



Adult attachment anxiety moderates the relation between self-reported childhood maltreatment and borderline personality disorder features

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ABSTRACT

Childhood maltreatment is one of many risk factors for borderline personality disorder (BPD). However, not all individuals with BPD report histories of childhood maltreatment. Therefore, it is necessary to identify factors that contextualize the relation between childhood maltreatment and BPD features. With its emphasis on the developmental origins of emotion regulation, attachment theory provides a useful framework to understand how people are differentially affected by early life stress. The present study examined self-reported adult attachment as a moderator in the relation between childhood maltreatment and BPD features in a large undergraduate sample (n = 1 033). Attachment anxiety, but not attachment avoidance, moderated the relation between childhood maltreatment and BPD features, and this relation was non-significant among participants low (−1 standard deviation) in attachment anxiety. These results support the hypothesis that secure attachment in adulthood may buffer against the otherwise deleterious effects of distal risk factors on personality pathology. Future research should continue to examine this question across risk factors and across disorders. Furthermore, we suggest that researchers who have historically examined attachment as a mediator cross-sectionally should re-examine their data for evidence of a moderation effect. © 2019 John Wiley & Sons, Ltd.

Borderline personality disorder (BPD) is a severe, debilitating disorder whose features include dysregulation in affect and identity, instability in relationships and increased risk for suicide and non-suicidal self-injury.¹ Although the estimated prevalence of BPD in the general population is 1.6%,² its prevalence among suicide completers is estimated to be far higher than that (9–33%), and meta-analytic findings suggest that the suicide rate among BPD patients is 100 times higher than that in the general population.³ On a societal

level, BPD also represents a significant economic and public health burden through increased risk for work-related problems, psychiatric and non-psychiatric hospitalizations and cardiovascular disease.^{4,5}

On an individual level, BPD is associated with significant suffering: it is commonly co-morbid with depressive and anxiety disorders, and treatment of these disorders is rendered less effective when BPD is co-morbid.¹ Individuals with BPD also experience significant impairment in social

and intimate relationships, partly because of a characteristic fear of abandonment related to a more general tendency towards interpersonal hypersensitivity.^{6,7} When measured dimensionally (rather than with a yes/no diagnosis), even a few subthreshold features of BPD can cause clinically significant impairment.^{8,9} Notably, measuring BPD this way may be more reliable and valid,¹⁰ and dimensional measurements may be especially useful in non-clinical populations because some evidence suggests that the number of BPD criteria is more predictive of dysfunction in individuals meeting fewer criteria.¹¹ In summary, empirical research has unequivocally underscored the severe burden that BPD represents.

Among the many risk factors for BPD that have been examined, maltreatment in childhood has been repeatedly highlighted in its robust relation to BPD. A large body of research has converged on the general finding that maltreatment in childhood is more common among individuals with BPD than healthy controls, see Johnson et al.¹² and Widom et al.¹³ for reviews. This finding holds across gender and socio-economic status,^{14,15} and it holds whether BPD is measured dimensionally or as a categorical diagnosis.^{16,17} It is unclear how much the type of maltreatment matters. For example, some studies have suggested that, compared with other forms of maltreatment, sexual abuse in particular may be robust in relation to BPD and related problems, although this effect may not be specific to BPD.^{18,19} Some studies have shown that childhood emotional abuse may also play a salient and possibly unique role in risk for BPD,^{20,21} a finding that echoes the literature on BPD and insecure attachment, given the scaffolding of insecure attachment on which emotional abuse may often rest. Overall, the diversity of these samples and the range of methods employed (e.g. categorical, interview-based diagnosis vs. self-report measures of BPD) suggest a robust association between childhood maltreatment and BPD features.

