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Interpersonal trust in adolescents with psychiatric disorders and borderline pathology

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Abstract

Background: Adolescents with features of borderline personality disorder (BPD) may experience deficits in interpersonal trust; however, a simultaneous comparison of interpersonal trust among adolescents with BPD, other psychiatric disorders, and no psychiatric conditions (healthy controls) has never been conducted.
Objective: The aims of this study were to 1) explore differences in interpersonal trust (emotional trust, honesty beliefs, and reliability beliefs) between these three groups, and 2) examine the incremental value of BPD features in association with interpersonal trust over and above internalizing and externalizing.
Method: Adolescents (N = 445, 67.9% female, M_{age} = 15.13) recruited from two psychiatric hospitals (psychiatric sample, n = 280) and community organizations (healthy sample, n = 165) completed measures of BPD features, interpersonal trust, and internalizing and externalizing psychopathology. Psychiatric adolescents also completed an interview assessing BPD (n = 83 BPD). ANCOVA and hierarchical linear regression were used for analyses.
Results: Emotional trust differed significantly across all three groups, with the lowest level of emotional trust in adolescents with BPD. Reliability was also lower in the two psychiatric groups relative to healthy controls. BPD features were significantly, inversely associated with emotional trust and reliability beliefs when controlling for internalizing and externalizing pathology. Post-hoc analyses testing specificity of the three forms of trust found that lower emotional trust predicted BPD diagnosis over and above the other two forms of trust.
Conclusions: Findings highlight emotional trust as a correlate and important target of intervention for adolescents with BPD, and add to knowledge on interpersonal trust deficits for adolescents with psychiatric disorders more broadly.

Keywords: interpersonal trust; borderline personality disorder; adolescence; internalizing; externalizing; group comparison

Introduction

Theoretical frameworks such as Bowlby's attachment theory (1) and Erikson's psychosocial stages (2) convey the significance of interpersonal trust as an important aspect of adaptive psychosocial functioning across the lifespan, beginning during early development (3, 4). According to Rotenberg and colleagues (5), interpersonal trust can be conceptualized along three bases: reliability, emotional trust, and honesty. Reliability refers to the belief that others will fulfill their word or keep a promise. Emotional trust refers to the belief that others will refrain from causing one harm and will keep confidentiality. Honesty can be understood as the belief that others are being truthful and acting without manipulation (5). In adolescence, interpersonal trust is particularly relevant because of the changes in the social-cognitive areas of the brain occurring during this developmental period, which are associated with changes in social behavior and interpersonal relationships, such as spending more time with peers relative to family members, and increased interest in romantic relationships (6, 7). Further, understanding the impact of interpersonal trust beliefs and their influence on wellbeing during adolescents has been an understudied topic (8).

Given the importance of trust for adaptive psychosocial functioning, deficits in interpersonal trust have been identified as a correlate of psychopathology in adolescence. Prior research has

demonstrated that interpersonal trust beliefs are inversely related to both internalizing and externalizing problems in community samples of youth (9–18). In addition, a recent review by Clarke and colleagues (19) examining studies of interpersonal trust beliefs among adolescents with mental illness identified four studies that have shown inverse relationships between trust in caregivers and adolescents' depressive symptoms (20–23), and three studies that showed direct or indirect relations between lower trust and suicidal ideation or attempt in adolescents (22, 24, 25). One more recent study, published since the review, also revealed that trust in significant others was inversely associated with internalizing symptoms among inpatient adolescents (26). Two studies included in the review did not find significant associations between trust and anxiety (20, 27). In terms of links between interpersonal trust and externalizing pathology in adolescents with mental illness, Clarke and colleagues' review (19) identified some studies that did not observe significant associations between interpersonal trust and conduct disorder, externalizing problems, or delinquency (20, 28–30), and other studies that did observe significant associations (31, 32). Overall, studies included in Clarke and colleagues' review (19) point to strongest links between depressive symptomology and interpersonal trust beliefs among adolescents with mental illness, but also highlight a notable need for further examination of interpersonal trust beliefs in adolescent psychiatric populations. In particular, examination of differences in levels of interpersonal trust among adolescents with psychiatric disorders compared to healthy adolescents is needed.

