Menstrual Symptoms are More Severe than Premenstrual Symptoms: Age, Height, and Anxiety History are Associated with Women's Symptom Patterns

Dani Adduono, HBSc

Kirsten Oinonen, PhD. C.Psych, Megan Richards, PhD. L.Psych*

Department of Psychology, Lakehead University

September 22, 2018

Northern Health Research Conference

* Dr. Richards is now at the department of Psychology, University of New Brunswick

Disclosure of Affiliations, Financial Support, and Mitigating Bias

Affiliations:

- We have no relationships with for-profit or not-for-profit organizations.

Financial Support:

- This session/program has not received financial or in-kind support.

Background Review

Premenstrual Symptoms

Research and social discourse related to women's menstrual cycles largely focus on the negative symptomatology of the premenstrual phase.

- Premenstrual Dysphoric Disorder – DSM-5
  - » "Expression of mood lability, irritability, dysphoria, and anxiety symptoms that occur repeatedly during the premenstrual phase of the cycle and remit around the onset of menses or shortly thereafter" (American Psychological Association, 2013)
- Large focus on PMS symptoms (Direkvand-Moghadam, Sayehmiri, Delpisheh, & Kaikhavandi, 2014)

Background Review
Menstrual Symptoms

However, there is some evidence suggesting that symptom severity may actually be greater during the menstrual phase (Beumont, Abraham, Argall, & Simson, 1978; Oinonen & Mazmanian, 2001).

- Dysmenorrhea
  - » Painful menses (i.e., cramps; occurs at the onset of menstruation)
  - » Linked to various affective symptoms (Agarwal & Agarwal, 2010)
- Pure Menstrual Migraines
  - » Migraines that occur at the onset tend to be longer and more severe (Mannix, 2008)
  - » Possibly triggered by the sudden drastic drop in estrogen in the late luteal phase (Maasumi, Tepper, & Kriegler, 2016; MacGregor, Frith, Ellis, Aspinall, & Hackshaw, 2006; Mannix, 2008)
- Emotional Symptoms
  - » Low levels of progesterone and estradiol linked to higher rates of suicidality (Baca-Garcia, 2010)
- Minimal focus on menstrual symptoms

Background Review

Oral Contraceptives (OCs)

- Emotional symptoms: Mixed findings
  - » Increases psychological symptoms (Lewis & Hoghughi, 2003; Robinson, Dowell, Pedulla, & McCauley, 2003)
  - » Reduces mood fluctuations (Goldzieher, Moses, Averkin, Scheel, & Taber, 1971; Oinonen & Mazmanian, 2002)
- Physical symptoms: effective
  - » Reduction in menstrual pain and breast tenderness (Bancroft & Rennie, 1993)
  - » Relieves dysmenorrhea (Davis, Westhoff, O'Connell, & Gallagher, 2005)

Research Objectives & Hypotheses

- Research Objectives:
  1. Examine any differences in symptomology between the premenstrual phase and menstrual phase
  2. Explore whether there are any specific reproductive, emotional, or demographic differences between women who show more menstrual or more premenstrual symptoms
  3. Examine whether OC use is associated with lower menstrual-cycle related symptoms

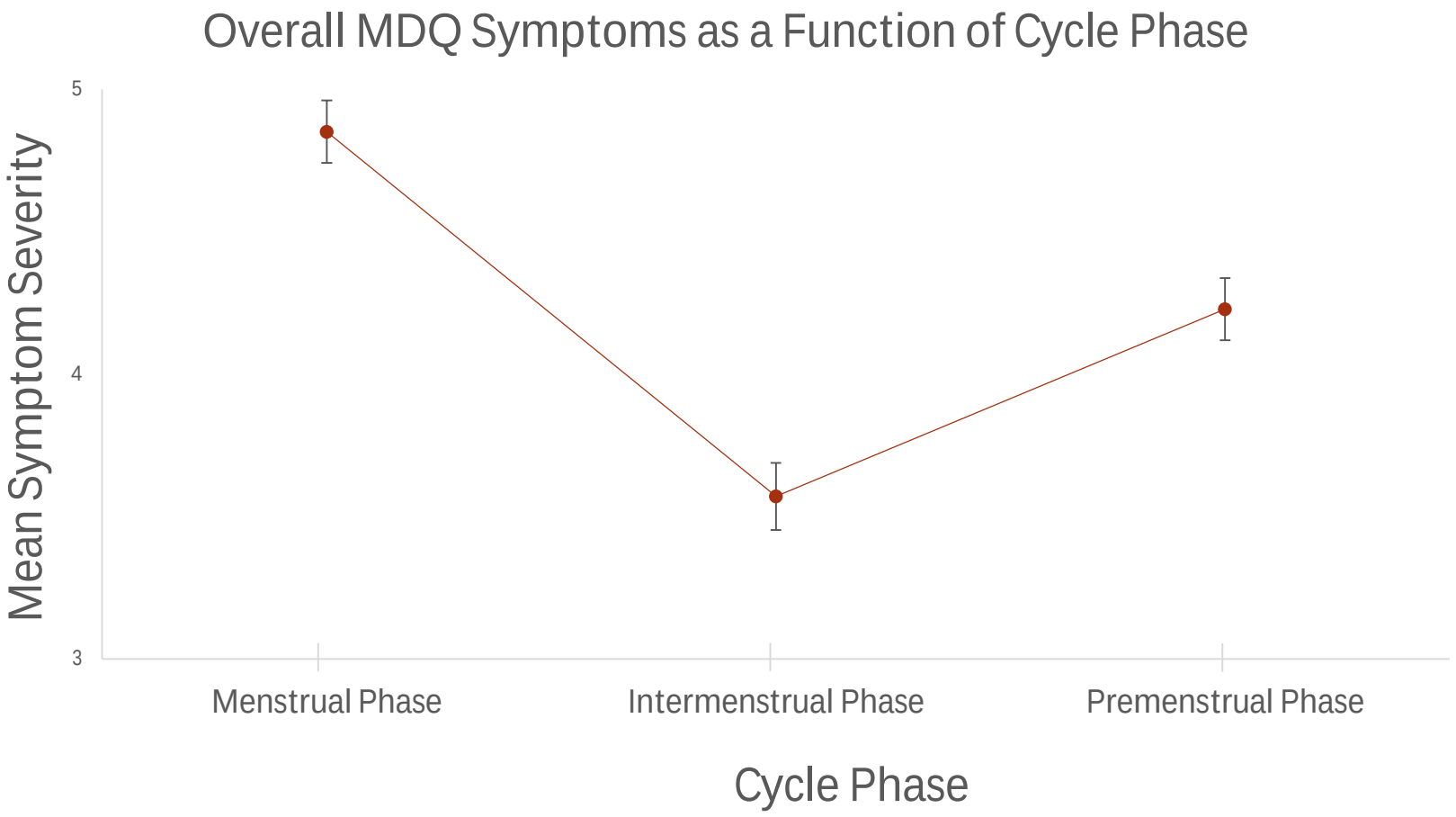
- Hypotheses:
  1. Women report more severe symptoms during the menstrual than the premenstrual phase
  2. Oral contraceptive use mitigates cycle-related symptomatology

