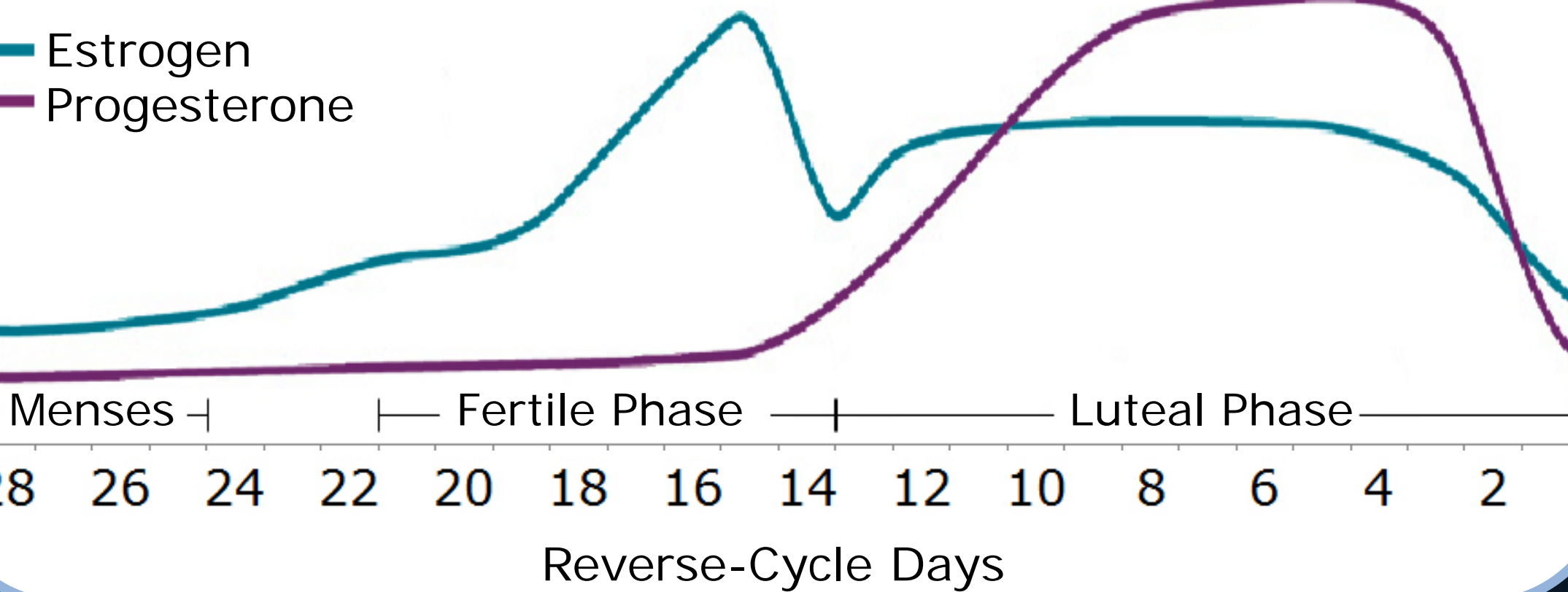
- The number of ways by which the menstrual cycle affects women's lives is staggering [1], yet its effects in the consumption setting has been minimally explored.
- During the fertile phase (21-14 Reverse-Cycle Days [RCD]; see Figure 1), women exhibit increases in mating-related desires and behaviors:
  - Sexual desires and activity [2], [3]
  - Response to sexual stimuli [4], [5]
  - Extra-pair desires [6], [7]
  - Receptivity to sexual advances [8], [9]
  - Grooming and sexiness of clothing [10]-[12]
- During the luteal phase (13-1 RCD), women exhibit increases in eating behaviors:
  - Caloric intake [13], [14]
- Hormonal effects:
  - Estrogen associated with mating drives [15]
  - Progesterone correlated with eating drives [13]
- Evolutionary perspective:
  - Women in ancestral times had to make trade-offs between spending time on mating-related activities vs. food foraging.
  - Shifts in mating and eating drives in accordance with fertility levels are indicative of adaptive psychological and hormonal mechanisms [16].

