

THE EFFECTS OF COMBINED ORAL CONTRACEPTIVES ON MOOD AND AFFECT: A META-ANALYSIS

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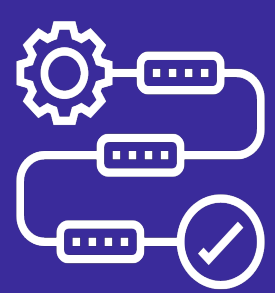
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BACKGROUND

Combined oral contraceptive (COC) pills are used more commonly than any other method of contraception, with over 22 million users worldwide^①. Although many studies have investigated the potential health-related side effects of hormonal contraceptive use, relatively less research has investigated the potential psychological side effects of COCs despite the fact that many women anecdotally report such side effects^②. While research suggests that 46% of women who discontinue use of COCs do so because of mood-related side effects, the research on this topic has provided equivocal results — some studies indicate that COCs improve their mood^③, some indicate that COCs worsen mood^④, and others suggest COCs do not have any impact on mood at all^⑤. In light of the equivocal findings in this field of research, a meta-analysis is a useful way to shine a light on possible connections between variables that interact with birth control use and mood, and to direct future research toward examining the most likely possibilities for explaining these connections.

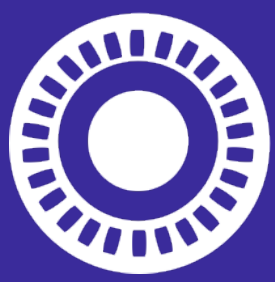
CRITERIA FOR STUDY INCLUSION



Methodology: randomized trials with or without placebo that included mood assessment as a primary or secondary outcome (within-subject only given aim of determining causal effects of COCs).



Population: studies of healthy women and those studying women with fertility issues and/or premenstrual dysphoric disorder (PMDD) were included to maximize inclusion.



COC information: noted any information regarding COC brand and dosage if provided, but this was not an exclusion criteria because so few studies report this information.



Mood Scale: any studies that utilized a standard scale with a primary or secondary outcome of mood ratings (e.g., BDI, PANAS, Q-LES-Q) or a self-created mood assessment were included.



Publication Date: only studies published 1985 and later (change in the standard level of estrogen in COCs in 1985 after concerns about higher levels being linked to a risk of vascular disease).



Language: only studies published in English or with an available English translation were included.

ANALYSIS

A total of 17 different studies contributed data to the final analysis, with responses from 1268 participants across 25 unique samples. Effect sizes and variances were calculated using the Practical Meta-Analysis Effect Size Calculator and robust variance estimation (RVE) was used for the main analysis^⑥. The scale direction for each effect size was adjusted to reflect a positive effect size to indicate an increase in negative mood symptoms (i.e. worsening of mood), and a negative effect size to indicate a decrease in negative mood symptom (i.e. improvement of mood). Taking into account the data points from multiple scales or scale items, a total of 71 effect sizes contributed to the final analysis.

RESULTS

The results suggest that COCs have a small, but significant, positive effect on women's mood (mean ES = -0.54, 95%CI [-1.0200, -0.0479]). This indicates that women may experience a slight improvement in mood and affect when taking COCs as compared to not taking them (i.e., natural menstrual cycle).



Preregistration



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CONCLUSIONS

These findings suggest that, in contrast to commonly held ideas about COCs creating mood issues, they are more likely to stabilize or improve a woman's mood when she begins taking them. This result is perhaps not surprising given that COCs were used as a treatment for PMDD in the studies that met the inclusion criteria for our analysis. It is possible that COCs may have differential effects on those suffering from mood disorders. More research on healthy populations is necessary to further clarify this issue. Additionally, future research should consider the potential impact of different types of COCs (this was not possible with the current data), as available COC options vary both in ethinyl estradiol doseage (typically 25-35µg) as well as the type and doseage of progestin (some of the more common progestins used are desogestrel, levonorgestrel, norgestimate, and drospirenone); indeed, a large-scale study^⑦ of COC use in the US recently demonstrated that women aged 15-44 report using over 80 different brands of COCs. While the analysis presented here does provide some evidence for a positive impact of COC initiation on mood, it more strongly highlights the high variability of research methods used in the field, from the COC formulation to the mood scale employed. Future research using more standardized methodologies could help further elucidate the impact of COC on women's psychological health.

REFERENCES

① Mosher (2004); Skouby (2004); Hall (2012) ② Welling (2013); Hahn (2019) ③ Borgest (2006); Nyberg (2013) ④ Gingnell (2013); Sangers (2001) ⑤ Duke (2007); Rapkin (2006) ⑥ Wilson (2018); Hedges (2010)