One form of psychopathology during adolescence for which it may be particularly important to understand deficits in trust is borderline personality disorder (BPD; 33). Features of BPD often onset during the adolescent period (34). BPD can be reliably diagnosed beginning in adolescence (35), and research supports symptom presentation is consistent in both youth and adults who meet criteria (36). Individuals with borderline personality disorder often exhibit a range of interpersonal difficulties including instability in relationships and disruptions in understanding self and others (37) that may interrupt their ability to form close, trusting relationships (38, 39). Difficulties with trust among individuals with BPD can also be understood in light of the link between BPD and insecure attachment that has been observed (40). Fonagy and colleagues (41) suggest that disruptions in early attachment relationships may lead to deficits in social-cognitive capacities, including interpersonal trust, which can go on to influence later development of personality disorders. Unstable sense of self and unstable interpersonal relationships, both features of BPD,

may also pose a threat to the maintenance of close relationships. Therefore, based on developmental correlates and features of BPD, adolescents with BPD features may demonstrate particular deficits in interpersonal trust relative to adolescents with other psychiatric disorders and healthy adolescents. To our knowledge, only one study has examined links between interpersonal trust and BPD symptoms in adolescents (42), which found that adolescents' rating of their own epistemic trust in their parents was negatively associated with borderline features.

Against this background, the current study seeks to explore how interpersonal trust, as measured by Rotenberg's framework of reliability beliefs, emotional trust beliefs, and honesty beliefs, manifests in adolescents who meet criteria for BPD in contrast to adolescents with other psychiatric disorders and healthy control adolescents. Utilizing Rotenberg's bases of interpersonal trust provide insight into the specific quality of interpersonal trust in adolescent relationships (3): adolescents high in reliability believe close others (parents, peers, teachers) will fulfill their promises and keep their word; adolescents reporting high emotional trust believe that others close to them are not trying to emotionally harm them, socially embarrass them, or break confidentiality; and adolescents high in honesty beliefs trust that others are telling the truth. Interpersonal trust beliefs are founded in early attachment relationships (1), are predictive of social behavior and important for healthy social interactions and adjustment more broadly (43, 44), and play a role in psychological resilience (26). Trust beliefs are therefore crucial not only in normative development but also may be an important risk or protective factor for adolescent psychopathology. For adolescents with psychopathology, trust beliefs are also pertinent to treatment, in that adolescents who are more trusting of others may find it easier to build a secure relationship with their therapist (45).

Furthermore, understanding these three forms of trust and their relationships to BPD in adolescence could aid in prevention and earlier BPD diagnosis, as well as in the prediction of BPD symptoms and severity. Earlier diagnosis of BPD or recognition of significant borderline features in adolescents allows for earlier intervention (46) and reduction in severe symptom presentation. Further, earlier diagnosis promotes active participation in treatment and allows earlier delivery of specific evidence-based treatments for BPD (36) as opposed to treatment of comorbid conditions that may not address the full scope of interpersonal deficits, including deficits of interpersonal trust. Therefore, better understanding specific anomalies in trust of BPD patients could deepen our ability to understand and treat social-cognitive difficulties in adolescents with BPD or

BPD features, improve interventions for adolescents with BPD features, or even shape parenting interventions for parents of youth with BPD features.

Our first study aim was to explore group differences in interpersonal trust between inpatient adolescents who meet DSM-5 criteria for Borderline Personality Disorder, compared to inpatient adolescents with psychiatric disorders other than BPD (non-BPD psychiatric group) and a healthy control sample from a community-based population. Our second aim was to examine the incremental value of borderline personality features predicting interpersonal trust over both internalizing and externalizing symptoms. On the basis of extant literature showing impaired social-cognitive processes in adolescents with BPD, we expected to find lower levels of trust across all trust domains among youth meeting criteria for BPD compared to youth with other psychiatric disorders and healthy controls.

Methods
Participants
The sample included 445 adolescents ranging from 12-18 years old, 67.9% female, M_{age} = 15.13 (SD = 1.37), including adolescents recruited from two different psychiatric inpatient hospitals (n = 83 BPD and n = 197 psychiatric control group), and a group of healthy control adolescents (n = 165) recruited from the community.

The sample of adolescents receiving psychiatric care at one of two different psychiatric hospitals included adolescents recruited from both a private psychiatric hospital (n = 108) and public psychiatric hospital (n = 172) in a large metro area of the Southwestern United States. The sample included 83 youth (M_{age} = 14.92, SD = 1.29, 83.1% female) meeting DSM-5 Section II criteria for BPD as determined by the Childhood Interview for Borderline Personality Disorder (47), and 197 non-BPD psychiatric inpatient adolescents (M_{age} = 14.98, SD = 1.48, 57.9% female). Adolescent patients were eligible for the study if they had sufficient fluency in English to complete all research assessments. Exclusion criteria were a diagnosis of a psychotic disorder, IQ below 70, a diagnosis of an autism spectrum disorder (ASD), or due to clinician determination of inability to complete assessments. At each adolescent's admission to the private psychiatric hospital, parents were approached for consent for the research study, and if given, adolescents were approached for assent. Data for the present analysis were drawn from a subset of adolescents (n = 108) at the private psychiatric hospital who participated during the period when all of the measures included in this analysis were part of

