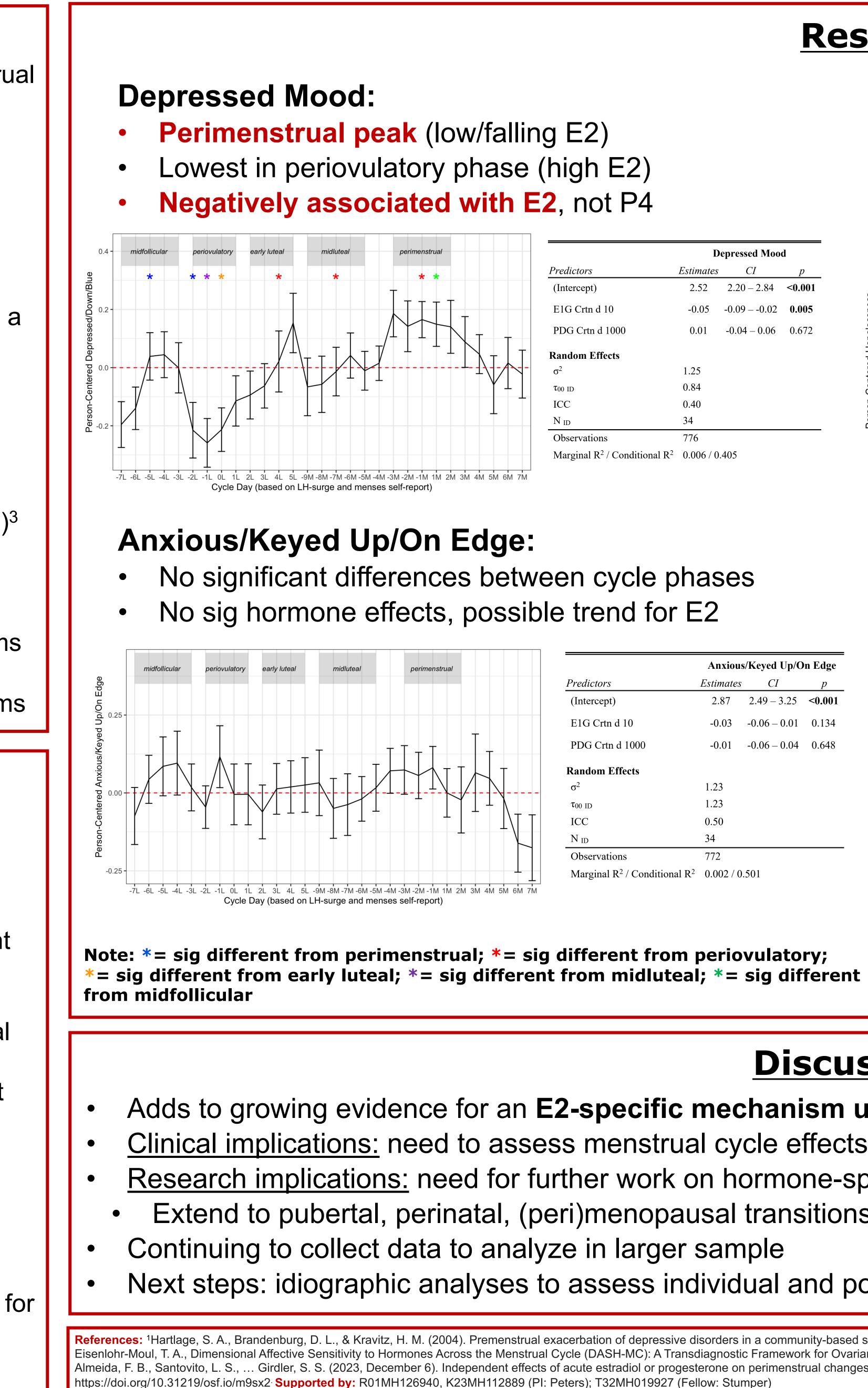




Introduction
<ul> <li>~60% of depressed females experience premenstruit</li> </ul>
exacerbation of symptoms (PME) <sup>1</sup>
The Menstrual Cycle
PERI-MERSTRUAL     PERI-MENSTRUAL       FOLLICULAR PHASE     LUTEAL PHASE
PROGE STERONE ( <sup>24)</sup>
ESTF-ADIOL (E2)
PREMENSTRUAL WEEK MENSES
Perimenstrual estrogen (E2) withdrawal may be
depression-specific mechanism <sup>2</sup>
<ul> <li>Later onset and offset for increased depression</li> </ul>
symptoms in PMDD, PME of suicide
<ul> <li>In contrast to cardinal PMDD symptom of irritability,</li> </ul>
likely driven by P4 surges
<ul> <li>PME of depression prevented by</li> </ul>
luteal/perimenstrual E2 supplementation (not P4)
Current Study:
<ul> <li>Examine PME of depressive disorders, with novel</li> </ul>
dried urine method for daily hormones
<ul> <li>H1: Perimenstrual increase of depression symptom</li> </ul>
<ul> <li>in contrast to periovulatory (highest E2)</li> </ul>
• H2: E2 decrease $\rightarrow$ increased depression symptom
Mothodc
<u>Methods</u>
Sample:
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# Sensitivity to Estrogen Withdrawal as a Mechanism of **Premenstrual Exacerbation of Mood & Anxiety Symptoms** Allison Stumper, PhD<sup>1,2</sup>, Leslie A. D. Brick PhD<sup>1</sup>, Yunshu Yu, BS<sup>1</sup>, Megan A. Fydenkevez, BA<sup>1</sup>, Tory A. Eisenlohr-Moul, PhD<sup>3</sup>, Jessica R. Peters, PhD<sup>1</sup> <sup>1</sup>Alpert Medical School of Brown University, <sup>2</sup>Rhode Island Hospital, <sup>3</sup>University of Illinois at Chicago



