# The Impact of Estrogen-Suppressing Contraceptives on Behavioral Symptoms in Borderline Personality Disorder

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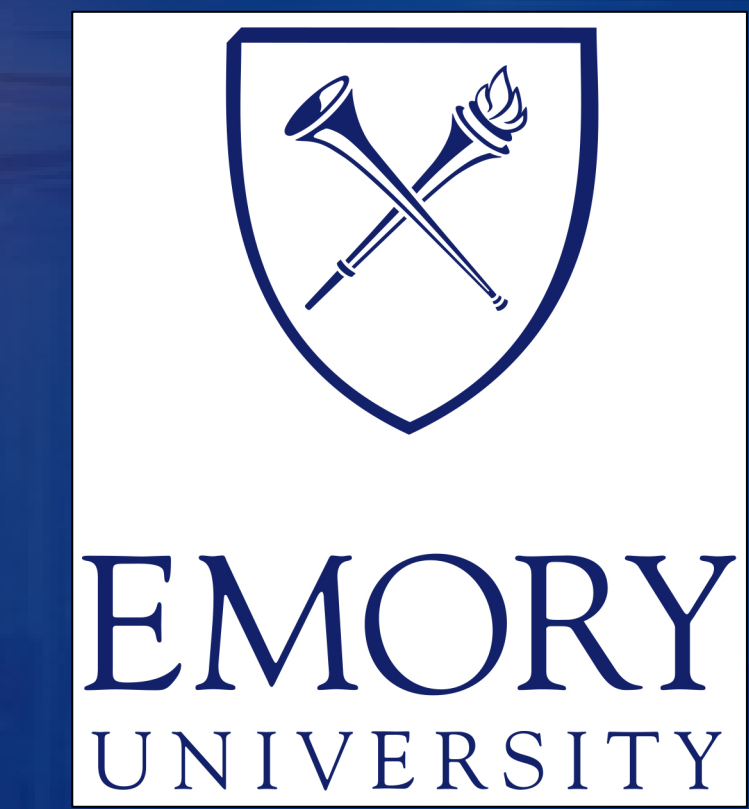
BACKGROUND

Borderline Personality Disorder (BPD) is a debilitating psychiatric disorder characterized by rapidly shifting emotional, interpersonal, and behavioral symptoms, including chronic suicidality, unstable relationships and emotions, and impulsive behaviors, and highly co-morbid with mood and anxiety disorders. Females are three times more likely to be diagnosed with BPD than males and exhibit greater functional impairment. The biological mechanism underlying the rapid shifts in BPD symptoms can be the reproductive system, specifically, the ovarian hormones, given fluctuations occurring both across the lifespan (puberty, pregnancy, menopause) and during the menstrual cycle. Hence, contraceptives that suppress ovulation, and with it the estrogen peak, may impact the manifestation and severity of BPD-related psychiatric symptoms.

METHODS

This study includes 348 females ages 18-50 admitted to a non-profit residential and ambulatory psychiatric rehabilitation facility in the southeastern US between 2019 and 2024. We investigated the influence of estrogen-suppressing contraceptives on psychiatric symptoms in those with and without a co-morbid BPD diagnosis using interaction models.

Use of estrogen-suppressing contraceptives (e.g., oral contraceptives, Depo-Provera, implant, patch, vaginal ring)

BPD diagnosis →

Behavior and Symptom Identification Scale (BASIS-32) domains at admission and discharge (~90 days treatment):
1) Difficulties in relationships
2) Impulsivity
3) Depression/Anxiety
4) Daily Living

RESULTS

Table 1: Cohort Characteristics (N = 348)

Mean (SD) or N (%)	BPD (N = 131)	No BPD (N = 217)	p-value
Age	23.19 (5.27)	26.87 (8.02)	<0.001[c]
Race[a]			0.97[d]
White	104 (79.4%)	177 (81.6%)	
Black	10 (7.6%)	18 (8.3%)	
Other	7 (5.3%)	11 (5.1%)	
Primary Diagnosis[b]			<0.001[e]
Mood Disorder	124 (94.7%)	183 (84.3%)	
Anxiety Disorder	4 (3.1%)	6 (2.8%)	
Psychotic Disorder	0 (0%)	24 (11.1%)	
Other	3 (3.2%)	1 (0.46%)	
Psychiatric Symptoms at Admission			
Difficulties in relationships	2.45 (0.87)	2.17 (0.98)	0.01[f]
Impulsivity	1.11 (0.75)	0.70 (0.71)	<0.001[f]
Depression/Anxiety	2.53 (0.87)	2.33 (0.99)	0.06[f]
Daily living	2.48 (0.91)	2.27 (1.00)	0.06[f]
Psychiatric Symptoms at Discharge			
Difficulties in relationships	1.45 (0.83)	1.21 (0.83)	0.01[f]
Impulsivity	0.44 (0.45)	0.31 (0.48)	0.02[f]
Depression/Anxiety	1.55 (0.92)	1.3 (0.86)	0.03[f]
Daily living			
Estrogen-suppressing contraceptive use	64 (48.9%)	81 (37.3%)	0.05[d]