Method & Procedure

- Participants:
  - 309 women
  - Age 18 – 41 (M = 20.39, SD = 3.98)
  - 149 (48.2%) OC users, 160 (51.8%) non-users
- Measure: Demographic and Background Information
  - Age, height, emotional history, reproductive history
- Measure: The Menstrual Distress Questionnaire (MDQ: Moos, 1968)
  - Assesses symptomatology related to the menstrual cycle
  - 47 items divided into 8 subscales: pain, water retention, autonomic reactions, negative affect, impaired concentration, behaviour change, arousal, and control
  - Omitted the arousal subscale since we are focusing on negative symptomatology
  - Most recent period (menstrual phase), four days prior (premenstrual phase), and remainder of cycle (intermenstrual phase)
  - Used to categorize women into the menstrual and premenstrual pattern groups

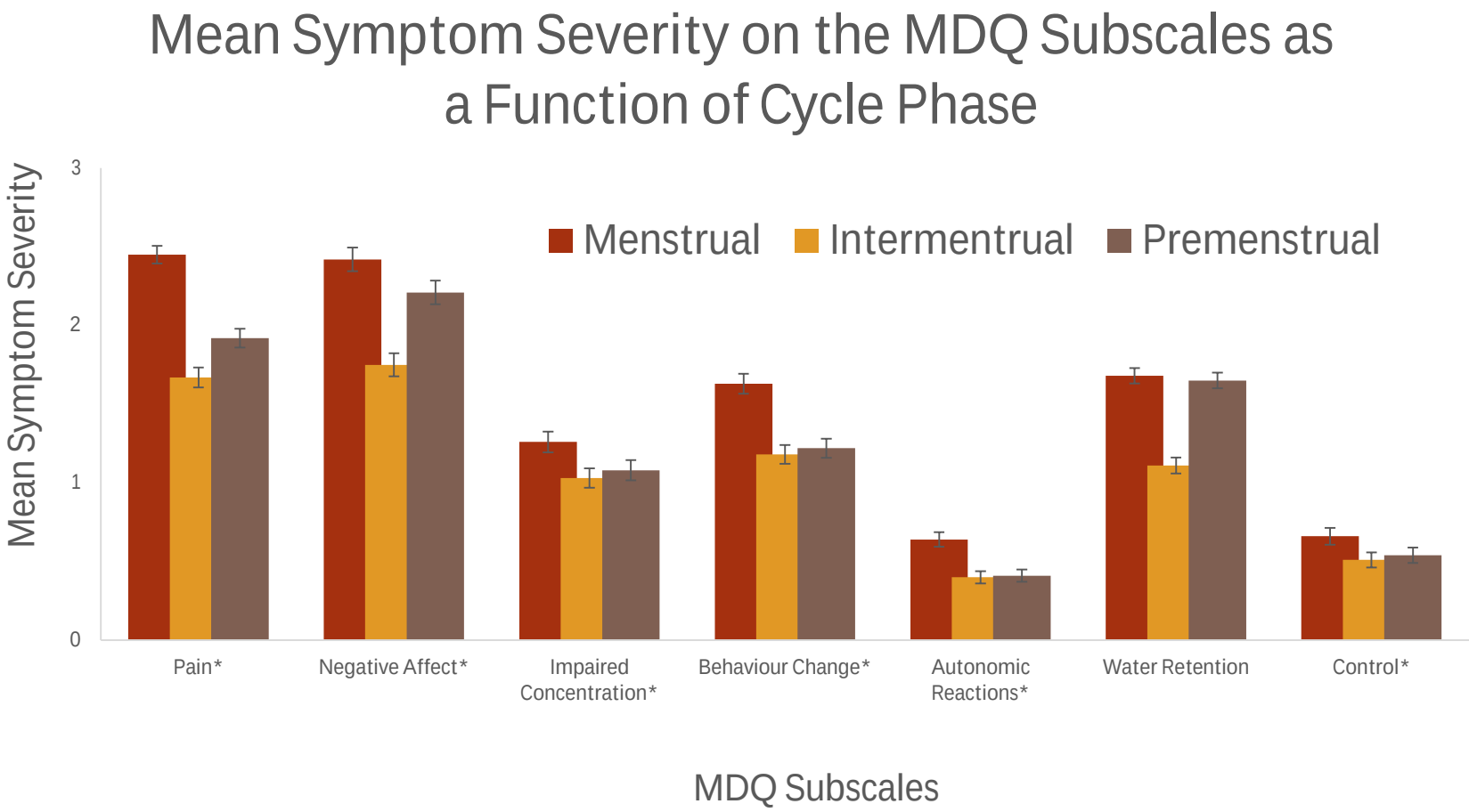
Results
Hypothesis #1

- The women reported overall greater symptoms in the menstrual vs. the premenstrual phase, $F(2, 206) = 142.74$, $p < .001$



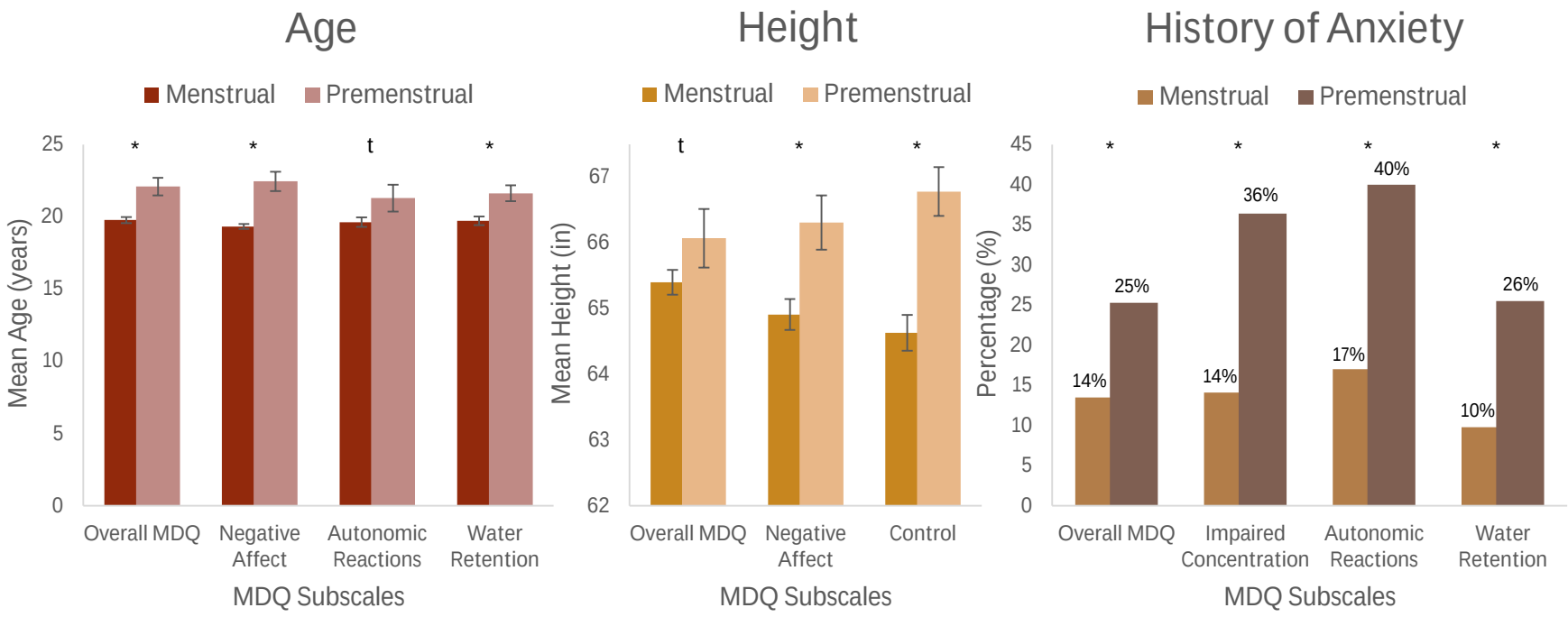
Results
Hypothesis #1

- Women reported greater symptoms in the menstrual phase vs. the premenstrual phase for all subscales ($p < .001$) except water retention ($p = 1.00$)