## 4) Methodology

- A 35-day panel was used to track food and appearance-related consumption over the course of a full menstrual cycle.
- Participants were asked to:
  - Track every dollar spent in a shopping diary
  - Complete online survey(s) every evening:
    - Survey 1: taken every day (N = 35)
    - Survey 2: taken on three specific days (N = 17)<sup>A</sup>
- Dependent variables:
  - Consumption desires (9-point Likert-type scale ranging from -4 to +4)
  - Product usage (-4 to +4)
  - Purchasing behaviors (\$)
- Analyses: repeated-measures analysis (General Linear Model, one-tailed)<sup>B</sup>



Figure 1  
Hormone Levels Across a 28-Day Menstrual Cycle



## 3) Predictions

- H1:** Women's **appearance**-related consumption desires, purchases, and product usage will be greater on **fertile days** than on non-fertile days.
- H2:** Women's **food**-related desires, purchases, and product usage will be greater on **luteal days** than on non-luteal days.

## 6) Implications

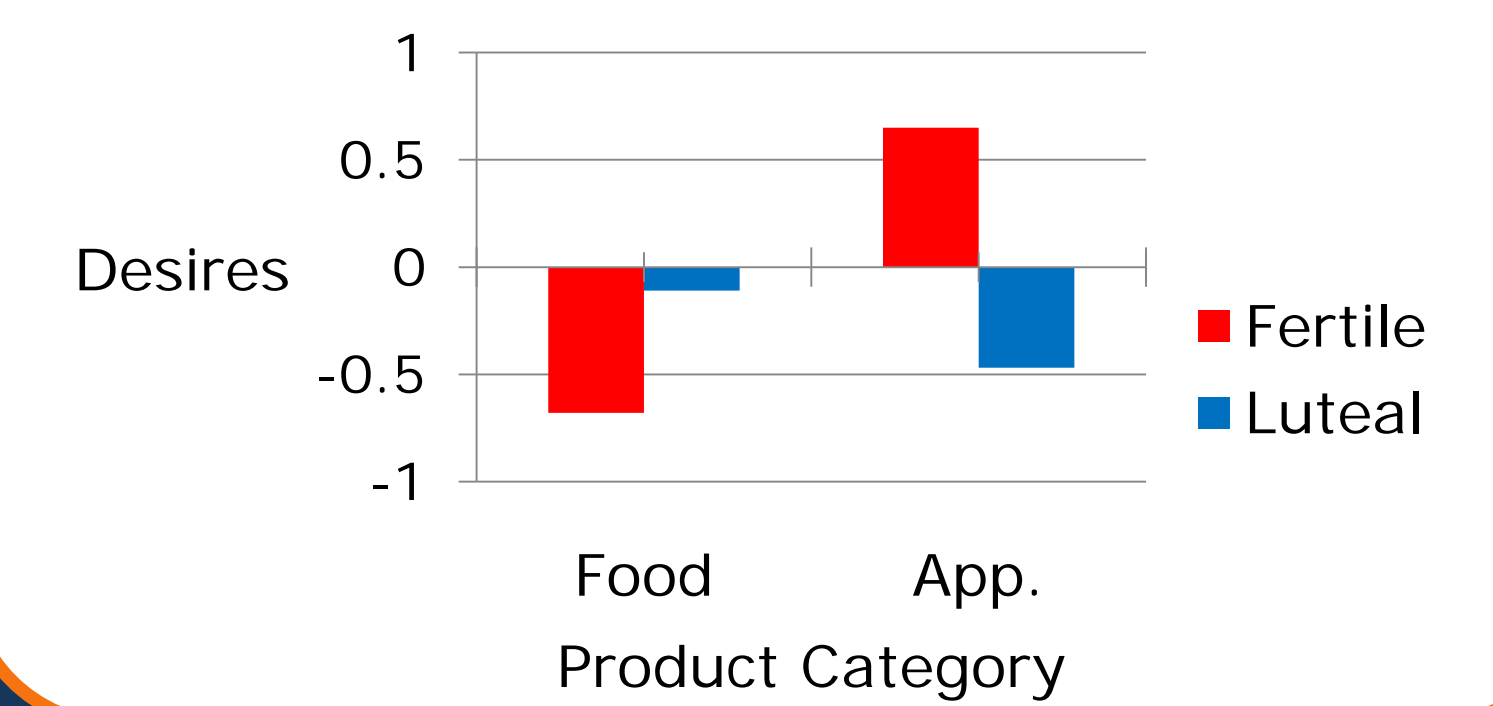
- The obtained effects on actual purchases constitute the first direct economic evidence of a menstrual cycle effect on women's consumer behavior.
- Our research is of relevance to consumer welfare in that we are highlighting when women are most vulnerable to succumbing to cyclical temptations for high-calorie foods and appearance-enhancing products.
- From a managerial perspective, marketers could benefit from recognizing that food and clothing consumption behaviors follow distinct cyclical patterns and applying this knowledge to data mining and direct marketing strategies.
- Overall, our findings add to the growing body of work at the nexus of physiology and consumer behavior [17]-[19].