Despite the robust association between childhood maltreatment and BPD, some individuals

with BPD nonetheless have a history of little or no childhood maltreatment.^{22,23} Therefore, it is important to identify contextual factors that may explain variation in the association between childhood maltreatment and adulthood BPD traits (e.g. identity disturbance) and symptoms (e.g. excessive anger), hereafter collectively referred to as 'BPD features'. While some such factors may be less flexible, such as constitutional sensitivities to experiences,²⁴ there are likely other factors that are amenable to intervention, either in adulthood or earlier in development. Identifying such malleable factors that can buffer against the development of BPD—or at least ameliorate its severity—has implications for the prevention and treatment of the sequelae of adverse childhood experiences.

One such factor may be the capacity to sustain healthy, close relationships and to effectively use such relationships for support during times of stress. Within the framework of attachment theory, securely attached individuals are able to flexibly cope with stressful situations as a function of their ability to find comfort in their social structure, whether in real interaction or in mental representation. On the other hand, non-securely attached individuals may be characterized in their relationships by high attachment anxiety, high attachment avoidance or both. Attachment anxiety refers to the tendency to worry about the availability and interest of close others, and attachment avoidance refers to discomfort with sharing feelings and a tendency to avoid dependence or affection. These two dimensions form a four-quadrant space in which each quadrant (high/high, high/low, etc.) can represent distinct attachment styles.²⁵ Compared with individuals high on attachment anxiety and/or avoidance, securely attached individuals not only have safe and trusted mental representations of the people in their lives but they are able and willing to actively seek others as a means to regulate stress.^{26,27} These differences in attachment, first theoretically formulated by Bowlby,²⁸ have been robustly associated with differences in response to stress in the empirical literature. Specifically,

securely attached adults seem to be buffered against various negative effects of stressors compared with their more attachment-anxious or attachment-avoidant counterparts, partly because secure individuals use more adaptive and effective coping mechanisms.^{29–31}

In one example, researchers in a cleverly designed observational study of dating couples led women to believe they would undergo a short wait, and researchers then unobtrusively videotaped the subsequent interactions with their partners in a waiting room. There were striking differences in response by attachment style: securely attached women sought more support from their partner in conditions of increasing anxiety, whereas attachment-avoidant women sought progressively less support and reassurance from their partner as their anxiety level increased.³² The same pattern of results emerges in other research even when a partner is not physically present. In this case, securely attached individuals are instead able to call upon positive memories and imagery of loved ones for support. For example, among Israeli ex-prisoners of war, secure attachment was associated with utilization of positive memories and imagery of trusted others during imprisonment, and securely attached individuals demonstrated the best long-term adjustment after returning home. Conversely, higher attachment anxiety and avoidance were both associated with more PTSD symptoms.³³

Given the research highlighting the protective effects of secure attachment, it may be the case that attachment security serves as a buffer in the association between risk factors like childhood maltreatment and BPD features. Past research on attachment in BPD suggests that insecure attachment is the norm among individuals with BPD,^{34,35} implying that insecure attachment experiences are developmental precursors to BPD features. Although there is not one particular insecure attachment style that characterizes BPD, disorganized attachment coupled with unresolved trauma is common in individuals with BPD.³⁶ Because insecure attachment confers risk for both

BPD and psychopathology more generally, securely attached individuals should fare better in the context of other risk factors.

Thus, in a large sample of university undergraduates, we sought to preliminarily test the hypothesis that secure attachment may protect individuals who experience childhood trauma from developing BPD features. Our main hypotheses were twofold. First, consistent with the literature described, we hypothesized that self-reports of childhood maltreatment would be positively correlated with self-reported BPD features. Next, we hypothesized that among individuals reporting secure attachment (i.e. low attachment anxiety and low attachment avoidance), the BPD–childhood maltreatment association would be significantly less strong than that in insecurely attached individuals.