the study protocol. The sample from this hospital was 82.3% White/Caucasian, 8.3% Hispanic/Latinx, 3.1% multiracial or other, 3.1% Asian or Pacific Islander, and 3.1% Black or African American. Of patient admissions to the public psychiatric hospital with parental consent, 411 adolescents provided assent to participate, 67 declined to participate, 41 were excluded due to severe psychosis and/or intellectual disability and 168 were discharged prior to completing the assessment. Data for analysis from the public psychiatric hospital were drawn from a subset of adolescents (n = 172) who participated during the period when all of the measures included in this analysis were part of the study protocol. The sample from this hospital was 40.1% Hispanic/Latinx, 27.3% Black or African American, 26.2% White/Caucasian, 4.1% multiracial or other, and 1.2% Asian or Pacific Islander. Ethnicity across the two clinical samples was 44.3% White/Caucasian, 27.5% Hispanic/Latino, 17.9% Black or African American, 3.6% multiracial or other, and 1.8% Asian or Pacific Islander.

The healthy control sample included 165 healthy adolescents ranging in age from 12-18 (M_{age} = 15.42, SD = 1.23, 72.3% female) from a large metro area in the Southwestern United States, recruited from schools and community organizations as part of a larger study. Inclusion criteria were that youth were between the ages of 12-18, were literate in English, and had a living mother. Exclusion criteria included any significant psychopathology. Of 223 adolescents who consented, 34 were excluded for missing scheduled study appointments, resulting in a sample of 189. Of the 189, 24 were excluded for missing or corrupted data for study measures, resulting in a final sample of 165 for healthy adolescents. The healthy control sample was 41.8% Hispanic/Latinx, 32.1% Asian or Pacific Islander, 14.5% Black or African American, and 9.7% White or Caucasian.

Measures
Children's generalized trust beliefs
The Children's Generalized Trust Beliefs (CGTB; 5) scale is a 24-item child self-report questionnaire designed to assess trust across the three bases: emotional trust, honesty, and reliability. This measure of trust was specifically designed to assess trust and trust behaviors in children utilizing a developmental framework. Respondents rate items on a Likert-type five-point scale ranging from: 1—*very unlikely* to 5—*very likely*, with higher scores representative of higher levels of trust. Example questions include "Louisa says that she will share her chocolate bar with Claire at lunchtime. How likely is it that Louisa will share the chocolate bar with Claire?" (reliability); "Tina tells her Mother that she held hands with a boy at school, but asks her Mother

not to tell anyone. How likely is it that Tina's Mother will not tell others about it?" (emotional trust); and "Charlotte asks her Father if she can borrow his fishing rod. Her Father has said he has lent it to someone else. How likely is it that her Father has lent the fishing rod to someone else?" (honesty). Male and female protagonist names are used in the questionnaire for male and female respondents, respectively. In addition, the protagonist's name in each question is underlined and participants are asked to imagine that they are that character in the scenario. The CGTB has shown structural validity by factor analyses and construct validity based on correlations with other related measures (5). In this study, we used the CGTB to assess trust across all three trust domains in individuals with BPD, other psychiatric controls and healthy controls. Higher scores denote greater trust beliefs. Cronbach's alpha in this sample for the CGTB was α = .86.

Borderline Personality Disorder

The Childhood Interview for DSM-IV Borderline Personality Disorder (CIBPD; 47) is a semi-structured interview for youth that evaluates the nine DSM-5 Section II criteria for BPD: inappropriate anger, affective instability, chronic feelings of emptiness, identity disturbance, transient stress-related paranoid ideation, or severe dissociative symptoms, fears of abandonment, recurrent suicidality or self-harm behavior, impulsivity, and intense interpersonal relationships. The CI-BPD was adapted from the borderline module of the Diagnostic Interview for DSM-IV Personality Disorders (48). Trained interviewers rated symptoms on a 3-point scale, "0" for absence of symptom, "1" for if the symptom is probably present, and "2" if the symptom is definitely present. For a full diagnosis of BPD an individual must score 2 on at least five out of nine criteria. In the current study, sample two-way agreement (0 – BPD absent or sub-threshold; 1 – BPD present) was calculated for 5.7% of the clinical sample (n = 16) based on ratings of independent raters. The kappa statistic indicated there was excellent agreement between raters, $\varkappa$ = 1.00, p < .001. We also calculated three-way agreement for question 10 on the CIBPD asking whether the patient meets BPD criteria (0 - Meets three or fewer criteria, 1 - Meets four criteria, 2 - Meets five criteria) for the same 5.7% of the clinical sample (n = 16), $\varkappa$ = .78, p < .001. In this study, CI-BPD was used to create the BPD grouping variable; adolescents in the psychiatric sample who met at least five of nine criteria were in the BPD group.