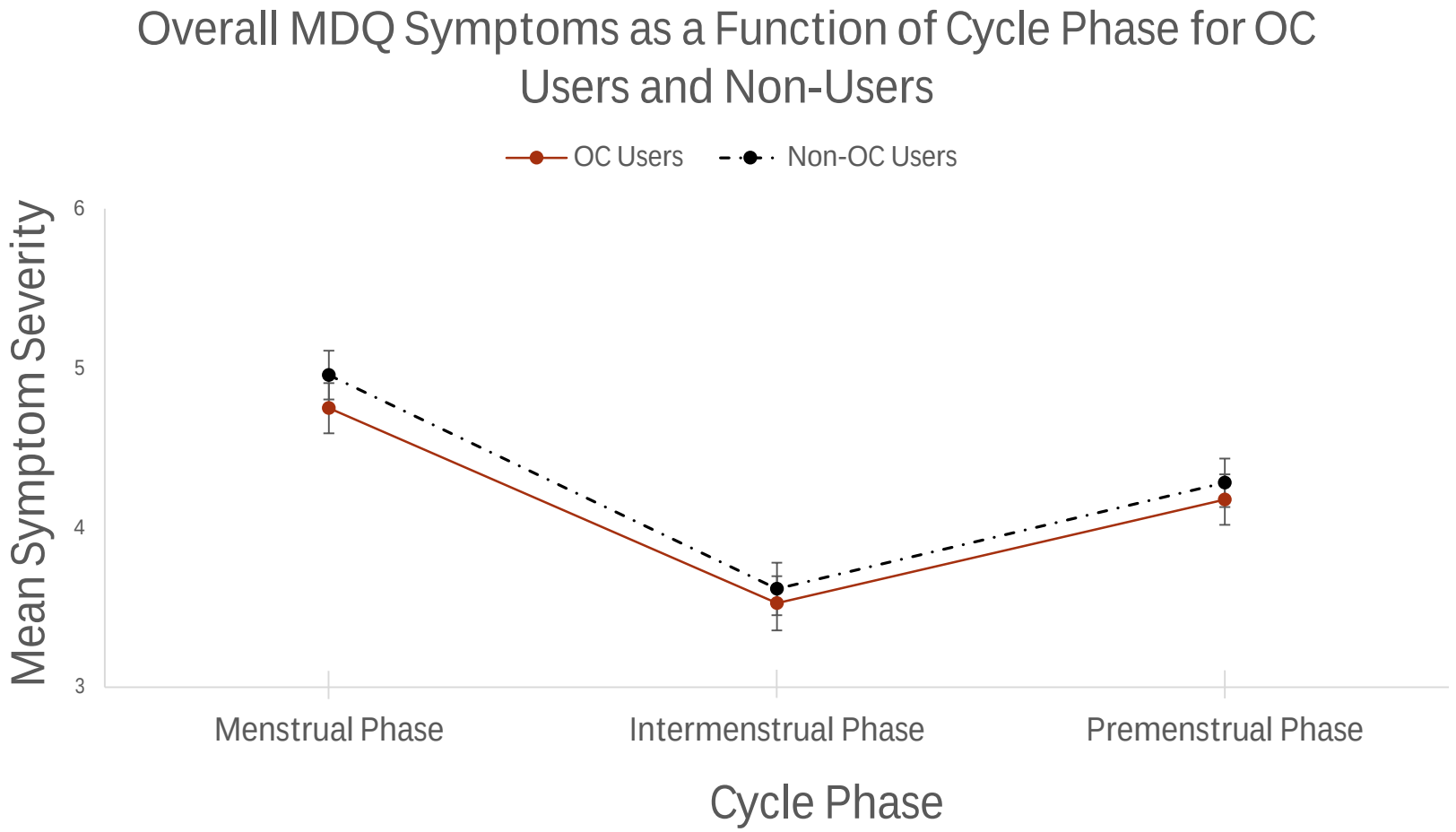
Results
Demographic Variables

- 68% of women showed a menstrual symptom pattern for the overall MDQ (i.e., more severe menstrual vs. premenstrual symptoms)
- When the menstrual pattern and premenstrual pattern groups were compared, the women who showed the menstrual symptom pattern tended to be:
  - » younger (overall MDQ; $F(2, 306) = 10.05$, $p < .01$)
  - » shorter (trend for overall MDQ; $F(2, 312) = 2.44$, $p = .09$)
  - » less likely to have a history of anxiety (13.5% vs. 25.3%); $\chi^2(1, N = 297) = 5.685$, $p < .05$)



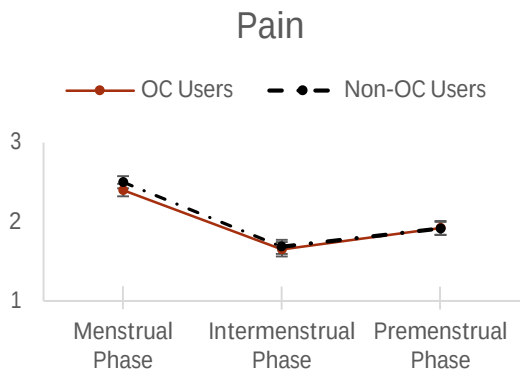
Results
Hypothesis #2

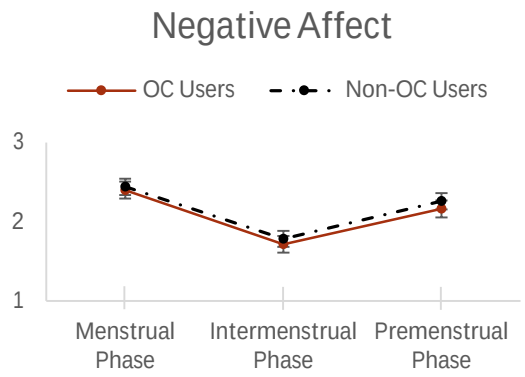
- No overall effect of OCs on overall MDQ symptoms; $F(1, 307) = 0.424$, $p > .05$