[a]Missing in 7 participants. [b]Missing in 3 participants. [c]Tested using t-test. [d]Tested using chi-square test. [e]Tested using Fisher's exact test. [f]Adjusted for age using linear models.
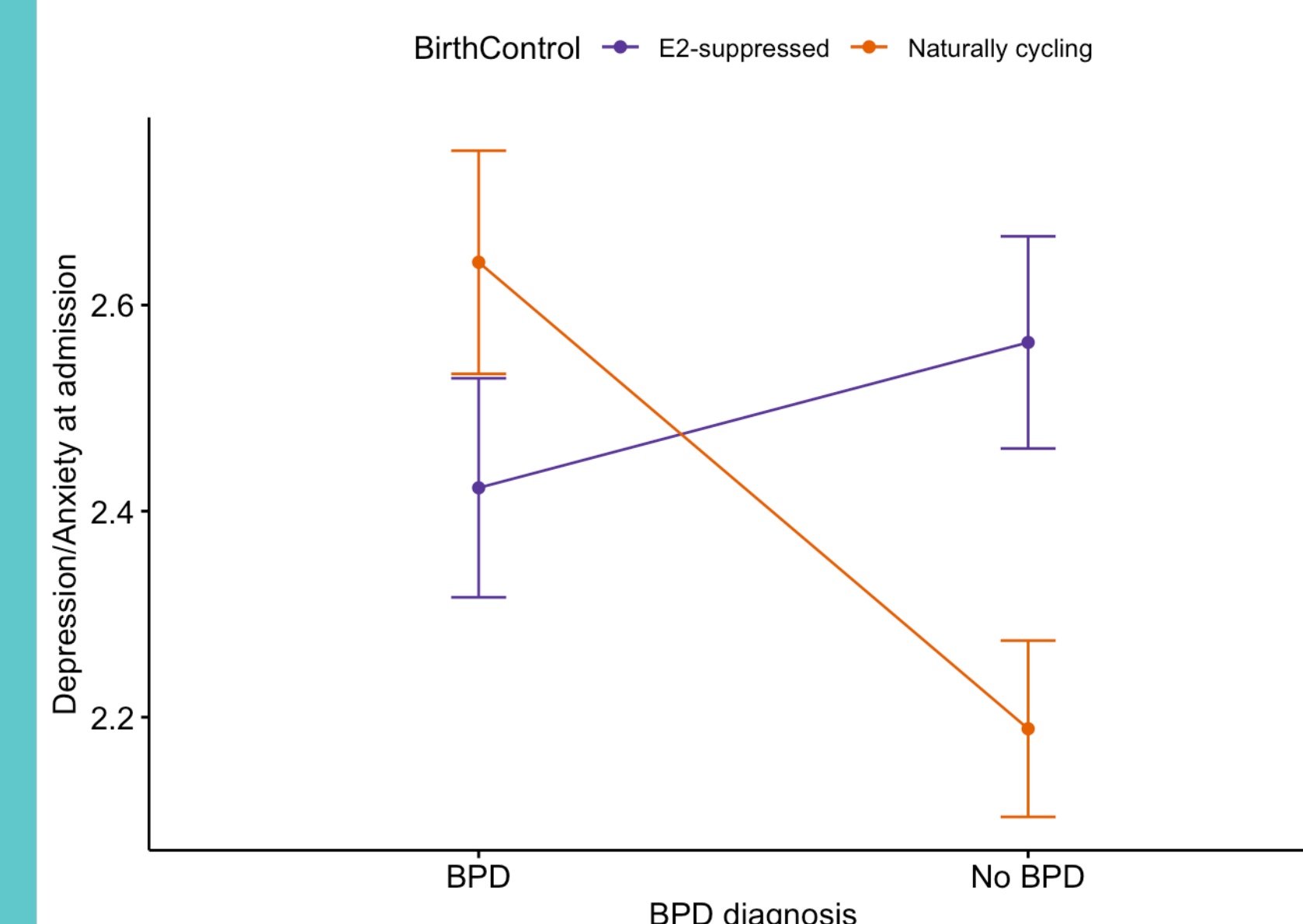
Association between estrogen-suppressing contraceptive use and Psychiatric Symptoms