Borderline features

The Borderline Personality Features Scale for Children (BPFS-C; 49) is a 24-item youth self-report measure examining borderline features in children and adolescents aged 9 and older. Features include: identity problems ("How I feel about myself changes a lot"), affective instability ("When I'm mad, I can't control what I do"), negative relationships ("Lots of times, my friends and I are really mean to each other"), and self-harm ("When I get upset, I do things that aren't good for me"). Items are measured on a five-point Likert-type scale ranging from 1—not at all true to 5—always true. Higher scores indicate greater levels of borderline personality features. Cronbach's alpha in this sample for the BPFS-C was α = .89.

Internalizing and externalizing psycho-pathology

The Youth Self-Report (YSR; 50) is a 112-item self-report questionnaire that measures psychopathology in youth ranging from 11 and 18 years of age. Items are scored on a three-point scale using 0 as "not true," 1 as "somewhat or sometimes true," and 2 as "very or often true". For the present study, raw scores from Externalizing Problems and Internalizing Problems subscales of the YSR were used. The YSR has well-established reliability and validity (50).

Results
Descriptive and bivariate results

Descriptive statistics for key study variables across adolescents with BPD, adolescents with other psychiatric disorders, and healthy controls are displayed in Table 1. An analysis of variance (ANOVA) was conducted to compare group differences on BPFS-C and YSR internalizing and externalizing scores across the three groups. Results revealed a significant difference across groups for all three measures, $F(2,424)$ = 84.83 (BPFS), $F(2,428)$ = 56.79 (YSR Internalizing), $F(2, 428)$ = 89.625 (YSR Externalizing), p < .001. A Tukey HSD post hoc test revealed that, on average, adolescents with BPD had higher borderline features (M = 79.41, SD = 13.12), internalizing problems (M = 29.5, SD = 11.35), and externalizing problems (M = 26.28, SD = 10.94) than non-BPD psychiatric controls ($M_{borderline}$ = 65.35, SD = 12.75; $M_{internalizing}$ = 23.09, SD = 11.74; $M_{externalizing}$ = 26.28, SD = 10.94) and healthy controls ($M_{borderline}$ = 55.60, SD = 14.40; $M_{internalizing}$ = 14.15, SD = 10.26; $M_{externalizing}$ = 9.49, SD = 7.52). Psychiatric controls also had higher scores on YSR internalizing and externalizing than healthy controls.

A Pearson chi-square test revealed that gender significantly differed across groups, X^2 = 19.751, p < .001. Age also differed significantly across groups

TABLE 1. Scores on main study measures across groups

	BPD (n = 83, 18.7%)		Non-BPD Psychiatric (n = 197, 44.2%)		Healthy Controls (n = 165, 37.1%)	
	M	(SD)	M	(SD)	M	(SD)
Honesty (CGTB)	22.47	(5.93)	23.35	(5.55)	24.34	(4.53)
Emotional Trust (CGTB)	25.05	(5.73)	26.36	(5.53)	28.10	(4.92)
Reliability (CGTB)	28.61	(5.55)	28.53	(5.36)	30.29	(4.47)
Borderline Features (BPFS)	79.41	(13.12)	65.35	(12.75)	55.60	(14.40)
Internalizing (YSR)	29.46	(11.35)	23.09	(11.74)	14.15	(10.26)
Externalizing (YSR)	26.28	(10.94)	17.45	(9.96)	9.49	(7.52)
Age	14.92	(1.29)	14.98	(1.48)	15.42	(1.23)

Note. CGTB = Rotenberg Children's Generalized Trust Beliefs Scale; YSR = Youth Self Report; BPFS = Borderline Personality Features Scale (Child Self Report)

TABLE 2. Pearson correlations between main study variables

	1	2	3	4	5	6	7	8
1. Honesty (CGTB)	--							
2. Emotional trust (CGTB)	.572**	--						
3. Reliability (CGTB)	.598**	.630**	--					
4. Borderline personality features (BPFS)	-.213**	-.268**	-.226**	--				
5. Internalizing problems (YSR)	-.206**	-.269**	-.201**	.671**	--			
6. Externalizing problems (YSR)	-.209**	-.248**	-.232**	.691**	.606**	--		
7. Age	.123**	.072	.140**	.077	.108*	.020	--	
8. Gender	.018	-.029	-.078	-.102*	.084	.056	.038	--

Note. ** Correlation is significant at the .01 level (2-tailed); * Correlation is significant at the .05 level (2-tailed)
Gender was dichotomously coded with 0 = female and 1 = male;
CGTB = Rotenberg Children's Generalized Trust Beliefs Scale; YSR = Youth Self Report; BPFS = Borderline Personality Features Scale

(F (2, 442) = 6.056, p = .003), and post-hoc comparisons using Tukey's HSD test found that the healthy control group (M_{age} = 15.42, SD = 1.23) was on average significantly older than the psychiatric control (M_{age} = 14.98, SD = 1.48, p = .006) and BPD (M_{age} = 14.92, SD = 1.29, p = .015) groups. Due to the significant differences across groups in gender and age, these variables were entered as covariates in further multivariate analyses.