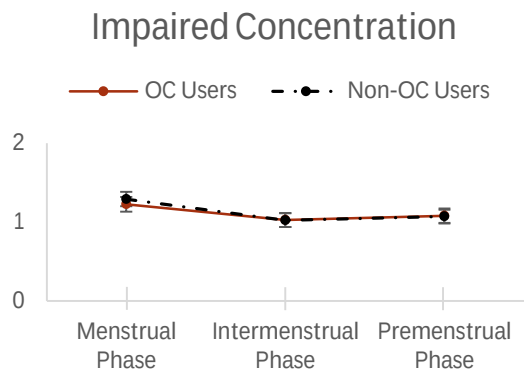


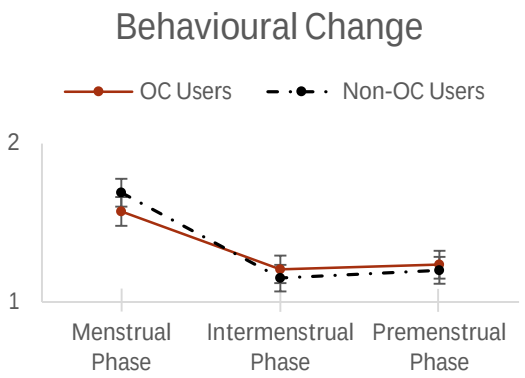
Results
Hypothesis #2

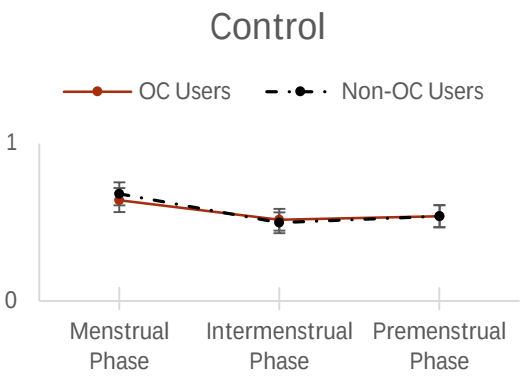
- No overall effect of OCs on any of the MDQ subscales across cycle ($p > .05$)

