Oral Contraceptive Use Associated With Increased Romantic Relationship Satisfaction

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ABSTRACT. Hormone fluctuations due to menstruation may cause changes in mood. Oral contraceptives (OCs) stabilize hormone levels. Although inconsistent, some research has found OCs to have a positive impact on women’s mood and affect. Stable mood may in turn lead to positive overflow effects in a woman's life as seen through increased romantic relationship satisfaction. The current study examined the association between OC use and relationship satisfaction. Data from Waves 3 and 4 of the National Longitudinal Study of Adolescent Health (Add Health) data set (N = 4,311 women) were used. Women ranged in age from 18 to 28 (M = 22.26, SD = 1.79) at Wave 3 and from 25 to 34 (M = 29.02, SD = 1.73) at Wave 4. Results indicated that women who used OCs at Wave 3 were more satisfied with their relationships at Wave 4 than women who did not use OCs, R² = .049, F(5, 4048) = 41.65, p < .001; β = .032, p = .041. These results suggest that hormones in OCs may have diffuse downstream effects in the lives of women who take them, including in their romantic relationship satisfaction. This highlights the importance of recognizing the primary and secondary implications of OC use and the need for both women and clinicians to understand the potential benefits of OCs in making informed treatment decisions.

Most (82%) sexually experienced women have used oral contraceptives (OCs) at some point in their lives (Daniels, Mosher, & Jones, 2013). In addition to preventing pregnancy, many women take OCs for other noncontraceptive benefits such as mitigating symptoms of premenstrual syndrome (PMS), treating acne, and normalizing irregular cycles (Dawood, 2006; Jones, 2011). Reproductive hormones have been linked to mood alterations (Newman & Mello, 2009), and researchers have begun to further explore the association between hormones and mental health and well-being. Because OCs have the potential to impact mood, they may also potentially affect behavior and interpersonal relationships.

PMS is a common ailment that many women of reproductive age experience. It includes both physiological and psychological symptoms. Sometimes these symptoms are so severe that they significantly impair a woman’s normal functioning, defined as premenstrual dysphoric disorder (PMDD) in the Diagnostic and Statistical Manual of Mental Disorders (5th ed.; American Psychiatric Association, 2013). A common element between PMS and PMDD is that they are both menstrual-related disorders with a component of mood-related and/or psychological symptoms (e.g., depression, irritability, anxiety, confusion, social withdrawal, mood swings, feeling suddenly sad or tearful, increased sensitivity to rejection, and increased interpersonal conflicts; American College of Obstetricians and Gynecologists, 2000; American Psychiatric Association, 2013), suggesting that women’s hormones have an effect on mood and behavior.

Sensitivity to the fluctuating hormones (i.e., estradiol, progesterone) of the menstrual cycle is widely believed to be the cause, at least in part, of PMS and PMDD symptoms (Halbreich, Borenstein, Pearlstein, & Kahn, 2003; Joffe et al., 2007; Schmidt, Nieman, Danaceau, Adams, & Rubinow, 1998). Estrogen is known as a mood enhancer. Thus, it is not surprising that PMDD’s affective symptoms occur during the premenstrual phase of the menstrual cycle, which is a phase known for its variability in estrogen levels (Douma, Husband,
O’Donnell, Barwin, & Woodend, 2005). OCs can neutralize these hormonal fluctuations by supplementing endogenous hormones with consistent synthetic ones, thereby stabilizing hormone levels (Pearlstein, Bachmann, Zacur, & Yonkers, 2005).

Many studies have reported efficacious results in treating PMDD sufferers’ affective symptoms and mood variability with OCs (Joffe et al., 2007; Pearlstein et al., 2005; Yonkers et al., 2005). Although these studies have demonstrated success, other studies have shown that women who used OCs experienced increases in negative affect and mood variability when compared to nonusers, and still other studies have found no significant difference between OC users and nonusers (Douma et al., 2005; Oinonen & Mazmanian, 2001, 2002). These inconsistent findings may be attributed to differences in using monophasic (static dosage of hormone levels) versus triphasic (variable dosage of hormone levels) OCs and differences in diagnostic criteria and measurements, among other potential confounds.