## 5) Results

### A) Consumption Desires

- Appearance-related desires:
  - Women reported a significantly greater desire to look sexy on fertile days than on luteal days ( $F[1,15]=5.60, p=0.031$ ).
- Food desires:
  - Women reported significantly greater cravings for highly caloric foods on luteal days than on fertile days ( $F[1,33]=5.54, p=0.012$ ).<sup>C</sup>

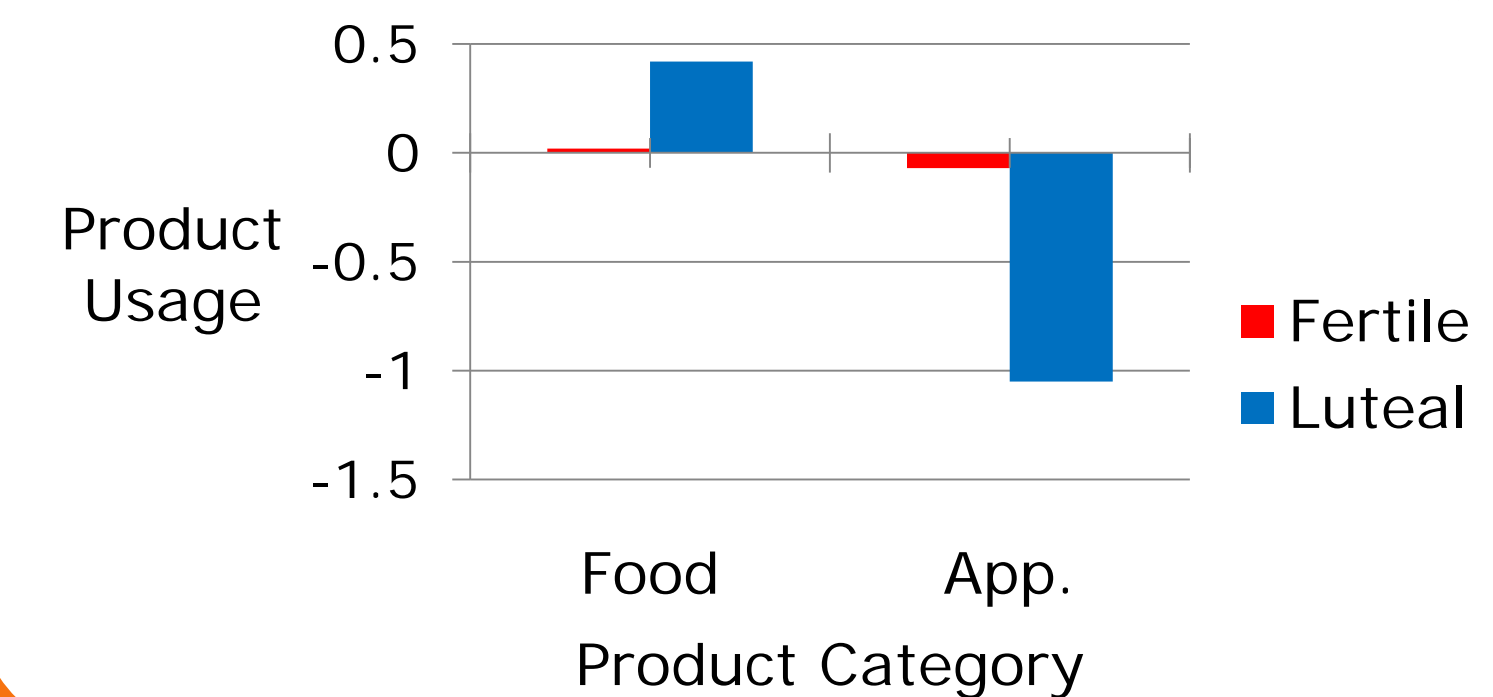
Figure 2  
Food and Appearance-Related Desires



### B) Product Usage

- Appearance-related product usage:
  - Women reported engaging in greater appearance-related product usage on fertile days than on luteal days ( $F[1,15]=8.62, p=0.005$ ).
- Food consumption:
  - Women reported consuming significantly more food on luteal days than on fertile days ( $F[1,33]=5.85, p=0.01$ ).