Bivariate analysis with continuous variables was conducted using Pearson correlations and is displayed in Table 2. For this analysis, all three groups were combined into one sample to maximize variability in the sample. The three domains of trust on the CGTB were significantly, positively related to each other with large correlation size. Each domain of trust was also significantly, inversely associated with borderline features and internalizing and externalizing problems such that higher levels of each form of trust were associated with lower levels of each symptom domain. These correlations were small to medium in size. Older age was significantly associated with higher levels of honesty and reliability, but not with emotional trust. Gender was not significantly associated with any form of trust.

Between-group comparison

Analysis of covariance (ANCOVA) was conducted to compare CGTB subscales of honesty, reliability, and emotional trust across the three groups. We controlled for gender and age in this analysis given differences in gender and age between groups. Because of the inclusion of a psychiatric control group, we did not control for internalizing and externalizing pathology in group analyses. Analysis revealed significant differences across groups in the CGTB emotional trust (F(2, 440) = 9.21, p < .001, η_p^2 = .040) and reliability (F(2, 440) = 4.23, p = .02, η_p^2 = .019) subscales. Results of contrast tests revealed that adolescents in the BPD group (M = 25.05, SD = 5.73) had a significantly lower mean emotional trust scores compared to the healthy control group (M = 28.10, SD = 4.92, p < .001, d = .57), and the psychiatric control group (M = 26.36, SD = 5.53, p = .048, d = .23). The healthy control and psychiatric groups also significantly differed in level of emotional trust (p = .006, d = .33). Adolescents in the BPD group (M = 28.61, SD = 5.55, p = .03, d = .33) and adolescents in the psychiatric control group (M = 28.53, SD = 5.36, p = .009, d = .36) reported a significantly lower mean

reliability score compared to the healthy control group ($M = 30.29$, $SD = 4.47$). However, adolescents in the BPD and psychiatric control groups did not differ from each other on level of reliability ($p = .88$). There were no significant differences across the three

groups in the honesty subscale of the CGTB ($F(2, 440) = 2.81$, $p = .061$) when controlling for gender and age.

TABLE 3. Hierarchical regression model evaluating whether there is a unique association of borderline features with each form of interpersonal trust

	b	SE	β	t	p	R² (%)	Adj. R² (%)
DV = Emotional Trust (CGTB)							
Step 1						8.7[a]	7.8
Gender	-.53	.56	-.05	-.95	.34		
Age	.45	.19	.12	2.42	.02		
Internalizing problems (YSR)	-.09	.03	-.21	-3.78	<.001		
Externalizing problems (YSR)	-.05	.03	-.10	-1.79	.07		
Step 2						10.3[b]	9.2
Gender	-.68	.56	-.06	-1.22	.22		
Age	.48	.19	.12	2.59	.01		
Internalizing problems (YSR)	-.06	.03	-.13	-2.05	.04		
Externalizing problems (YSR)	-.01	.03	-.02	-.30	.77		
Borderline features (BPFS)	-.07	.03	-.19	2.67	.01		
DV = Reliability (CGTB)							
Step 1						8.4[c]	7.5
Gender	-.94	.53	-.08	-1.77	.08		
Age	.63	.18	.17	3.50	.001		
Internalizing problems (YSR)	-.05	.02	-.11	-1.90	.06		
Externalizing problems (YSR)	-.07	.03	-.16	-2.83	.01		
Step 2						9.4[d]	8.3
Gender	-1.06	.53	-.10	-1.99	.048		
Age	.65	.18	.17	3.63	<.001		
Internalizing problems (YSR)	-.02	.03	-.04	-.63	.53		
Externalizing problems (YSR)	-.04	.03	-.09	-1.45	.15		
Borderline features (BPFS)	-.05	.02	-.16	-2.18	.03		
DV = Honesty (CGTB)							
Step 1						8.7[e]	7.8
Gender	-.06	.55	-.01	-.11	.92		
Age	.58	.19	.15	3.14	.002		
Internalizing problems (YSR)	-.06	.03	-.15	-2.60	.01		
Externalizing Problems (YSR)	-.06	.03	-.13	-2.22	.03		