Method

Participants and procedure

One thousand thirty-three undergraduates at a large north-eastern university completed a battery of self-report measures online in order to fulfil partial requirements for an introductory psychology course. All participants provided informed consent. Of these participants, 950 (92%) fully completed all measures in the succeeding text and were thus included in the relevant statistical analyses; the other 83 participants were missing data on at least one measure. There were no significant differences between full and partial completers on sex, age or any of the four measures in the succeeding text, and Little's missing completely at random test was non-significant ($\chi^2(42) = 34.76, p = 0.78$), indicating that these data were missing completely at random.

Of the 950 participants included in the analyses, the majority were women (62.9%), heterosexual (90%), White (78%) and underclassmen (89%) with a mean age of 19.18 (SD = 2.11). Full demographic information is shown in Table 1.

All procedures in this study were approved by the Pennsylvania State University Institutional

Table 1: Sample characteristics

Characteristic	n (N = 1 033)	%
Gender		
Male	349	36.93
Female	594	62.86
Transgender	2	0.21
Primary race/ethnicity		
Caucasian	740	77.98
Asian/Pacific Islander	90	9.48
African American	44	4.64
Hispanic/Latino	39	4.11
African Caribbean	12	1.26
Arab	3	0.32
African	3 0	32
Other	17	1.79
Class year		
Freshman	670	70.68
Sophomore	169	17.83
Junior	65	6.86
Senior	44	4.64

Summed totals may be less than 1 033 because of some missing data.

Review Board, and all procedures conformed to the provisions of the Declaration of Helsinki.

Measures

Demographics. At the beginning of the larger questionnaire battery, participants responded to a series of demographics questions, including age, gender, racial/ethnic identity, college year, work status, relationship status and some questions about parental demographics.

McLean Screening Instrument for Borderline Personality Disorder³⁷. The McLean Screening Instrument for Borderline Personality Disorder (MSI-BPD) is a self-report screening measure of BPD features. It consists of 10 yes/no items that correspond to the nine *DSM-IV/5* criteria for BPD (two items for paranoia/dissociation). As a screening instrument, the MSI-BPD has shown adequate criterion validity with semi-structured interviews in community and clinical samples,^{37,38}

where a cut-off score of seven yielded the best trade-off between sensitivity and specificity. The total MSI-BPD score is the sum of all 'yes' responses.

In the current sample, 38 participants (4%) scored at or above the previously established clinical cut-off of seven³⁷ on the MSI-BPD, and 94 participants (9.9%) endorsed at least half (five) of the MSI-BPD items.

Childhood Trauma Questionnaire–Short Form³⁹.

The Childhood Trauma Questionnaire–Short Form (CTQ-SF) is a 28-item self-report questionnaire. The CTQ-SF retrospectively measures frequency of childhood traumatic incidents classified into five categories: physical abuse (e.g. 'I was punished with a belt, a board, a cord, or some other hard object'), sexual abuse (e.g. 'Someone made me do or watch sexual things'), emotional abuse (e.g. 'People called me things like stupid, lazy or ugly'), physical neglect (e.g. 'I didn't have enough to eat') and emotional neglect (reverse scored; 'People in my family felt close to each other'). All items are preceded by the phrase, 'When I was growing up ...', and participants were explicitly instructed to report on their experience prior to age 18. Trauma frequency ratings are made on a five-point Likert-type scale: *never true*, *rarely true*, *sometimes true*, *often true* and *always true*. As such, childhood maltreatment frequency was measured continuously, yielding a total childhood trauma score and five subscores corresponding to the categories listed earlier.

The CTQ-SF has shown acceptable reliability and validity in both clinical and community populations.^{39,40} Bernstein et al.³⁹ found moderate levels of agreement between therapist observation ratings and CTQ-SF subscale scores (correlations as high as 0.75 for sexual abuse) and good internal consistency scores across a range of samples (physical abuse = 0.83–0.86, emotional abuse = 0.84–0.89 and sexual abuse = 0.92–0.95). Internal consistency was high in this sample for four subscales (physical abuse = 0.76, emotional abuse = 0.85, sexual abuse = 0.94 and

emotional neglect = 0.90) and low for physical neglect ($\alpha = 0.56$). The low reliability for physical neglect is consistent with other studies that demonstrated lower reliability for physical neglect across samples.^{41–43} The total score was used for all analyses in the current study.