Initial research on the association between OCs and mood focused on categorical dimensions (e.g., comparing depressive disorders of OC users to other groups or comparing general mood scores of OC users to other groups), whereas more recent research has focused on describing the association between OCs and affect by focusing on a dimensional approach (e.g., daily rating scales to measure cyclical changes and group differences; see Oinonen & Mazmanian, 2002 for a full review), which allows researchers to assess mood variability to see a fuller picture. For reasons such as this, the effects of OC use on mood remain largely inconclusive. However, because reproductive hormones remain undeniably linked to mood, further research to understand and explore this association, particularly as it relates to women’s mental health and well-being, is warranted.

Recently, Keyes and colleagues (2013) found that women who used hormonal contraceptives not only had lower levels of depressive symptoms, but they were also less likely to report a past year suicide attempt when compared to nonusers. These findings suggested that hormones are directly linked to mental health outcomes. Researchers not only continue to study the direct effects of hormones and OC use, but also their indirect effects. Indirect effects suggest that hormones and OCs not only have the ability to influence women’s mental health outcomes, but that these effects may spill over into other areas of women’s lives such as in their romantic relationships.

Women who suffer from PMS report significantly more dissatisfaction with both marital and sexual relationships (Winter, Ashton, & Moore, 1991). Furthermore, their degree of social and interpersonal impairment directly relates to their levels of affective symptoms, such that more severe symptoms are associated with greater distress and impairment in interpersonal functioning (Jones, Theodos, Canar, Sher, & Young, 2000; Schmelzer et al., 2014). These two studies seem to have affirmed that endogenous hormones can negatively impact relationship satisfaction. OC use has also been shown to influence a woman’s initial partner choice as well as subsequent satisfaction with that same partner depending on changes in initial OC use. If a woman maintained congruent OC use from the time of meeting their partner to present OC use, they reported higher levels of sexual satisfaction than did noncongruent women (Roberts et al., 2014). It was also found that, although women who used OCs were less sexually satisfied and less physically attracted to their partner, they were more satisfied with the paternal investment their partner had to offer and experienced longer relationships and were less likely to separate than nonusers (Roberts et al., 2011). These studies further suggest that hormones can contribute to relationship outcome.

Further evidence on the effect of endogenous and exogenous hormonal changes within heterosexual relationships comes not only from the women themselves, but also how women’s hormones affect and influence men’s relationships and relationship satisfaction. Men’s attraction to women is altered depending on women’s menstrual cycle phase and OC use, and may also predict relationship outcomes (Cobey, Buunk, Pollet, Klipping, & Roberts, 2013; Haselton & Gildersleeve, 2011; Puts et al., 2013). Arguably, women’s hormones have the ability to not only affect their own well-being and interpersonal functioning, but also that of their partners. OCs have been shown to alter the sexual behavior of coupled women, which may also account for the impact to their relationships and interpersonal functioning. In one study, women who used OCs had fewer extra-pair affairs and more frequent intercourse with their partners than nonusers, which may suggest higher levels of commitment to the relationship (Klapilová et al., 2014). It is important to note that this information does not imply that women are solely responsible for the satisfaction of their partners. Rather, when hormones affect personal well-being, whether
Keyes and colleagues’ (2013) aforementioned study as well as the review by Oinonen and Mazmanian (2002) corroborated the assumption that stabilized hormone levels lead to more stable mood. More specifically, we predicted that OCs produce a more stable mood by reducing mood swings. Subsequently, it has been proposed that fewer mood swings may have beneficial overflow effects extending into other areas of women’s lives including their romantic relationships. Presumably, women who experience fewer mood swings may experience more positive interactions with their romantic partners, which in turn might increase satisfaction within the relationship, thus, becoming a positive feedback cycle.

The Present Study
Due to the inconsistencies in results of previous studies, additional research examining the association between OC use and women’s mood is warranted. Researchers believe that PMS symptoms are the result of hormonal fluctuations due to menstruation (Halbreich et al., 2003; Schmidt et al., 1998), which include changes in affect (i.e., mood swings). OCs can neutralize these hormonal fluctuations by replacing endogenous hormones with consistent synthetic ones, thereby stabilizing hormone levels (Pearlstein et al., 2005).