Notes. DV = dependent variable
[a]Model significant, $F (4, 409) = 9.754$, $p < .001$; [b]Model significant, $F (5, 408) = 9.347$, $p < .001$, R^2 change .016, $p = .008$; [c]Model significant, $F (4, 409) = 9.357$, $p < .001$; [d]Model significant, $F (5, 408) = 8.502$, $p < .001$, R^2 change .011, $p = .03$; [e]Model significant, $F (4, 409) = 8.301$, $p < .001$. Borderline features did not explain significant variance in Step 2 (R^2 change .004, $p = .167$); only Step 1 was interpreted
CGTB = Rotenberg Children's Generalized Trust Beliefs Scale; YSR = Youth Self Report; BPFS = Borderline Personality Features Scale

Examining unique associations between borderline features and interpersonal trust
Next, three hierarchical linear regression models were evaluated to examine the unique association of BPD symptoms measured continuously and across all groups, above and beyond the effects of internalizing and externalizing pathology, with each form of interpersonal trust. In Step 1 of each model, internalizing and externalizing problems were entered as independent variables, with each form of trust as the dependent variable, and gender and age included as covariates. In Step 2, borderline features were added as an additional independent variable. Results of hierarchical regression analysis are displayed in Table 3.

Results showed unique associations between borderline features and both emotional trust and reliability, over and above internalizing and externalizing psychopathology. For emotional trust, in Step 1, the overall model was significant ($F(4, 409) = 9.75$, $p < .001$), and internalizing ($β = -.21$, $t = -3.78$, $p < .001$) was associated with lower emotional trust. In Step 2, the overall model was also found to be significant ($F(5, 408) = 9.35$, $p < .001$), with significant additional variance explained by the addition of BPD features. Greater BPD features were significantly related to lower emotional trust ($β = -.19$, $t = -2.67$, $p= .008$). Internalizing remained significant in association with emotional trust ($β = -.13$, $t = -2.05$, $p = .04$) in Step 2. The R^2 value in Step

1 was 8.7%, and 10.3% in Step 2, signifying 1.6% more variance in emotional trust explained due to the addition of BPD symptoms to the model.

For reliability beliefs, in Step 1, the overall model was significant ($F(4, 409) = 9.36$, $p < .001$), and greater externalizing ($\beta = -.16$, $t = -2.83$, $p = .01$) was associated with lower reliability beliefs. In Step 2, the overall model was also found to be significant ($F(5, 408) = 8.50$, $p < .001$), with significant additional variance explained by the addition of BPD features. Greater BPD features were significantly related to lower reliability beliefs ($\beta = -.16$, $t = -2.18$, $p = .03$). Externalizing was no longer significant ($\beta = -.09$, $t = -1.45$, $p = .15$) in Step 2. The R^2 value in Step 1 was 8.4%, and 9.4% in Step 2, signifying 1.0% more variance in reliability beliefs explained due to the addition of BPD symptoms to the model.

For honesty beliefs, in Step 1, the overall model was significant ($F(4, 409) = 8.30$, $p < .001$), and greater internalizing ($\beta = -.15$, $t = -2.60$, $p = .01$) and externalizing ($\beta = -.13$, $t = -2.22$, $p = .03$) were associated with lower honesty beliefs. In step 2, borderline features did not significantly add to the model, indicating that there was not a unique association of borderline with honesty beliefs when internalizing and externalizing problems were taken into account.

Post-hoc analyses
Effects of race and ethnicity
It is important to acknowledge that race and ethnicity may be related to interpersonal trust beliefs; for example, experiences of racial or ethnic discrimination may lead to decreased trust in others (51). Results were re-analyzed with race as a covariate (0 = white, 1 = Black or African American, Hispanic or Latinx, Asian or Pacific Islander, or Multiracial or Other), and findings were unchanged.

Specificity analysis between types of inter-personal trust
To further understand specific relationships between the three forms of trust and psychiatric group status, we tested a logistic regression model where the three forms of trust were entered as simultaneous predictors of group status. Gender and age were covaried as in previous analysis. Over gender and age and other forms of trust, emotional trust significantly predicted membership in the BPD group versus the healthy control group ($b = .11$, $SE = .04$, $p = .001$, $OR = 1.12$), and in the BPD group versus the psychiatric control group ($b = .07$, $SE = .03$, $p = .04$, $OR = 1.07$). None of the three forms of trust significantly predicted membership in the psychiatric control group versus the healthy control group more than the other (p values $\geq .114$). Neither reliability nor honesty differentiated the BPD group from the

other two groups over and above emotional trust (p values $\geq .145$).