*Experiences in close relationships-revised*⁴⁴. The experiences in close relationships-revised is a 36-item self-report measure of adult attachment. It comprises two subscales that assess two theoretically orthogonal dimensions, attachment anxiety and avoidant attachment. Attachment anxiety assesses the extent to which an individual is preoccupied about others' affection and worried about being abandoned by others. This dimension is assessed with items like 'I often worry that people do not really love me' and 'My desire to be very close sometimes scares people away'. Attachment avoidance is measured with items such as 'I prefer not to be too close to people' and 'I find it easy to depend on people' (reverse scored). Across hundreds of studies, the anxiety and avoidance dimensions are nearly orthogonal, as intended, with an average correlation of $r = 0.15$.⁴⁵ In the current sample, there was a small correlation between attachment anxiety and avoidance ($r = 0.27$, $p < 0.001$). Internal consistency was high for both attachment anxiety ($\alpha = 0.93$) and attachment avoidance ($\alpha = 0.91$). Given the centrality of attachment disturbance in BPD,³⁶ we have provided a graph depicting the current sample's scores on the two experiences in close relationships-revised dimensions, with larger dots/circles representing higher scores on the MSI-BPD (Figure 1).

Results

The presented data were collected in 2012. All analyses were conducted using IBM SPSS Statistics v24. Bivariate relations (Pearson's r) demonstrated significant correlations between attachment, total childhood maltreatment and BPD features that were small to moderate in magnitude (Table 2). Next, we conducted a

regression-based moderation analysis in order to assess potential interactions between childhood maltreatment and adult attachment in predicting BPD features. Attachment avoidance was initially included as a variable in these models, but because it was a significant predictor neither independently nor in interaction with other variables, it was dropped from the analyses in favour of a more parsimonious model. In this more compact model, the interaction between childhood maltreatment and attachment anxiety was the only significant predictor of BPD features. The results of this regression are depicted in Table 3.

In order to determine the magnitude of the relation between childhood maltreatment and BPD features at different levels of attachment anxiety, we conducted regression-based simple slopes analyses. At low levels of attachment anxiety (one standard deviation below the mean), the magnitude of the relation between childhood maltreatment and BPD features was small and non-significant, $b = 0.009$, $t(939) = 0.99$, $p = 0.32$. At high levels of attachment anxiety (+1 standard deviation), this relationship was stronger, $b = 0.062$, $t(939) = 8.98$, $p < 0.001$. These effects are equivalent to Cohen's d s of 0.06 and 0.59, respectively, suggesting a substantial group difference and, notably, a non-significant effect among individuals reporting low attachment anxiety. This interaction is visualized in Figure 2.

Discussion

We sought to examine the roles of adult attachment and childhood maltreatment in relation to BPD features. Specifically, we were interested in the relation between self-reported childhood maltreatment and BPD features at varying levels of attachment security. Here, we relied on two bodies of research literature: one suggesting that maltreatment in childhood is a potential risk factor for BPD^{12,13,15}; and another suggesting that individual differences in attachment may contextualize the impact of such risk factors.^{46,47} Consistent with previous research,^{18,19,21,22,48} we

