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What is This?

Women Can Keep the Vote: No Evidence That Hormonal Changes During the Menstrual Cycle Impact Political and Religious Beliefs

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Recently, Durante, Rae, and Griskevicius (2013) reported that women's menstrual cycle phase affected their religiosity, voting preferences, social (but not fiscal) political attitudes, and preferences for U.S. presidential candidates. The direction of these effects seemingly depended on women's relationship status. The authors argued that during the fertile phase of the menstrual cycle (relative to the infertile phase), women in committed relationships become more religious and socially conservative, which causes them to shift toward preferring the more conservative presidential candidate. In contrast, women who are not in committed relationships reportedly show the opposite effect; namely, during peak fertility, single women shift to being less religious and more socially liberal, and therefore prefer the more liberal presidential candidate.

Durante et al. suggest that "because ovulation might lead married women to become more sexually interested in men who are not their partner, and because it is especially costly for such women to cheat on their partner, increased religiosity and conservatism might function to decrease the likelihood of behaviors that might harm the relationship" (p. 1009). This reasoning contrasts with most evolutionary psychologists' theorizing, which generally contends that pair-bonded females are more likely to engage in extrapair sex during the peak fertility phase in order to acquire better genes for offspring (e.g., Penton-Voak et al., 1999).

We attempted to directly replicate the findings of Durante et al. Assessing the robustness of their findings seems warranted for several reasons. First, the findings depart strikingly from common-sense ways of thinking about political and religious behavior, implying markedly greater fickleness in women's attitudes relative to those of men—something that, to our knowledge, has not been noted by pollsters and political scientists. Second, there is great variability among menstrual cycle studies on preferences in how fertility is calculated (e.g., there is variability in the number of days categorized as fertile and as infertile, the specific days counted in each category, and which days are excluded altogether) and in what moderators are examined. Such inconsistency potentially introduces flexibility into analytic methods, which endangers replicability (Harris, Chabot, & Mickes, 2013; Pashler & Wagenmakers, 2012; Simmons, Nelson, & Simonsohn, 2011).

The Current Research

The current work employed the measures reported in Durante et al. We faithfully reproduced their analytical strategies, including categorization of relationship status and fertility status,[1] and employed their exclusionary criteria for the sample and the primary analyses. As in Durante et al., subjects were recruited from Amazon's Mechanical Turk, although our sample was much larger ($N = 1,206$; see the Supplemental Material available online for participant data, including details on relationship-status and menstrual cycle classifications). Our first phase of data collection occurred before the 2012 U.S. presidential elections (women were asked for whom they wanted to vote). Unlike Durante et al., we also performed a second wave of data collection after the elections, asking women for whom they voted and about their menstrual cycle at time of voting (see the Supplemental Material for further details).

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Table 1. Mean Scores on Measures of Religious, Social, and Fiscal Attitudes for Each Group, and Between-Groups Comparisons for Each Measure

Group	Religiosity	Social attitudes	Fiscal attitudes
	Relationship status		
Paired (*n* = 409)[a]	5.64 (2.95)	3.01 (1.69)	3.10 (1.24)
Single (*n* = 268)	4.86 (2.91)	2.56 (1.49)	2.94 (1.17)
Comparison	$F(1, 673) = 11.41^*$	$F(1, 673) = 12.66^*$	$F(1, 672) = 3.06$, n.s.
Effect size	$d = 0.27$	$d = 0.28$	$d = 0.14$
	Fertility status		
High fertility (*n* = 333)	5.27 (2.95)	2.86 (1.65)	3.09 (1.26)
Low fertility (*n* = 344)	5.39 (2.96)	2.81 (1.61)	2.99 (1.16)
Comparison	$F(1, 673) = 0.16$, n.s.	$F(1, 673) = 0.19$, n.s.	$F(1, 672) = 0.91$, n.s.
Effect size	$d = 0.03$	$d = 0.03$	$d = 0.07$
	Relationship Status × Fertility Status		
Paired, high fertility (*n* = 199)	5.55 (2.94)	3.03 (1.74)	3.17 (1.33)
Paired, low fertility (*n* = 210)	5.72 (2.96)	2.99 (1.65)	3.04 (1.14)
Single, high fertility (*n* = 134)	4.85 (2.92)	2.59 (1.48)	2.96 (1.14)
Single, low fertility (*n* = 134)	4.87 (2.90)	2.52 (1.51)	2.91 (1.20)
Comparison[b]	$F(1, 673) = 0.10$, n.s.	$F(1, 673) = 0.01$, n.s.	$F(1, 672) = 0.24$, n.s.

Note: Standard deviations are given in parentheses. Religiosity was measured on a 9-point scale, with higher numbers representing greater religiosity. Social and fiscal attitudes were measured on separate 7-point scales; higher numbers indicate greater conservatism.
[a]One paired participant did not complete the fiscal-attitudes measure. [b]For each interaction term, we calculated the effect size (η_p^2) in the same manner as did Durante (K. M. Durante, personal communication, June 21, 2013). The effect size was less than .001 for each interaction (see the Supplemental Material for comparison with the results of Durante, Rae, & Griskevicius, 2013).
*$p < .001$.