We also examined overall trust as a predictor of group status by calculating the total CGTB score (sum of all 24 items, $\alpha = .86$) and entering it as the independent variable, with gender and age covaried. Overall trust significantly differentiated healthy controls from both the psychiatric control group ($b = -.02$, $SE = .01$, $p = .008$, $OR = .98$) and the BPD group ($b = -.04$, $SE = .01$, $p = .001$, $OR = .97$). However, the BPD and non-BPD psychiatric groups did not differ in overall interpersonal trust ($p = .201$).

Discussion
The purpose of this research was to examine interpersonal trust in adolescents with BPD, non-BPD psychiatric controls, and healthy non-clinical adolescents using Rotenberg's Children's Generalized Trust Beliefs scale (CGTB; 5). For this study, we first examined group differences in each of the CGTB interpersonal trust scales—emotional trust, reliability, and honesty—controlling for age and gender, using analysis of covariance. We found that adolescents meeting criteria for BPD demonstrated lower levels of emotional trust than healthy controls and psychiatric controls. Psychiatric controls also had lower levels of emotional trust relative to healthy controls. Effects were small to medium in size for group differences in emotional trust. Adolescents with BPD and adolescents in the non-BPD psychiatric group also demonstrated lower levels of reliability beliefs relative to healthy controls, with small effect sizes, but did not differ on reliability from each other. The three groups did not differ on honesty beliefs. When these relationships were tested dimensionally using linear regression, borderline features shared unique associations with emotional trust (contributing 1.6% of unique variance in emotional trust scores) and with reliability beliefs (contributing 1% of unique variance in reliability scores) over and above the contribution of internalizing and externalizing problems.

Post-hoc analyses testing the three forms of trust as simultaneous predictors of group status showed specificity in that lower emotional trust significantly predicted BPD diagnosis over other forms of trust, such that for every one-unit reduction in emotional trust, there was 1.12 greater odds of being in the BPD group versus the healthy control group, and 1.07 greater odds of being in the BPD group versus the psychiatric control group. When overall interpersonal trust was used as the predictor, lower trust was observed in both psychiatric groups, but they did not differ from each other. Overall, these results support the idea that emotional trust may be a specific impairment in adolescent BPD, whereas there appear to be general interpersonal trust deficits

for adolescents with psychiatric disorders, driven in particular by emotional trust and reliability beliefs.

Our initial hypothesis was that BPD adolescents would have lower levels of trust across all bases (i.e., reliability, honesty, and emotional trust) resulting from impaired social-cognitive processes, such as insecure attachment, that have been linked to BPD. That differences emerged most strongly for emotional trust, for which there was a unique relationship with BPD categorical diagnosis and with BPD features measured dimensionally, may be explained by taking into account that emotional trust refers to the belief that others will refrain from causing personal emotional harm (i.e., open to disclosures, maintaining confidentiality, refraining from criticism and embarrassment) (3,5). This particular impairment in emotional trust is consistent with findings of emotional sensitivity and shame tendencies that have been demonstrated for individuals with BPD (52–54). Prior research has also demonstrated that individuals with BPD may believe others are more likely to harm them emotionally (55,56). Emotional trust may also be specifically impaired, as it cannot be appraised as objectively as honesty and reliability forms of trust. In contrast to reliability and honesty which can be measured behaviorally, emotional trust is subjective and appraisal of others' intent can vary with emotional state (57). The instability in image of self and others likely impairs the ability of individuals with BPD to accurately appraise subjective experiences. BPD has also been linked to hypermentalizing, or the over-reading of mental states in others that goes beyond observable data (58,59), which could lead to misinterpretations of others as not emotionally trustworthy. Stress-induced paranoid thoughts, another symptom of BPD (37), may also be one reason why emotional trust is particularly impaired among adolescents with BPD. Our findings extend the literature on impairments in trust in BPD by demonstrating that in adolescence, BPD diagnosis or higher levels of borderline features are associated with specific impairments in *emotional trust* relative to other forms of trust.