Keyes and colleagues’ (2013) aforementioned study also corroborated the assumption that stabilizing hormone levels may lead to more stable mood. Subsequently, the current study proposed that women using OCs may experience additional benefits associated with more stable mood, which may extend into other areas of their lives such as their romantic relationships. Presumably, women whose moods are more stable may have more positive interactions with their romantic partners. Thus, the present study aimed to assess this possibility by examining the association between the use of OCs and romantic relationship satisfaction in a large, nationally representative sample inclusive of all sexualities. It was hypothesized that, due to beneficial overflow effects, women using OCs would be more satisfied with their romantic relationships than women not using OCs.

Method
Participants and Procedure
The present study used archival data from the National Longitudinal Study of Adolescent Health (Add Health) data set (Harris et al., 2009). Add Health was supported by three program project grants from the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) with cofunding from 23 other federal agencies and foundations. The Add Health Study includes a nationally representative sample of adolescents, in which respondents completed in-home interviews at four separate time points. Wave 1 was completed in 1995, Wave 2 was completed in 1996, Wave 3 was completed between August 2001 and August 2002, and Wave 4 was collected in 2007 and 2008. Recruitment was done throughout the United States using stratified random sampling.

All U.S high schools that included an 11th grade and had at least 30 enrolled students were eligible to participate. Feeder schools were also eligible as long as they had a seventh grade and if the students from those middle schools would be attending one of the eligible high schools. Seventy-nine percent of the recruited schools agreed to participate, resulting in a sample size of 132 schools.

Although the study collected data at four different time points, it was not mandatory to participate in every wave. All participants who completed Wave 1 were eligible to complete all other waves. However, there was a small portion of participants that completed Wave 2 who did not complete Wave 1. In order to complete Waves 3 and 4, the only mandatory requirement was participation at Wave 1. It was not necessary to complete Wave 2 in order to be eligible to complete Wave 3, nor was it mandatory for Wave 4 participants to have completed Wave 3. This explains why there are different sample sizes according to each specific wave (as well as a decrease due to attrition). For example, at Wave 3, interviews with 15,170 Wave 1 respondents were completed. At Wave 4, all Wave 1 respondents were again eligible, resulting in a sample of 15,701 participants. Add Health combines longitudinal survey data on respondents’ social, economic, psychological and physical well-being with contextual data on the family, neighborhood, community, school, friendships, peer groups, and romantic relationships.

Because the main focus of the present study was on sexually active young adults, analyses were conducted using a subsample of 4,311 women who participated in both Waves 3 and 4 of Add Health and who were involved in a current relationship at Wave 3. Women ranged in age from 18 to 28 (M = 22.26, SD = 1.79) at Wave 3 and from 25 to 34
(\(M = 29.02, SD = 1.73\)) at Wave 4. For a list of means and standard deviations for all study variables split by women who took OCs and women who did not take OCs, please refer to Table 1. The San Diego State University Institutional Review Board approved this study.

Measures

The original Add Health study included a variety of measures pertaining to 40 (Wave 1), 39 (Wave 2), 35 (Wave 3), and 29 (Wave 4) section, covering diverse content areas such as demographic information, personal history, physical and mental health-related behaviors, and friendship, family, as well as intimate relationships. For the current study, the main study measures were chosen from Wave 3 Section 11: Illnesses, Medications, and Physical Disabilities (OC use) and Wave 4 Section 17: Relationships in Detail (relationship satisfaction).

OC use. Participants’ OC use was assessed at Wave 3 with the item, “In the past 12 months, which of the following methods of birth control have you used? Mark all that apply.” Answers were recoded as 0 if participants did not mark “birth control pills (‘the pill’)” as one of their responses or 1 if participants marked “birth control pills (‘the pill’)” as one of their responses. Other response options included, “an implant (Norplant),” “birth control shot (Depo Provera),” “a diaphragm,” “emergency contraception or the morning-after pill,” “natural family planning (safe periods by temperature, cervical mucus test, or calendar),” and “female sterilization,” “a condom,” and “male sterilization (vasectomy).” However, because the main focus of the present study was on hormonal birth control methods and because only a minority of participants indicated they had used hormonal birth control methods other than the pill (0.6% of participants had used an implant and 12.3% had used a birth control shot), only pill use was assessed in the present study.

