



The Causal Effects of Hormonal Contraceptives on Sexuality Outcomes

A recommendation by **Thomas Evans**  based on peer reviews by **Summer Mengelkoch** and 1 anonymous reviewer of the STAGE 2 REPORT:

Laura J. Botzet, Julia M. Rohrer, Lars Penke, Ruben C. Arslan (2025) Positive Treatment Effects and High Heterogeneity of Hormonal Contraceptive Use on Women's Sexuality. OSF, ver. 3, peer-reviewed and recommended by Peer Community in Registered Reports.

<https://osf.io/gz9uh>

Submitted: 19 March 2024, Recommended: 22 January 2025

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Ensuring universal access to sexual and reproductive health and reproductive rights is a global concern, exemplified by goal 5.6 of the Sustainable Development Goals (UN General Assembly, 2015). Whilst the range of contraceptive options have increased, our understanding of the impacts of use for women are inadequate and represent a key barrier to positive change in policies and practices. In particular, we have few consensus on the expected impacts of hormonal contraceptive use on women's sexuality and wellbeing. In their Stage 1 Report, Botzet et al. (2023) argued that this inconclusive evidence base could be due to the wide heterogeneity in responses, the impacts of this heterogeneity upon attrition, differences in contraceptive methods and dosage effects, confounders, and the potential for reverse causality. Tackling some of these potential factors, Botzet (2023) planned to explore whether hormonal contraceptive use influences sexuality and well-being outcomes, and whether (and to what extent) the effects vary between women. To achieve this they proposed analysis of longitudinal data from the German Family Panel (PAIRFAM) which included annual waves of data collection, with separate Stage 2 submissions planned to report findings based on sexuality and well-being. This specific Stage 2 Report, Botzet et al. (2025) focus upon the sexuality-based outcomes of the programme of work and found positive effects of hormonal contraceptives on sexual frequency and sexual satisfaction (but not desired sexual frequency), having controlled for a number of potential confounding variables. However, they also found relatively high heterogeneity for individual treatment effects, suggesting that predicting its effect for any given individual may be difficult. This work is a rigorous starting point for better understanding the impacts of hormonal contraceptives and the possibility for tailored approaches to contraception. The Stage 2 manuscript was evaluated following one round of in-depth review. Based on detailed responses to the reviewers' and recommenders' comments, the recommender judged that the manuscript met the Stage 2

criteria and therefore awarded a positive recommendation. **URL to the preregistered Stage 1 protocol:** <https://osf.io/kj3h2> **Level of bias control achieved: Level 3.** *At least some of the data/evidence that was used to answer the research question existed and was accessible in principle prior to IPA but the authors certify that they did not access any part of that data/evidence until after IPA.* **List of eligible PCI-RR-friendly journals:**

- [Collabra: Psychology](#)
- [Peer Community Journal](#)
- [PeerJ](#)
- [Royal Society Open Science](#)
- [Studia Psychologica](#)
- [Swiss Psychology Open](#)

References:

1. Botzet, L. J., Rohrer, J. M., Penke, L. & Arslan, R. C. (2023). Hormonal Contraceptive Use and Women's Sexuality and Well-Being: Estimating Treatment Effects and Their Heterogeneity Based on Longitudinal Data [Stage 1]. In principle acceptance of Version 3 by Peer Community in Registered Reports. <https://osf.io/kj3h2>
2. Botzet, L. J., Rohrer, J. M., Penke, L. & Arslan, R. C. (2025). Positive Treatment Effects and High Heterogeneity of Hormonal Contraceptive Use on Women's Sexuality [Stage 2]. Acceptance of Version 3 by Peer Community in Registered Reports.
2. UN General Assembly (2015). *Transforming our world : the 2030 Agenda for Sustainable Development*, 21 October 2015, A/RES/70/1. Available at: <https://www.refworld.org/docid/57b6e3e44.html> [accessed 27 September 2023]

Reviews

Evaluation round #2

DOI or URL of the preprint: <https://osf.io/ujp62>

Version of the preprint: 2

Authors' reply, 14 January 2025

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Decision by [Thomas Evans](#) , posted 15 November 2024, validated 15 November 2024

The Causal Effects of Hormonal Contraceptives on Psychological Outcomes

Thank-you for responding to the previous feedback provided and being so comprehensive and transparent in your working. I believe the responses were appropriate and changes have indeed made the manuscript clearer and more convincing.