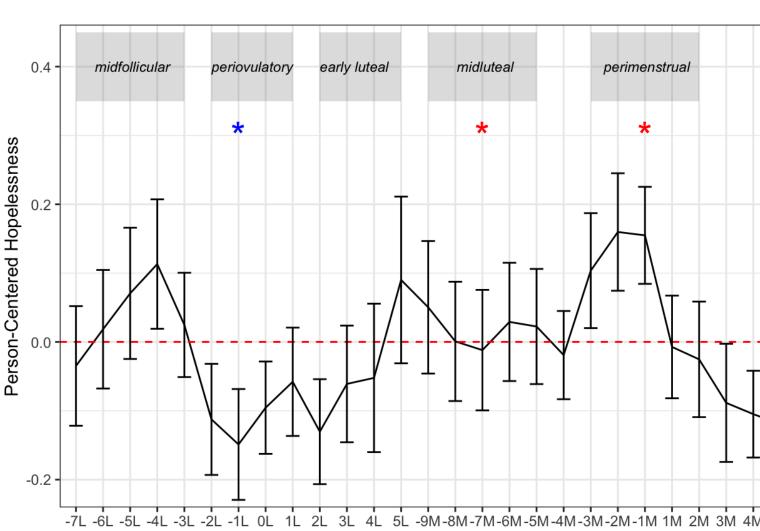
## Results

	Depressed Mood				
	Estimates	CI	р		
	2.52	2.20 - 2.84	<0.001		
	-0.05	-0.090.02	0.005		
	0.01	-0.04 - 0.06	0.672		
	1.25				
	0.84				
	0.40				
	34				
	776				
ditional R <sup>2</sup>	0.006 / 0.	405			

Anxious/Keyed Up/On Edge				
Estimates	CI	р		
2.87	2.49 - 3.25	<0.001		
-0.03	-0.06 - 0.01	0.134		
-0.01	-0.06 - 0.04	0.648		
1.23				
1.23				
0.50				
34				
772				
0.002 / 0.	.501			
	<i>Estimates</i> 2.87 -0.03 -0.01 1.23 1.23 0.50 34 772	Estimates         CI $2.87$ $2.49 - 3.25$ $-0.03$ $-0.06 - 0.01$ $-0.01$ $-0.06 - 0.04$ $1.23$ $0.50$ $34$		

### **Hopelessness**: **Perimenstrual peak** (low/falling E2)

- Lowest in periovulatory phase (high E2)
- Trend for E2 effect (not P4)



### Summary:

### H1: As hypothesized, significant perimenstrual worsening of depression symptoms in people with current depression

In contrast to luteally-bound symptoms typical for PMDD

### H2: As hypothesized, decreases in E2 predicted worsening depressed mood

- Trend for hopelessness
- No effects of P4
- No effects of cycle or hormones on anxiety symptoms, may be specific to depressed mood

# Discussion

Adds to growing evidence for an E2-specific mechanism underlying PME of depression <u>Clinical implications:</u> need to assess menstrual cycle effects in people with depression <u>Research implications: need for further work on hormone-specific mechanisms across PMDD/PME</u> Extend to pubertal, perinatal, (peri)menopausal transitions: could sensitivity to E2 change be common risk factor?

Next steps: idiographic analyses to assess individual and possible subgroup effects, lagged hormones

References: <sup>1</sup>Hartlage, S. A., Brandenburg, D. L., & Kravitz, H. M. (2004). Premenstrual exacerbation of depressive disorders in a community-based sample in the United States. Psychosomatic medicine, 66(5), 698-706; <sup>2</sup>Peters, J. R., Schmalenberger, K. M., Eng, A.G., Stumper, A., Martel, M. M. Eisenlohr-Moul, T. A., Dimensional Affective Sensitivity to Hormones Across the Menstrual Cycle (DASH-MC): A Transdiagnostic Framework for Ovarian Steroid Influences on Psychopathology (Preprint). https://osf.io/hp7mn; <sup>3</sup>Eisenlohr-Moul, T. A., Barone, J., Pinna, G., Wagner-Schuman, M., Almeida, F. B., Santovito, L. S., ... Girdler, S. S. (2023, December 6). Independent effects of acute estradiol or progesterone on perimenstrual changes in suicidal ideation, affective symptoms, and 3α-reduced progesterone metabolites: A crossover randomized controlled trial (Preprint).

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	Hopelessness			
Predictors	Estimates	CI	р	
(Intercept)	2.07	1.70 - 2.43	<0.001	
E1G Crtn d 10	-0.03	-0.06 - 0.00	0.064	
PDG Crtn d 1000	-0.01	-0.05 - 0.04	0.828	
Random Effects				
$\sigma^2$	1.02			
$ au_{00 \ \mathrm{ID}}$	1.15			
ICC	0.53			
N ID	34			
Observations	774			
Marginal R <sup>2</sup> / Conditional R <sup>2</sup>	0.002 / 0	.530		