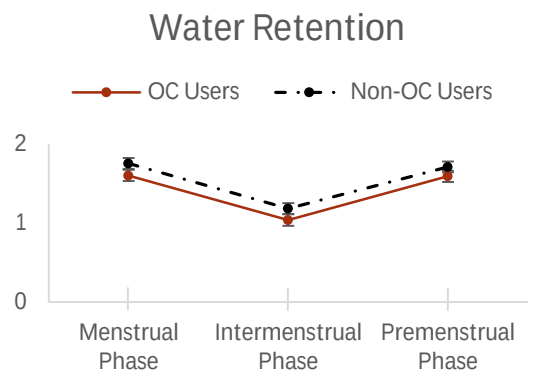






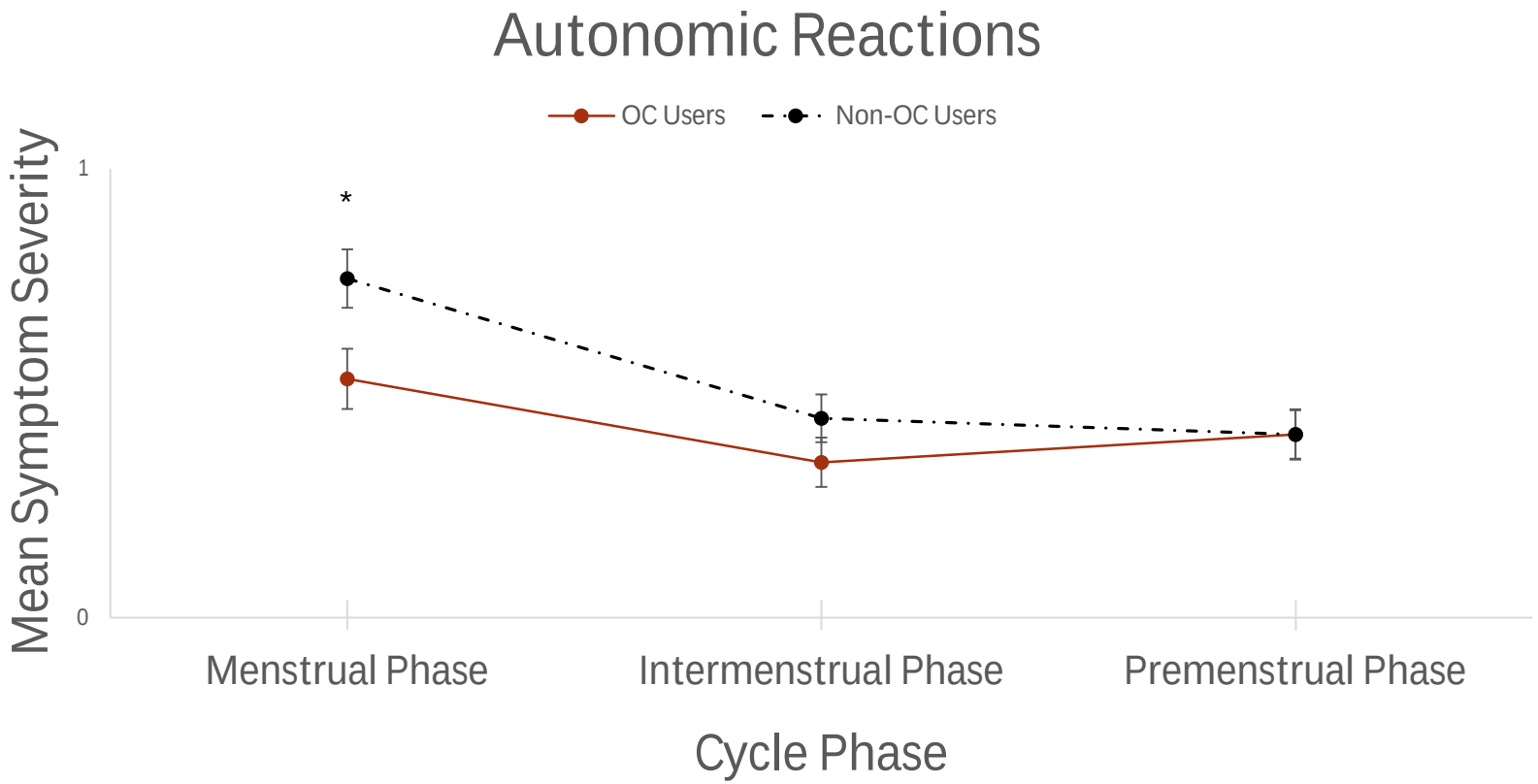






Results
Hypothesis #2

- No overall effect of OCs on any of the MDQ subscales across cycle ($p > .05$)
  - » However, a group x phase effect indicated that OC use was associated with lower autonomic reaction symptoms during the menstrual phase; $F(2, 614) = 5.649$, $p = .004$



Conclusions & Implications

- Hypothesis #1: supported - Most women show increased severity of both physical and emotional symptoms during the menstrual phase relative to the premenstrual phase. The women who endorsed a menstrual phase pattern tended to be younger, shorter, and less likely to have a history of anxiety
  - » Why is there so little focus on menstrual compared to premenstrual symptom severity?
    - » Concern of pathologizing women? PMDD?
    - » Taboos surrounding menstruation?
    - » Physical explanations = justifiable ignorance?
    - » PMS does not affect all women?
  - » Why are age, height, and anxiety history related to symptoms?
    - » Age and anxiety history may reflect a sociocultural influence? (Chrisler & Caplan, 2002; Cosgrove & Riddle, 2003; Johnson, 1987)
    - » Height = biological influence?

Conclusions & Implications

- Hypothesis #2: unsupported - Overall, oral contraceptive use was not associated with less severe symptoms across the cycle
  - » Oral contraceptive use was associated with less severe autonomic symptoms during the menstrual phase
    - » Similar to hormone replacement therapy?
- Limitations: retrospective cross-sectional study
- Strengths: first study to examine predictors of premenstrual vs. menstrual pattern types

The findings suggest a need to continue to monitor and conduct research on women's menstrual phase symptoms

Menstrual Symptoms are More Severe than Premenstrual Symptoms: Age, Height, and Anxiety History are Associated with Women's Symptom Patterns

Dani Adduono, HBSc

Kirsten Oinonen, PhD. C.Psych, Megan Richards, PhD. L.Psych*

Department of Psychology, Lakehead University

September 22, 2018

Northern Health Research Conference

* Dr. Richards is now at the department of Psychology, University of New Brunswick

Abstract