Relationship satisfaction. Participants in the original Add Health study reported relationship information for one current partner. Only participants who reported a current relationship were included in the current study. The specific wording in the Add Health questionnaire is as follows:

This section is administered for ONE current partner. If there are multiple current partners, priority is: marriage partner, cohabitation partner, pregnancy partner, dating partner. If two or more partners fall in the same type of relationship, the longer/longest relationship is selected. If two or more partners fall in the same type of relationship, and they are of the same duration, then the respondent is asked to pick the partner they care about the most.

Participants’ satisfaction with their relationships was assessed at Wave 4 using seven items (\(\alpha = .89\); relationship satisfaction was not assessed at Wave 3 of the Add Health study). Examples included, “We enjoy doing even ordinary, day-to-day things together” and “I am satisfied with the way we handle our problems and disagreements.” Items were rated on a 5-point Likert-type scale from -2 (strongly disagree) to +2 (strongly agree). Relationship satisfaction scores of the individual seven items were averaged to yield a mean satisfaction score.

Control variables. Age, race, household income, and relationship status, as assessed at Wave 4, were included as control variables in all analyses. Age was coded continuously, with participants ranging in age from 25 to 34 years. To assess race, the item “Indicate the race of the sample member/respondent from your own observation (not from what the respondent said)” from the
field interviewer's report was used. This item was
coded dichotomously (European American vs.
African American, American Indian, and Asian
groups combined).

To assess household income, the item “Thinking about your income and the income of everyone
who lives in your household and contributes to
the household budget, what was the total house-
hold income before taxes and deductions in
(2006/2007/2008)? Include all sources of income,
including nonlegal sources.” was used. This item
was coded continuously, with participants’ income
ranging from less than $5,000 to $150,000 or more.

Finally, to assess relationship status, the item
“Type of relationship with partner” was used.
This item was coded dichotomously (married vs.
nonmarried). A variety of other measures were
included in the Add Health study. However, based
on prior literature, these three control variables
were identified as the most important confounds.
For a full list of measures included in Add Health,
please refer to Harris et al. (2009).

Results
To test the hypothesis that women who used OCs
would experience higher levels of relationship satisfaction than women who did not use OCs,
we regressed relationship satisfaction on OC use,
while simultaneously accounting for all control variables (age, race, household income, and rela-
tionship status). Results supported the hypothesis.
The overall model was found to be significant,
\( R^2 = .049, F(5, 4048) = 41.65, p < .001 \). Women who
took OCs at Wave 3 were more satisfied with their
relationships at Wave 4 than women who did not
take OCs at Wave 3, \( \beta = .032, p = .041 \).

To test the alternative hypothesis that any type
of birth control might lead to the expected effects,
we compared women who used any type of birth
control assessed in Add Health’s Wave 3 includ-
ing the pill, an implant (Norplant), birth control
shot (Depo Provera), a diaphragm, emergency contraception or the morning after pill, natural
family planning (safe periods by temperature, cer-
vical mucus test, or calendar, female sterilization,
a condom, or male sterilization (vasectomy) to
women who had used none of these birth control
measures. In this additional set of analyses, we
regressed relationship satisfaction on birth con-
trol use, while simultaneously accounting for all
control variables (age, race, household income,
and relationship status). Overall, birth control
was not found to lead to the expected effects,
thereby supporting the hypothesis of the present
study. Although the overall model was found to be
significant, \( R^2 = .049, F(5, 4054) = 41.80, p < .001 \),
the association between any type of birth control
and relationship satisfaction at Wave 4 was not
significant, \( \beta = -.027, p = .079 \).

Discussion
This study attempted to assess positive overflow
effects from OC use, a drug that has long been
used for its noncontraceptive benefits (Dawood,
2006; Jones, 2011). Our findings suggest that OC
use was positively associated with increased relation-
ship satisfaction. If replicated and extended
by additional research, our findings may suggest
that this relationship is possibly due to the elimi-
nation of fluctuating hormones associated with
the menstrual cycle. The fact that the model was
not significant when pooling all methods of birth
control to predict relationship satisfaction may
support increased confidence in the interpretation
that OCs, specifically, may stabilize women’s mood,
which in turn may have beneficial consequences
in other areas of women’s lives. Other possible
reasons that might explain or contribute to this
association include other effects from OCs such
as decreased extra-pair sexual desire and activity,
more frequent intercourse with their partners
(Klapilová et al., 2014), and longer relationships
despite experiencing decreasing rates of sexual
satisfaction with and attraction to their partners
(Roberts et al., 2011; Roberts et al., 2014), starting
or stopping OCs during a relationship because it
has been shown to affect relationship outcome
(Roberts et al., 2011), rates of relationship satisfac-
tion before beginning birth control and how they
change over time, the impact of their partner’s
mental health, and the ease of using OCs in other
forms of birth control. As such, these find-
ings were merely correlational and should not be
interpreted as causal.