- Estrogen-suppressing contraceptive use was not associated with the severity of psychiatric symptoms at admission and discharge or change in symptoms pre- to post-treatment.
- Females with BPD diagnosis are more likely to use estrogen-suppressing contraceptives (X^2= 4.0, p= 0.05).
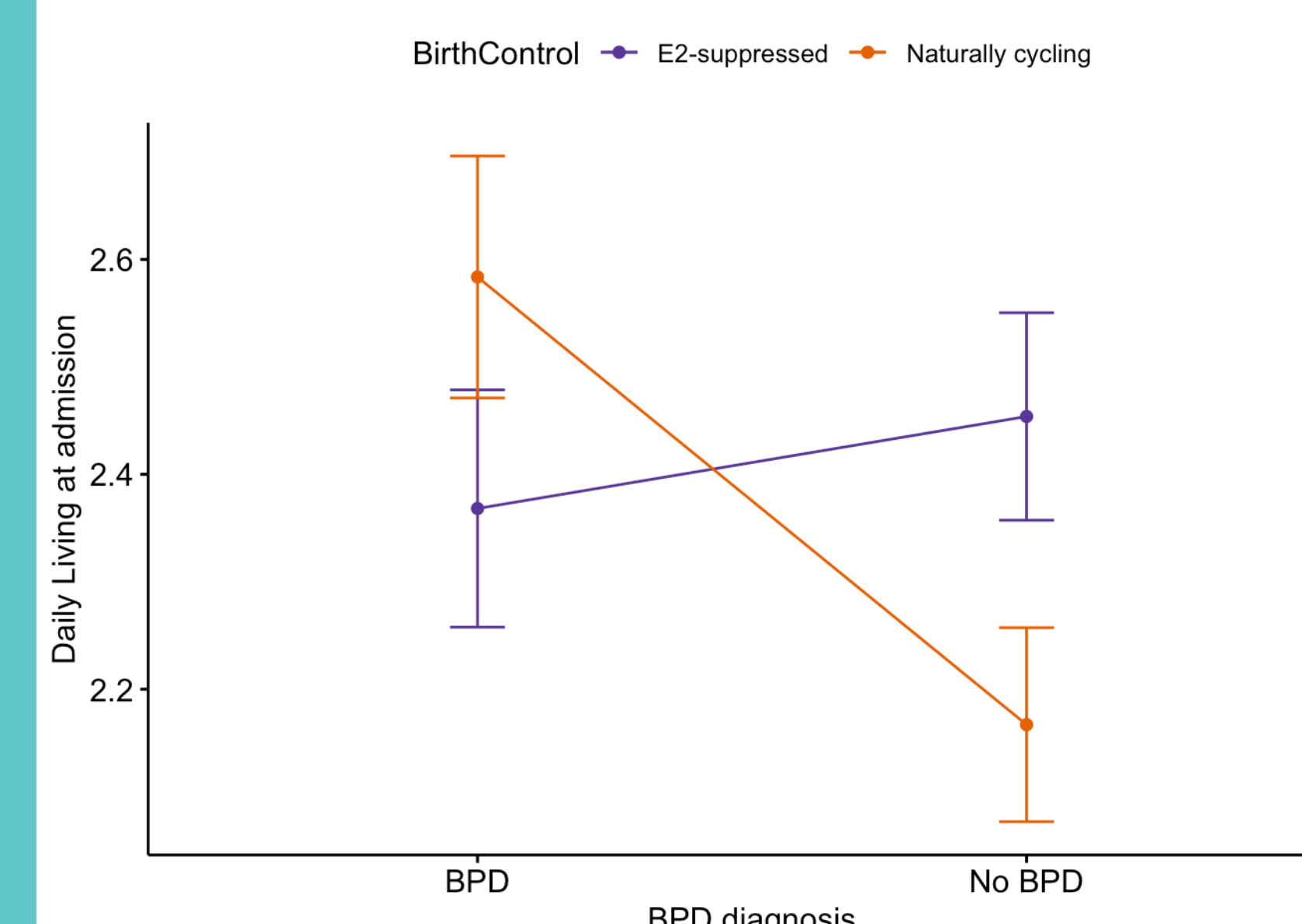
Depression and Anxiety

Estrogen-suppressing contraceptive use moderated the association between BPD diagnosis and symptoms of depression and anxiety at admission (β_{ixn}= -0.59, p_{ixn}= 0.005). Females with a BPD diagnosis expressed higher depression and anxiety symptoms at admission only if they were naturally cycling (β= 0.47, p= 0.002).