Research and social discourse related to women's menstrual cycles largely focus on the negative symptomatology of the premenstrual phase. However, there is evidence suggesting that symptom severity may actually be greater during the menstrual phase. Moreover, oral contraceptives (OCs) have been shown to reduce the symptoms present during the menstrual cycle. This project tested two hypotheses: (1) Women report more severe symptoms during the menstrual than the premenstrual phase, and (2) OC use mitigates cycle-related symptoms. A total of 309 women (149 OC users, 160 non-users) provided demographic information and completed the Menstrual Distress Questionnaire (MDQ) for their most recent menstrual cycle. There was support for hypothesis one in that an overall menstrual phase effect, indicating greater symptom severity during the menstrual than the premenstrual phase, was found. More than two thirds of the sample demonstrated this pattern. With the exception of the water retention scale, the same phase effect was found for the remaining six negative symptom subscales on the MDQ. Interestingly, women who showed this menstrual symptom pattern tended to be younger, shorter, and less likely to have a history of anxiety. No support was found for hypothesis two, as OC users and nonusers did not differ between phases in their symptom profiles; and no overall OC group by phase effect for symptoms was found. OC use, however, was associated with lower autonomic reaction symptoms during the menstrual phase. Results suggest that women experience the highest levels of symptom severity during the menstrual phase, and that OC use may not provide substantial symptom relief. The findings highlight the importance of ensuring that a societal bias focussing on premenstrual symptomatology does not overshadow research on menstrual symptomatology. Additionally, identifying predictors of women who experience menstrual versus premenstrual cyclical patterns may improve understanding of hormonal mechanisms and possible treatment options.

References

Agarwal, K., & Agarwal, A. (2010). A study of dysmenorrhea during menstruation in adolescent girls. Indian Journal of Community Medicine, 35(1), 159. doi:10.4103/0970-0218.62586

American Psychiatric Association [APA]. (2013). Diagnostic and statistical manual of mental disorders (5th ed.). Washington, DC: Author.