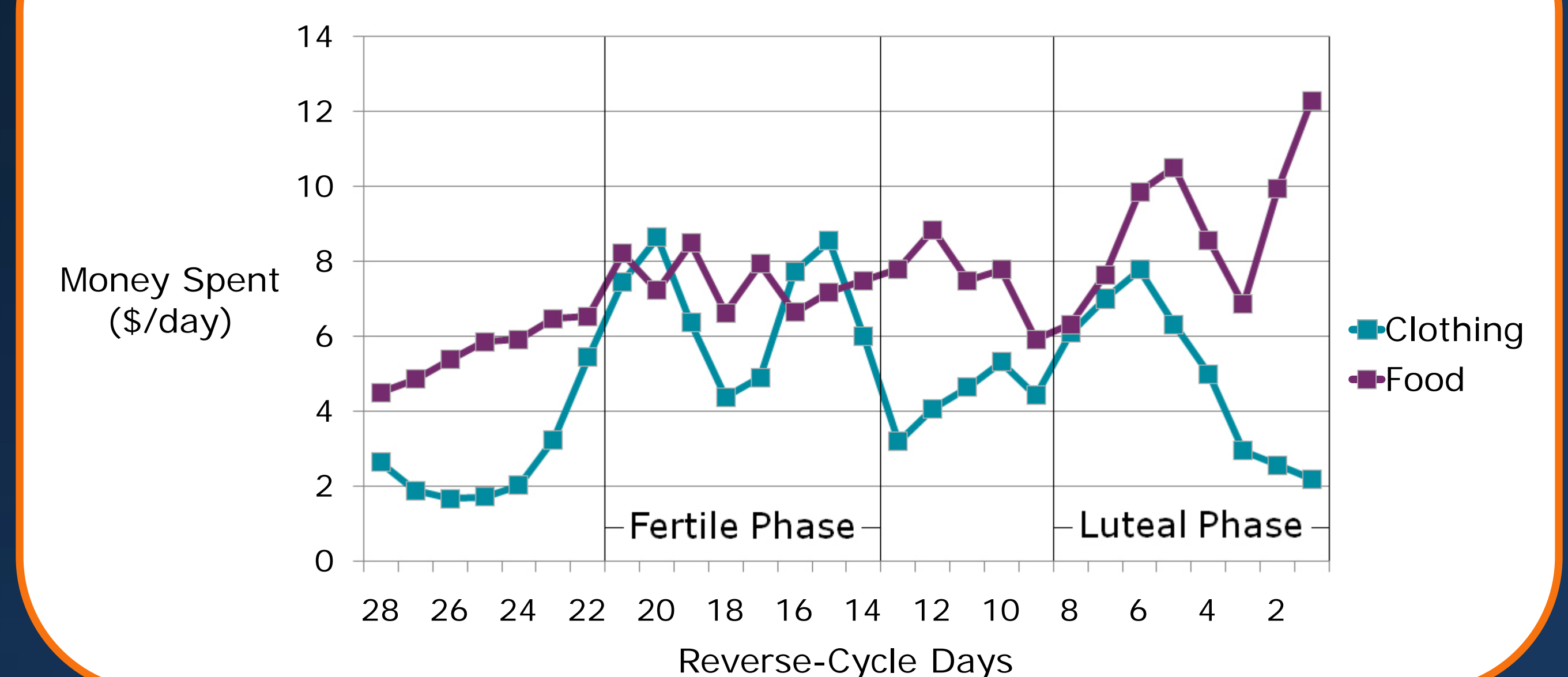
Figure 3  
Food and Appearance-Related Product Usage



### C) Purchasing Behaviors

- Clothing purchases:
  - There were no significant differences between the amount of money spent on clothing on fertile days and the amount spent on luteal days ( $F[1,33]=1.08, p=0.153$ ).
  - Across four 7-day sub-phases, the menstrual cycle did have a significant effect on amounts of money spent on clothing ( $F[3,30]=3.39, p=0.03$ ).
- Food purchases:
  - Women reported spending significantly more money on food on luteal days than on fertile days ( $F[1,33]=4.02, p=0.027$ ).
  - Across four 7-day sub-phases, the menstrual cycle had a significant effect on amounts of money spent on food ( $F[3,30]=4.09, p=0.009$ ).

