

Supplemental Material

“Neurophysiological activity following rewards and losses among female adolescents and young adults with Borderline Personality Disorder”

Additional Details About the Sample

The demographic and clinical characteristics for the sample are presented in Table 1. The HC and BPD participants did not differ in age or race; however, adolescents and young adults with BPD more frequently reporting income over \$100,000. BPD participants reported using the following categories of psychotropic medications: antidepressants ($n = 24$; 72.73%), atypical antipsychotics ($n = 18$, 54.55%), mood stabilizers ($n = 8$; 24.24%), benzodiazepines ($n = 4$; 12.12%), stimulants ($n = 4$; 12.12%), and naltrexone ($n = 2$; 6.06%).

Clinical Characteristics of BPD Youth

Comorbidity. On average, youth with BPD reported more than 3 comorbid disorders ($M = 3.12$, $SD = 1.39$). Unipolar mood disorders ($n = 24$, 72.73%) were most commonly co-occurred with BPD, followed by anxiety disorders ($n = 21$, 63.64%), substance use disorders ($n = 20$, 39.39%) and behavioral disorders ($n = 10$, 30.30%). Other comorbidities included bipolar mood disorders ($n = 7$, 21.21%), eating disorders ($n = 2$, 6.06%) and psychotic disorders ($n = 1$, 3.03%).

Suicidal Behaviors. Twenty-one (63.64%) youth with BPD reported at least one suicide attempt; specifically, 5 (15.15%) youth reported a single attempt, 6 (18.18%) reported 2 attempts, and nearly one-third of the sample ($n = 10$; 30.30%) had made 3 or more attempts. The most frequently reported suicide attempt methods were overdose using prescription and/or non-prescription medications ($n = 16$, 76.19%) and cutting oneself with a sharp object ($n = 3$,

14.29%). Other methods used, endorsed by one participant in each case, included ingesting poison, jumping in front of a train or car, suffocation, and strangling oneself.

Results

Predicting Group (HC, BPD) Membership

Since several ERP and time frequency indicators significantly differed among BPD youth and HCs, we conducted a logistic regression model wherein group (HC, BPD) was the outcome variable and the residualized ERP/time frequency variables that differentiated the groups (i.e., RewP, P300 [at a statistical trend], and delta power) were entered simultaneously. The addition of these variables to the model was statistically significant, $\chi^2[3, N = 68] = 13.84, p = 0.003$, and correctly classified 66.18% of the sample (HC: 22/35, 62.86%; BPD: 23/33, 69.70%). Greater delta to wins relative to losses was associated with lower odds of being a BPD relative to an HC participant, $b = -0.98, SE = 0.37, \chi^2[1, N = 68] = 7.00, p = 0.008, OR = 0.38, CI [0.18, 0.78]$. Neither of the other unique effects were statistically significant, $ps > 0.128$.

We next specified an additional logistic regression model that included the separate effects of RewP amplitude, P300 amplitude, and delta power to wins and losses. All independent variables were standardized to facilitate interpretation. These variables significantly improved group classification, $\chi^2[6, N = 68] = 19.42, p = 0.004$; specifically, they correctly classified 79.41% of the sample (HC: 30/35, 85.71%; BPD: 24/33, 72.73%). In the model, greater delta to wins (but not losses) was associated with lower odds of being a BPD relative to an HC participant, $b = -1.94, SE = 0.65, \chi^2[1, N = 68] = 8.82, p = 0.003, OR = 0.14, CI [0.04, 0.52]$. Additionally, greater RewP amplitude to losses (not wins) was associated with greater odds of being in the BPD versus HC group, $b = 1.55, SE = 0.65, \chi^2[1, N = 68] = 7.54, p = 0.017, OR = 4.72, CI [1.33, 16.78]$. All other predictors entered in the model were non-significant, $ps > 0.11$.