Baca-Garcia, E., Diaz-Sastre, C., Ceverino, A., Perez-Rodriguez, M. M., Navarro-Jimenez, R., Lopez-Castroman, J., ... Oquendo, M. A. (2010). Suicide attempts among women during low estradiol/low progesterone states. Journal of Psychiatric Research, 44(4), 209-214. doi:10.1016/j.jpsychires.2009.08.004

Bancroft, J., & Rennie, D. (1993). The impact of oral contraceptives on the experience of perimenstrual mood, clumsiness, food craving and other symptoms. Journal of Psychosomatic Research, 37(2), 195-202. doi:10.1016/0022-3999(93)90086-u

Beumont, P. J., Abraham, S. F., Argall, W. J., & Simson, K. G. (1978). A prospective study of premenstrual tension symptoms in healthy young australians. Australian & New Zealand Journal of Psychiatry, 12(4), 241-244. doi:10.3109/00048677809159087

Chrisler, J., & Caplan, P. (2002). The strange case of dr. jekyll and ms. hyde: How PMS became a cultural phenomenon and a psychiatric disorder. Annual Review of Sex Research, 13, 274-306. doi:10.1080/10532528.2002.10559807

Cosgrove, L., & Riddle, B. (2003). Constructions of femininity and experiences of menstrual distress. Women & Health, 38(3), 37-58. doi:10.1300/j013v38n03_04

Davis, A. R., Westhoff, C., O'Connell, K., & Gallagher, N. (2005). Oral contraceptives for dysmenorrhea in adolescent girls. Obstetrics & Gynecology, 106(1), 97-104. doi:10.1097/01.aog.0000165826.03915.65

Direkvand-Moghadam, A., Sayehmiri, K., Delpisheh, A., & Kaikhavandi, S. (2014). Epidemiology of premenstrual syndrome (PMS) - A systematic review and meta-analysis study. Journal of Clinical and Diagnostic Research, 8(2), 106-109. doi:10.7860/jcdr/2014/8024.4021

Goldzieher, J. W., Moses, L. E., Averkin, E., Scheel, C., & Taber, B. Z. (1971). Nervousness and depression attributed to oral contraceptives: A double-blind, placebo-controlled study. American Journal of Obstetrics and Gynecology, 111(8), 1013-1020. doi:10.1016/0002-9378(71)90096-2

Halbreich, U., Borenstein, J., Pearlstein, T., & Kahn, L. S. (2003). The prevalence, impairment, impact, and burden of premenstrual dysphoric disorder (PMS/PMDD). Psychoneuroendocrinology, 28, 1-23. doi:10.1016/s0306-4530(03)00098-2

Hyde, J. S., Byers, E. S., & DeLamater, J. D. (2015). Understanding human sexuality. Whitby, Ontario: McGraw-Hill Ryerson.

Johnson, T. M. (1987). Premenstrual syndrome as a western culture-specific disorder. Culture, Medicine and Psychiatry, 11(3), 337-356. doi:10.1007/bf00048518

Ju, H., Jones, M., & Mishra, G. (2013). The prevalence and risk factors of dysmenorrhea. Epidemiologic Reviews, 36(1), 104-113. doi:10.1093/epirev/mxt009

Klein, J. R., Litt, I. F. (1981). Epidemiology of adolescent dysmenorrhea. Pediatrics, 68(5), 661-664.

Lewis, A., & Hoghughi, M. (1969). An evaluation of depression as a side effect of oral contraceptives. The British Journal of Psychiatry, 115(523), 697-701. doi:10.1192/bjp.115.523.697

Maasumi, K., Tepper, S. J., & Kriegler, J. S. (2016). Menstrual migraine and treatment options: Review. Headache: The Journal of Head and Face Pain, 57(2), 194-208. doi:10.1111/head.12978

MacGregor, E. A., Frith, A., Ellis, J., Aspinall, L., & Hackshaw, A. (2006). Incidence of migraine relative to menstrual cycle phases of rising and falling estrogen. Neurology, 67(12), 2154-2158. doi:10.1212/01.wnl.0000233888.18228.19

Mannix, L. K. (2008). Menstrual-related pain conditions: Dysmenorrhea and migraine. Journal of Women's Health, 17(5), 879-891. doi:10.1089/jwh.2007.0440

Oinonen, K. A., & Mazmanian, D. (2001). Effects of oral contraceptives on daily self-ratings of positive and negative affect. Journal of Psychosomatic Research, 51(5), 647-658. doi:10.1016/s0022-3999(01)00240-9

Oinonen, K. A., & Mazmanian, D. (2002). To what extent do oral contraceptives influence mood and affect? Journal of Affective Disorders, 70(3), 229-240. doi:10.1016/s0165-0327(01)00356-1