Durante and her colleagues' primary predictions were that interactions occur between relationship status and menstrual cycle phase, such that when in the fertile phase of the menstrual cycle, women in relationships become more socially conservative and religious, whereas single women become more socially liberal and less religious. We conducted a 2 (relationship status) × 2 (fertility status) between-subjects analysis of variance on each attitude type (religious, social, and fiscal). Means and results of the analyses are presented in Table 1. None of the predicted interactions for attitude measures were reliable. Also, there were no significant main effects of cycle phase on attitudes. As expected, however, women in relationships were more socially and religiously conservative than women who were not in relationships.

In a logistic regression of hypothetical voting preferences, the interaction between fertility and relationship status did not reach significance, β = 0.23, Wald(1) = 3.16, *p* = .08. However, following Durante et al., we performed additional chi-square analyses. Counter to their hypothesis, preference for Obama was identical among high-fertility (77.6%) and low-fertility (77.4%) single women in our sample, $\chi^2(1, N = 138) = 0.001$, *p* = .98, *d* = 0.01. Among paired women (i.e., those in committed relationships), there was a significant effect (77.4% of low-fertility and 58.5% of high-fertility women preferred Obama), $\chi^2(1, N = 221) = 9.11$, *p* = .003, *d* = 0.41.

For actual voting behavior, the interaction between fertility and relationship status also did not reach significance, β = 0.26, Wald(1) = 3.02, *p* = .08. Additional chi-square analyses showed a different pattern from hypothetical responses. Fertility did not affect paired women's voting for Obama (68.3% low fertility vs. 69.2% high fertility), $\chi^2(1, N = 182) = 0.02$, *p* = .89; *d* = 0.02; in fact, the trend, if any, was in the opposite direction from that predicted by Durante et al. There was, however, an effect for single women's voting for Obama (74.6% low fertility vs. 89.8% high fertility), $\chi^2(1, N = 126) = 4.86$, *p* = .03; *d* = 0.40.

After seeing our results, reviewer S. Gangestad (personal communication, August 17, 2013) performed a logistic regression (combining hypothetical preferences with actual voting behavior), which produced a significant interaction between relationship status and fertility of the same sort reported by Durante and her colleagues (*p* = .013), plus an unexpected cycle-by-study interaction (*p* = .011). The former finding could be taken as partial support for one finding of Durante et al. However, post hoc combination of two different outcome measures into one analysis seems debatable, especially given that the trends in the two samples do not match up qualitatively (i.e., there was no cycle effect in single women for hypothetical voting and no cycle effect in paired women for actual voting—see also Fig. S1 in the Supplemental Material).[2]

Conclusion

We unequivocally failed to confirm two of the three key findings from the research reported by Durante et al. There was no interactive effect of ovulatory and relationship status on either religious beliefs or social political attitudes. Our full sample size ($N = 1,206$) outnumbered that of Durante and her colleagues (e.g., $N = 502$ for political attitudes and $N = 777$ for religiosity). Therefore, were an effect to exist, it seems unlikely that the present, more powerful, study would fail to find any hint of it.

With regard to voting data, the current results are more equivocal. The interaction of ovulatory status and relationship status (reported by Durante et al. to affect hypothetical voting preferences) fell short of significance in each of our samples when analyzed as we had intended (hypothetical preferences separate from real voting). However, when the two data types were combined at the recommendation of a reviewer, a significant interaction was found. Although it is possible that there is some true nonzero (albeit hard to explain) interaction here, we are inclined to doubt it for two reasons. First, Durante et al. proposed that voting shifts were caused by changes in religiosity and social political attitudes, but we found no evidence of such changes. Second, as noted earlier, the interaction trends in real and hypothetical voting appear qualitatively different. (For hypothetical voting data, there was no hint of an effect in single women; for actual voting, there was no hint of an effect in paired women.)

If the voting interactions turn out to be real, one possible explanation might be that women have a tendency to find men they like more attractive (or likeable) during peak fertility. If so, any potential effect on voting preference could be due to the tendency of single women to prefer the liberal candidate and committed women to prefer the conservative candidate, with fertility accentuating this effect. Again, however, this suggestion did not receive strong empirical support from our results and is quite different from the hypothesis of Durante et al.

This study adds to a growing number of failures to replicate several menstrual cycle effects on preferences and attraction (e.g., Harris, 2011; Wood, Kressel, Joshi, & Louie, in press), which invites concerns that this literature as a whole may have a false-positive rate well above the widely presumed 5%. That inflation is expected if data-analysis flexibility of the sort cautioned against by Simmons et al. (2011) is present (see discussion in Harris et al., 2013). However, each purported effect should be assessed on its own merits. Researchers in this area can help address the problem by committing to fertility classifications and analysis plans in advance through study preregistration. Not only will this decrease Type 1 errors, but it will also help ensure that effects that do exist are revealed, giving the field credibility.

Notes

1. In their article, Durante et al. inaccurately described their fertility categorization method. We employed their actual method, as provided by Durante (K. M. Durante personal communication, June 20, 2013; see the Supplemental Material for details and for analyses using a continuous fertility-risk calculation).
2. S. Gangestad (personal communication, August 17, 2013) observed, however, that the three-way interaction of study, fertility, and relationship status was not significant.

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