The Theory of Planned Behaviour, Menstruation, and Physical Activity: Using a diary approach to predict Intention and Physical Activity across the Menstrual Cycle

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**Introduction**

- The stigma of menstruation may have a negative impact on physical and emotional well-being during sport based on qualitative research (Held, 2013; Moreno & Vallianatos, 2005)
- Research has focused on how physical performance (e.g., strength) differs across the different phases of the menstrual cycle (e.g., Janse de Jonge, 2003)
- Limited research has examined factors relating to physical activity (PA) participation during the different phases of the menstrual cycle
- TPB and its constructs (attitudes, subjective norms [SN], perceived behavioral control [PBC], intention; Ajzen, 2001) is useful in predicting PA (Norman & Conner, 2005)

**Purpose**

To explore the predictability of the TPB components (e.g., attitudes, subjective norms, perceived behavioral control [PBC], intention) for self-reported PA and intention during the menstrual cycle

**Methods**

**Participants**

Of the 22 females who participated ($M_{age}=24.6$ years, $SD_{age}=4.0$), 4 were OC users

The average length of the menstrual cycle was 26.6 days ($SD=3.3$); with a mean length of menstrual phase of 4.6 days ($SD=1.6$)

- **Attitudes**

$\beta=0.33, p<0.001$

- **SN**

$\beta=0.22, p<0.001$

- **PBC**

$\beta=0.46, p<0.001$

- **Intention**

$ICC=0.13; Pseudo R^2= 30\%$

- **Menstrual Phase**

$ICC=0.15; Pseudo R^2= 17\%$

**Procedures:**

Participants recruited via social media posting and class advertising

Met with researcher for consent, background questionnaire and training for temperature

Took oral temperature and completed a diary daily ($M=36.6$ days) via text message

**Measures:**

- Background questionnaire: age, OC use, menstruation information
- Each daily text answered 8 questions:
  - **Basal body temperature tracking (BBT):** What is your temperature? (temp 1) (temp 2)
  - **Intention:** Do you intend to exercise today? No (1) to Yes (5)
  - **PA:** How many minutes of exercise did you complete yesterday?
  - **Mood:** What is your general mood today? Bad (1) to Good (5)
  - **Attitude:** For me to exercise today, I would consider to be an unpleasant/pleasant experience? Unpleasant (1) to Pleasant (5)
  - **SN:** People important to me think I should/should not exercise today. Should not (1) to Should (5)
  - **PBC:** For me to exercise today, I perceive to be difficult/easy. Difficult (1) to Easy (5)
  - **Comments:** (illness; soreness; general/alcohol dehydration; menstruation)

**Participants**

- Multilevel modeling was used to predict daily intention and PA
- Predictors included: TPB constructs (Level 1), Menstrual phase (Level 1), Oral contraceptive (OC) use (Level 2), phase by OC Use interactions

**Discussion**

- This expanded on previous research (Croteau & Wilson, 2016) looking at correlates of PA during the menstrual cycle
- Supports the utility of the TPB model in predicting intention and behavior (Norman & Conner, 2005)
- In contrast to the theory, PBC did not add to the prediction of PA behavior (Armitage & Conner, 2001)
- Limited research has used a diary approach with the TPB constructs
- Perceptions asked in morning, which may have been before some of the challenges for the day were perceived
- Another finding inconsistent with the theory is the positive relationship between SN and PA that approached significance ($p=0.057$)
- Perhaps looking at a day to day variation in social pressures have a stronger effect on behavior
- Although menstrual phase did not predict PA, it was associated with intention
- Supports previous findings where PA did not significantly vary across the menstrual cycle (Chrisler & McCool, 1991)
- Participants reported HIGHER intentions on the days in the menstrual cycle than the proliferatory phase
- As PA has been associated with reduced menstrual symptoms (Daley, 2008), one might speculate individuals may have been motivated to relieve such symptoms

**Analysis**

- **Intention**

$b=0.95, p=0.017$

- **Menstrual Phase**

$b=2.39, p=0.057$

**Strengths**

- The ease to which the temperature reading and text diary facilitated completion (2 participants ended early)
- Daily diary approach allowed day to day fluctuations to be examined

**Limitations**

- Lack of objective measures for PA (Freedson & Miller, 2000) and menstrual cycle (urinary, blood samples; Prior et al., 1990; Miller & Soules, 1996)
- Limited to mainly college-aged females

**Future Directions**

- Future research should consider objective measures of PA and menstrual cycle
- Replicate with a larger, less active sample
- Consider type of physical activity with varying intensity levels and/or level of initial commitment (sport vs. exercise)

**Conclusions**

- The menstrual and secretory phases and OC use did not seem to predict PA participation
- TPB model was beneficial in predicting daily fluctuations in intention and PA behavior