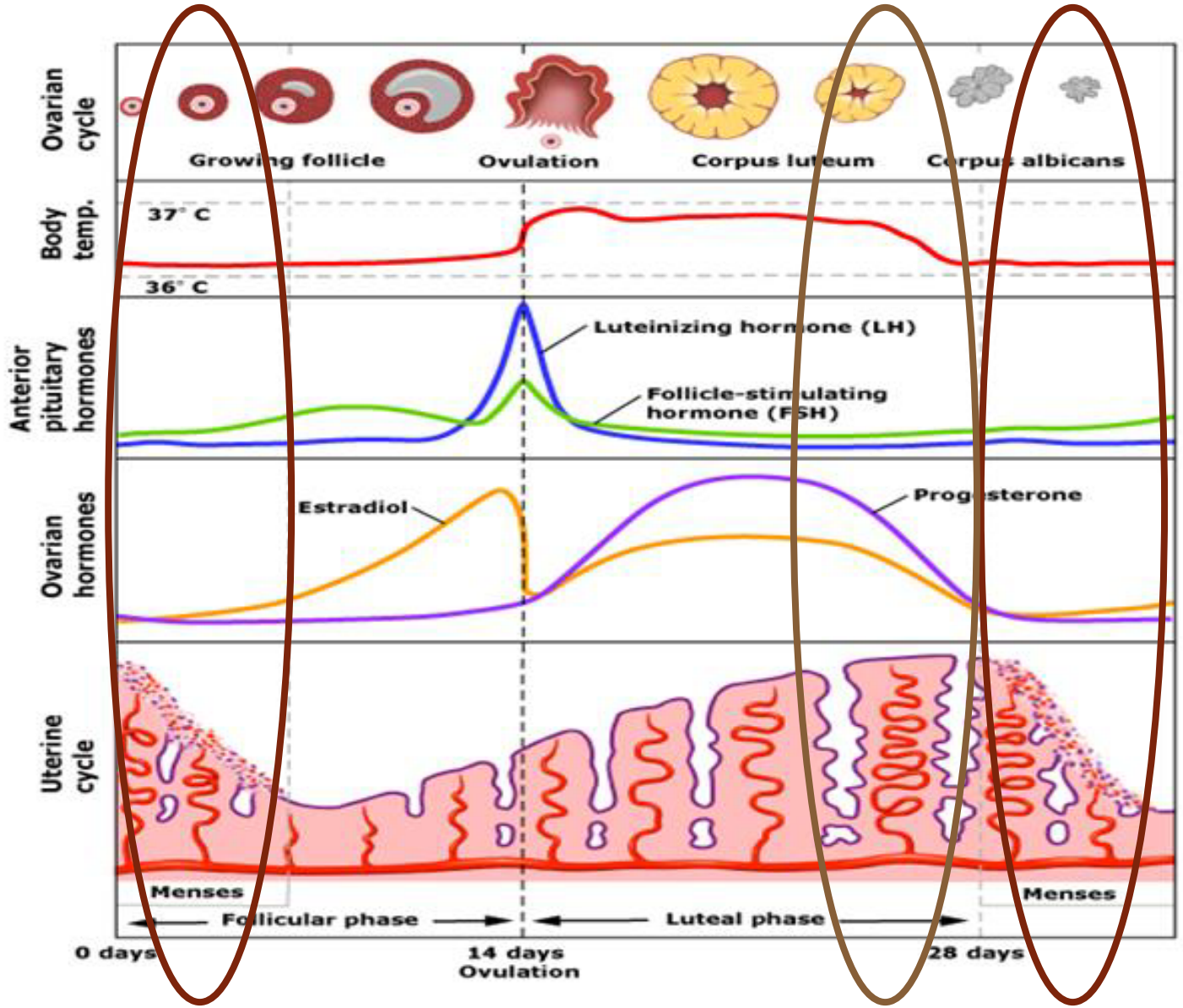
Robinson, S. A., Dowell, M., Pedulla, D., & McCauley, L. (2004). Do the emotional side-effects of hormonal contraceptives come from pharmacologic or psychological mechanisms? Medical Hypotheses, 63(2), 268-273. doi:10.1016/j.mehy.2004.02.013

Extra Slides

1. Menstrual Cycle
2. MDQ Scale
    a. Pain Subscale
    b. Negative Affect Subscale
    c. Impaired Concentration Subscale
    d. Behavioural Change Subscale
    e. Autonomic Reaction Subscale
    f. Water Retention Subscale
    g. Control Subscale
    h. Arousal Subscale
3. Pattern Frequency Information

Background Review

The Menstrual Cycle



Menstrual Distress Questionnaire

- The following is a list of common symptoms and feelings associated with menstruation. For each item, chose the descriptive category that best describes your experience (i.e., no experience of the symptom, present mind, present moderate, present strong, present severe) during each of the three time periods (i.e., most recent menstrual period, four days prior to menstrual period, remainder of cycle) ...
    a. Pain: muscle stiffness, headache, cramps, backache, fatigue, & general aches and pains
    b. Negative Affect: loneliness, anxiety, mood swings, crying, irritability, tension, feeling sad/blue, & restlessness
    c. Impaired Concentration: insomnia, forgetfulness, confusion, poor judgement, difficulty concentrating, distractible, minor accidents, & poor motor coordination
    d. Behavioural Change: poor school or work performance, take naps and/or stay in bed, stay at home, avoid social activities, & decreased efficiency
    e. Autonomic Reactions: dizziness/faintness, cold sweats, nausea/vomiting, & hot flashes
    f. Water Retention: weight gain, skin blemish or disorder, painful or tender breasts, & swelling
    g. Control: feelings of suffocation, chest pains, ringing in the ears, heart pounding, numbness/tingling, blind spots/fuzzy vision
    h. Arousal: affectionate, orderliness, excitement, feelings of well-being, bursts of energy/activity

Results

- 223 (68%) women showed a menstrual symptom pattern for the overall scale
- 75 (22.9%) women showed a premenstrual pattern for the overall scale