Based upon a few of the changes, I'd like to suggest to you that a protocol of deviations from the Stage 1 registration is provided to readers (either as an appendices or as a supplementary doc on the OSF but explicitly signposted within the manuscript) to make sure that all the changes made are maximally visible. I have no concerns over the deviations made, however I think it was quite easy to miss them when reading the manuscript and a transparent account of them all logging where the original plans have changed, how and why, would be a valuable addition.

Once this has been actioned (or a very strong justification for not, if you disagree), I will be very happy to provide a recommendation for this important and impactful work.

Many thanks,

Tom

Evaluation round #1

DOI or URL of the preprint: <https://osf.io/k8fps>

Version of the preprint: 1

Authors' reply, 13 November 2024

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Decision by [Thomas Evans](#) , posted 16 May 2024, validated 16 May 2024

Revision invited

Thanks for submitting one of your Stage 2 reports. The work included is impressive and substantive and I thoroughly enjoyed learning more. I am also very grateful to our returning reviewers who have advised that only relatively minor changes are needed to help improve the clarity of your communication. I have no further feedback beyond their very helpful suggestions, so I encourage you to work through their comments systematically, providing a response to each to discuss if/how you have actioned and I will look forward to re-reading this shortly.

Congratulations, thanks, and take care,

Dr Thomas Rhys Evans

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Reviewed by anonymous reviewer 1, 16 May 2024

I enjoyed reading the Stage 2 manuscript! The authors did a good job using the data and following their registered plan of testing their hypotheses. I have several relatively minor comments on this version of the manuscript:

From my understanding, in the PARFAIM dataset, if women were not sexually active they were given a code of non-hormonal contraceptive user even though they did not actually answer a question about their hormonal contraceptive use. This is indeed an issue because women who are not sexually active may be on HCs for a variety of other reasons. I agree that those women should be excluded from analyses because HC use cannot be ascertained. (I feel less strongly about the fact that they were given a 0 for sexual frequency.) Overall, I think this deviation from the Stage 1 plan is appropriate.

Though I am not sure about excluding women in lesbian relationships. Past research has found similar effects for the link between reproductive hormones and women's sexuality (e.g., sexual desire) among women who are in both heterosexual and homosexual relationships. I suggest this is added as a robustness analysis.

Overall, I found the analyses and results sound. With the exception of the final section (contraceptive decisions and individual treatment effects), because at this point I forgot what that model entailed.

A general point is that I found the paper quite difficult to read. When there is so much going on, a reader will need a bit more hand-holding to follow the reasoning for all analyses. It is a lot to keep in one's working memory without more written guidance. I think adding some of that hand-holding and maybe simplifying some sentences to emphasize the central point better would go a long way.

Did the authors look at whether the big 5 influenced decisions to use HCs or more likely to stop and start use of HCs? That would be interesting.

In the discussion, I would like a bit more elaboration on

(a) why specifically the one-year interval may be a limitation (and what interval may be better). Additionally maybe the reason for experimental studies' different effects might be with the time course of adjustment.

(b) a possible explanation for the negative association between HC use and income and education (including potentially biases from physicians)

(c) a greater discussion about what variables (beyond big 5 and age) in future studies may be important for understanding the heterogeneity individual treatment effects

Parts of the discussion also felt a bit sterile/clinical to me. Even if not measured in PARFAIM, it is easy to think about some psychological processes that might surround some of women's decisions to use or not use HCs depending on life events.