Figure 4  
Daily Money Spent on Food and Clothing



## Methodological Details

• In order to assess the daily food and appearance-related purchasing behaviors, participants were given shopping diaries and were requested to record the exact amounts of money spent on food and clothing over the 35-day period. They were asked to indicate these daily spending amounts in survey 1 every evening.

• To assess food and appearance-related desires and product usage, participants provided ratings in surveys 1 and 2. Specifically, on a nine-point Likert-type scale anchored by -4 ("far less than usual"), 0 ("about average"), and +4 ("far more than usual"), they were requested to indicate "Over the last 24 hours, compared to most days in the last 12 months, I..."

• In survey 1, desire for food was measured by "craved highly caloric foods" and "felt hungry"; whereas actual food consumption was assessed by the items "consumed calories" and "ate highly caloric foods." Given that the latter two items were found to be highly correlated, they were combined into a composite measure of food consumption ( $\alpha_{fertile}=.74, \alpha_{luteal}=.84$ ). Two food-related desire items were not combined given that the resulting multi-item measure would have had inadequate reliability scores ( $\alpha_{fertile}=.44, \alpha_{luteal}=.45$ ).

• In survey 2, appearance-related desires were measured by the item "felt a desire to look sexy" while a variety of items assessed appearance-related product usage namely "wore nice clothes," "wore sexy clothes," "wore clothes that showed lots of skin," "wore clothes that attract attention," "spent time making myself beautiful (includes fixing hair, applying make-up, putting jewellery on, thinking of what to wear, etc.)," "wore jewellery (necklaces, earrings, etc.)," "wore a cap or hat" (reverse-coded), "wore my hair in a pony tail" (rather than wearing it down), if possible (reverse-coded), "wore high heels," "wore make-up (lipstick, blush, eye shadow, etc.)," "removed body or facial hair (waxing, shaving legs, plucking eyebrows, etc.)," and "went sun tanning." Initially, the 13 appearance-related product usage items were combined into a multi-item measure with a low alpha in the fertile phase condition ( $\alpha_{fertile}=.67, \alpha_{luteal}=.90$ ). However, by removing the items "wore a cap or hat," "wore my hair in a pony tail," "wore jewellery," "wore high heels," and "removed body or facial hair," the multi-item measure of appearance-related product usage increased considerably in the fertile phase condition (8 items,  $\alpha_{fertile}=.78, \alpha_{luteal}=.89$ ).

## Footnotes

- A- Study inclusion criteria and sample sizes:
  - Women 1) taking hormonal contraceptives or anti-depressant medications within the last three months, 2) with cycles falling outside of the 26-to-39-day range within the last 12 months, and/or 3) pregnant or lactating within the last three months, were excluded from the study (this information was provided in the initial screening questionnaire).
  - 59 women who met the study's inclusion criteria began completing the surveys. After excluding data from participants who had dropped out, those who did not have a normal menstrual cycle length, and one who used a hormonal contraceptive, the final sample sizes were 35 for survey 1 and 17 for survey 2.
  - The total sample size of consumption days used in the analyses was 35 for survey 2 (N=17 fertile, N=18 luteal) and 575 for survey 1 (N=280 fertile, N=295 luteal). Participants completed survey 1 an average of 33.4 times (95.4% of the requested days), 8.0 during the fertile phase (min.=4, max.=16) and 8.4 during the luteal phase (min.=3, max.=14).
- B- Repeated-measures ANOVA analyses (SPSS 15.0).
  - When the sphericity assumption was assured (via Mauchly's test of sphericity), a univariate model of repeated-measures ANOVA was performed. When the assumption of sphericity was violated, a multivariate model of repeated-measures ANOVA was used [20].
  - Analyses comparing scores during the fertile phase vs. scores during the luteal phase, fertile days were identified as RCD 14-21 and luteal days as RCD 1-8 (these 8 luteal days differ most from the fertile days in terms of fertility, estrogen, and progesterone.)
- C- In addition to stronger cravings for highly caloric foods, women reported feeling significantly hungrier on luteal days ( $M=-0.21$ ) than on fertile days ( $M=-0.59, F[1,33]=5.54, p=0.012$ ).

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## Picture Sources

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- Hormone levels in Figure 1 are taken from S.F. Gilbert (2006) *Developmental Biology* (8th ed.), Sunderland, MA: Sinauer Associates.