The present results are also noteworthy for demonstrating that reliability was impaired in both psychiatric groups (BPD and non-BPD) relative to healthy controls; however, when examined dimensionally, reliability also showed unique associations with BPD features over and above internalizing and externalizing problems. Reliability as measured by the CGTB refers to the belief that others will fulfill their word or promise (3). Therefore, our findings suggest that adolescents with psychiatric disorders tend to have lower levels of trust that close others will be reliable and keep to their word. This impairment in trust may be aligned

with a lack of overall or perceived social support (60,61) that has been associated with lower well-being and mental health. It may also be due to insecure attachment styles and more difficult relationships with parents that have been associated with psychopathology during childhood and adolescence (62,63). Of note, the significant relationship demonstrated between BPD features and lower reliability beliefs in dimensional (regression) analyses, but not in categorical group analysis (ANCOVA), may suggest that adolescents with particularly severe BPD (i.e., very high levels of BPD features when measured dimensionally) experience deficits in reliability beliefs more so than other adolescents with BPD or than psychiatric controls. It is possible, also, that if adolescents in the BPD group experience an increase in severity of BPD as they develop into adulthood, deficits in reliability trust may grow large enough to appear in group comparisons. These findings point to directions for future research.

Honesty beliefs, which refer to the belief that others are being truthful, did not show specificity to BPD across analyses, and were not associated with psychiatric status in group analysis. However, in regression analysis, greater internalizing and externalizing problems were each uniquely associated with lower levels of honesty beliefs. This finding adds to knowledge more generally on interpersonal trust in adolescence and its associations with psychiatric symptoms by highlighting that both internalizing or externalizing symptoms in adolescence may influence beliefs that others are not trustworthy, or vice versa. Though we expected to see deficits across the three types of interpersonal trust for the BPD group, developmental considerations may play a role in why deficits in honesty beliefs were not specific to BPD or to psychiatric status, though they did significantly relate to internalizing and externalizing problems. For example, it may be possible that adolescence is a developmental period when youth in general feel that others are less trustworthy. Some support for this hypothesis is shown in that adolescents in our study, as well as youth in the original measure development study (5), demonstrated lowest scores on honesty beliefs relative to both reliability and emotional trust. Another avenue for future research that may add further to our understanding of all three types of interpersonal trust in healthy and psychiatric populations would be to assess adolescents' trust beliefs within their own relationships; a revised version of the CGTB is now available that measures this (64).

The present study has several limitations. The CGTB, BPFS-C, and YSR data were obtained through adolescent self-report; therefore, it is

possible associations in regression analysis were due in part to shared method variance. To strengthen the study design, however, a semi-structured clinical interview was also incorporated in assessment of BPD diagnosis for group comparison analyses. Second, the clinical samples of this study were collected from two distinct hospitals, which differed in terms of racial and ethnic makeup of the population and also differed in that one was private and one public. The sample from the private inpatient hospital was disproportionately White. Despite these samples coming from two inpatient psychiatric hospitals, we believe it strengthened the study to incorporate adolescents from both hospitals by providing more diversity to the clinical sample and therefore increasing overall generalizability of findings. Another limitation is that the racial and ethnic makeup of the combined clinical sample differed from that of the healthy controls; therefore, it is possible factors other than clinical status led to differences in trust between groups. Future research should make efforts to obtain a more balanced sample across groups. Notably, however, when race was included as a covariate in both three-group comparison and in dimensional analyses, results did not change.

Clinical Significance

Findings of this study point to treatment implications for adolescents. Ultimately, results suggest that adolescent patients with BPD or borderline features have a unique deficit in emotional trust, offering a specific construct to target in treatment. Mentalization Based Therapy (MBT) is one empirically supported treatment for BPD that has relevance for interpersonal trust. MBT challenges patients to understand their mental states and the mental states of others and regulate their thoughts and feelings, in turn improving interpersonal communication and relationships with others (65). Pairing our current finding of reduced emotional trust with existing treatments such as MBT for adolescents may have the potential to further reduce symptom presentation and distress experienced by adolescents with BPD. Additionally, addressing deficits in emotional trust in adolescence allows for earlier intervention, potentially increasing successful outcomes of social and dating relationships for adolescent populations. Another clinical implication of our findings is that deficits in emotional trust specifically may be a risk marker or correlate of adolescent BPD; this knowledge may also aid in assessment and early intervention for BPD during adolescence. Results also suggest that deficits in reliability may be observed in adolescents with psychiatric disorders more generally, and therefore that, in the context of treatment with this population,

it is important to bolster beliefs that other people can be reliable.

Overall, the current study is the first to compare adolescents with BPD to psychiatric controls and healthy controls on interpersonal trust beliefs. Our findings suggest that adolescents with BPD specifically possess impairment in emotional trust relative to adolescents with other psychiatric disorders and healthy control adolescents. Reliability trust appears to be low for youth with psychiatric disorders more generally compared to adolescents without psychiatric symptoms, although it may also be associated with severe or very high levels of BPD features. These findings provide insight for future research, expand knowledge on interpersonal trust deficits among youth with psychiatric disorders, and identify emotional trust in particular as an important correlate and potential target for prevention and intervention in adolescent BPD.

Conflicts of interest
The authors report no conflicts of interest.

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