A number of limitations tempered the con-
clusions that can be drawn from this research.
Although the overall model was significant, it had
a relatively small effect size (\( R^2 = .049 \)). However,
it may be explained by our inability to parse out
the effects from monophasic vs. triphasic OCs. It is
known that monophasic OCs exert a much stron-
ger effect on mood than triphasic OCs (Cheslack-
Postava, Keyes, Lowe, & Koenen, 2015), thus, the
combination of the two OCs may be interfering
with a potentially larger effect. As such, results as
they stand should be interpreted with caution given
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Several other limitations were also tied to the design of the original Add Health study. For example, women’s initial levels of relationship satisfaction were unable to be accounted for because satisfaction was not measured at Wave 3. Furthermore, it was impossible to assess whether women were in the same or different relationships at Waves 3 and 4. This can be problematic, for instance, if an OC user was in a poorly functioning relationship at Wave 3, but was in a new and much better functioning relationship at Wave 4. In this case, the OC user’s increased relationship satisfaction was more likely due to the change in relationships rather than due to OC use. Conversely, if an OC user was in the same relationship for both Waves 3 and 4 and reported higher relationship satisfaction at Wave 4, this increase in satisfaction would further support our hypothesis that OC use positively affects relationship satisfaction. In addition, the use of self-report measurement and the lack of established measures (i.e., relationship satisfaction) might limit the interpretation of the current results. Finally, the time gap between the two points of data collection (6 to 7 years) may cloud the conclusions that can be reached because there are no data as to whether women continued the use of OCs during this gap.

Nevertheless, the current study provided support for the interpretation that there may be an association between the use of OCs and women’s mood and relationship factors. Thus, these results call for replication and extension of the present findings. Understanding the mechanisms that underlie the OC-relationship satisfaction association would be highly beneficial in that it would allow for identification of individuals for whom the use of OCs for other noncontraceptive purposes may be effective. If the present findings can be extended in experimental settings, policymakers and clinicians could consider particular women or groups of women whose mental health and well-being may positively benefit from OC use in addition to preventing unwanted pregnancy.

Because our analyses examining the association between overall birth control use and relationship satisfaction did not turn out to be significant, the effect of birth control on relationship satisfaction and mood may be limited strictly to the hormones contained within OCs as opposed to a birth control effect in general. Thus, future studies could aim to assess the exact levels of certain hormones contained in OCs to tease apart the effects of different types and levels of hormones on women’s relationship satisfaction and for which women these benefits may occur. In addition, collecting data not only from individuals taking OCs but also from their partners may shed light on the dyadic effects that OCs may have on satisfaction. Potential mediators or moderators such as stress, children, socioeconomic status, and mood swings should be examined in the association between OCs and relationship satisfaction.

Bearing the limitations discussed, results of the present study may indicate that OCs could have positive overflow effects on other areas of women’s lives associated with mood. If findings can be replicated, the current research may lend support for the interpretations that OCs may provide other noncontraceptive benefits such as having a positive effect on mood, extending into women’s romantic relationship satisfaction. It is important to keep in mind that additional research is required before further conclusions can be drawn. Therefore, this is a call for future experimental studies to determine the exact mechanisms that may help to understand and explain whether the results seen are due to mood stabilization or whether they are due to other variables such as open communication or relationship satisfaction. Because previous studies have found support for an effect of OCs on mood (Joffe et al., 2007; Pearlstein et al., 2005; Yonkers et al., 2005) and the present study provided evidence that there may also be a residual effect of OCs on relationship satisfaction, it is likely that mood may be the mechanism at play. However, without future research clearly examining this possibility, interpretation remains speculative.

References


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