Difficulties in Daily Living

Estrogen-suppressing contraceptive use moderated the association between BPD diagnosis and difficulties in daily living at admission (β_{ixn}= -0.50, p_{ixn}= 0.02). Females with a BPD diagnosis expressed higher difficulties in daily living only if they were naturally cycling (β= 0.41, p= 0.009).

Difficulties in Relationships

Estrogen-suppressing contraceptive use moderated the association between BPD diagnosis and difficulties in relationships at admission (β_{ixn}= -0.56, p_{ixn}= 0.008) and discharge (β_{ixn}= -0.41, p_{ixn}= 0.03). Patients with a BPD diagnosis expressed increased difficulties in relationships both at admission (β= 0.51, p= 0.001) and discharge (β= 0.41, p= 0.001) only if they were naturally cycling.
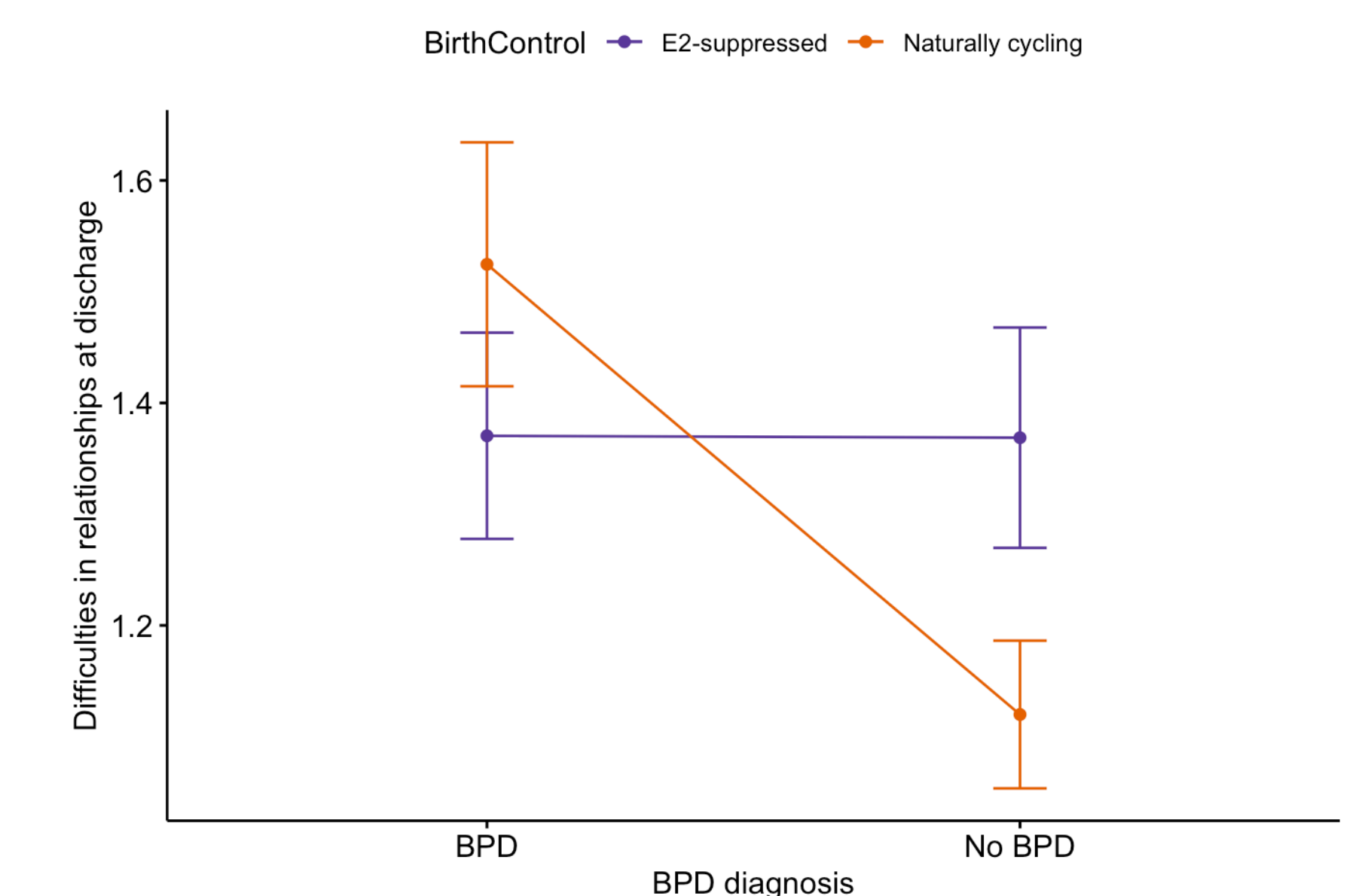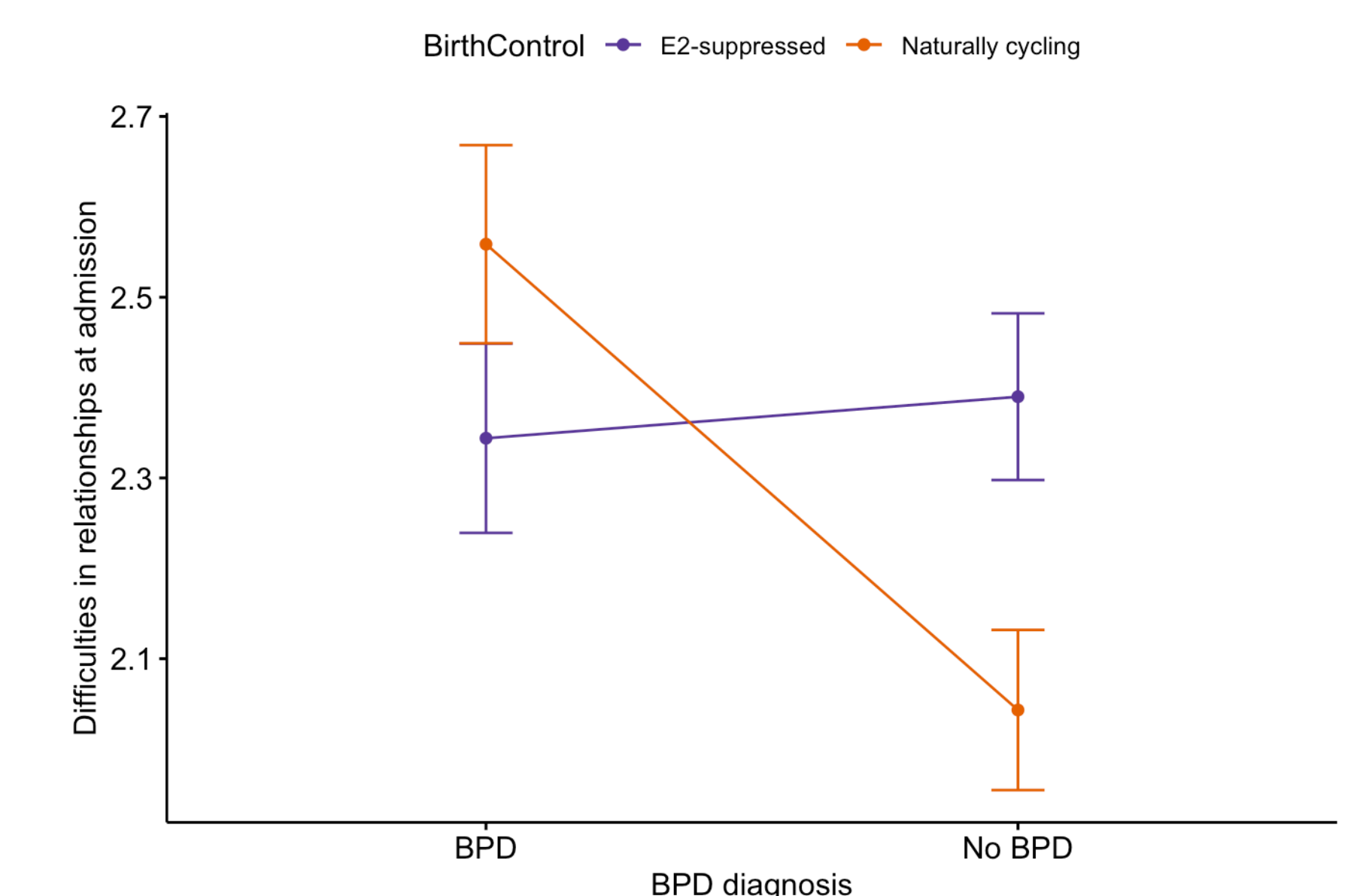
CONCLUSION

Estrogen-suppressing contraceptives may help to regulate the rapidly shifting emotional, interpersonal, and behavioral symptoms in those with BPD by stabilizing estrogen levels.