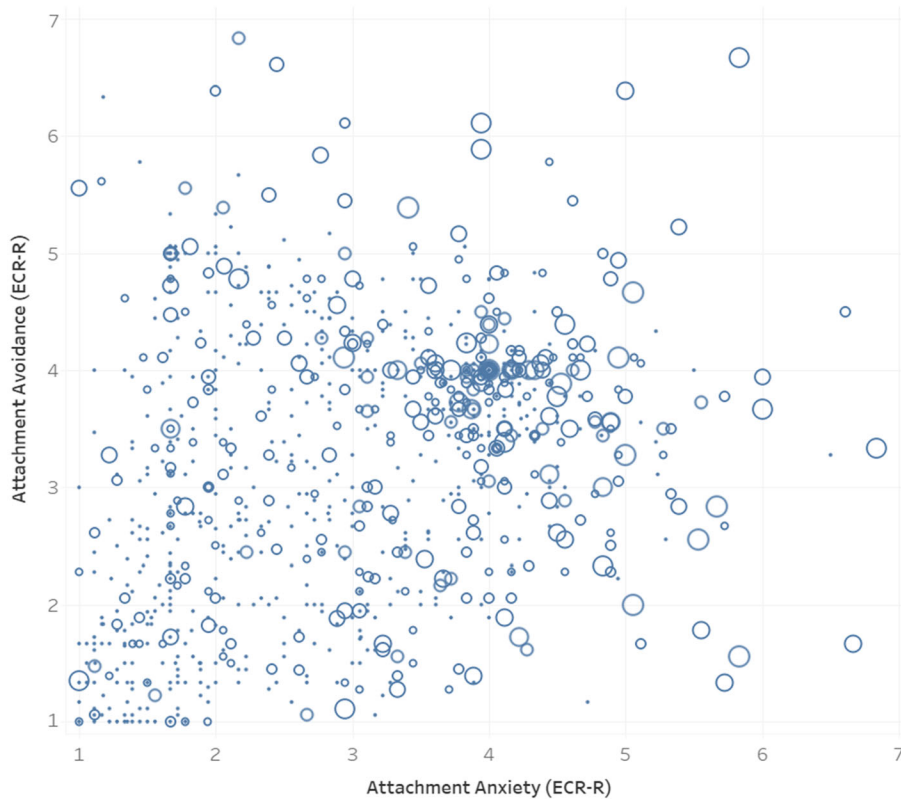


Figure 1: Participant McLean Screening Instrument for Borderline Personality Disorder scores (higher scores = larger circles) plotted onto the two-dimensional attachment space. ECR-R, experiences in close relationships-revised [Colour figure can be viewed at wileyonlinelibrary.com]

Table 2: Summary of intercorrelations, means and standard deviations for scores on the CTQ-SF, ECR-R avoidance and anxiety and MSI-BPD

Measure	1	2	3	M	SD
1. CTQ-SF	—			34.42	11.42
2. ECR-R anxiety	0.21	—		2.91	1.20
3. ECR-R avoidance	0.28	0.27	—	3.22	1.22
4. MSI-BPD	0.32	0.39	0.15	1.20	2.06

CTQ-SF, Childhood Trauma Questionnaire–Short Form; ECR-R, experiences in close relationships-revised; MSI-BPD, McLean Screening Instrument for Borderline Personality Disorder. All correlations were significant at $p < 0.001$.

hypothesized that childhood maltreatment would be positively correlated with BPD features. However, we hypothesized that the strength of this

relation would be smaller in securely attached individuals; high attachment security (i.e. low self-reported attachment anxiety and avoidance) would serve as a ‘buffer’ between childhood maltreatment and BPD. We tested these hypotheses in a large, undergraduate sample who filled out self-report measures online.

We found that self-reports of childhood maltreatment were positively related to BPD features. In partial confirmation of our hypothesis, attachment anxiety, but not attachment avoidance, moderated the relation between childhood maltreatment and BPD. Specifically, there was a moderate relation between childhood maltreatment and BPD features among individuals reporting high levels of attachment anxiety, whereas this effect was smaller and non-significant in those

Table 3: Hierarchical multiple regression predicting MSI-BPD score from CTQ-SF total score, ECR-R anxiety score and their interaction

DV = MSI-BPD	Model 1		Model 1	
	B (SE B)	<i>t</i>	B (SE B)	<i>t</i>
CTQ-SF	0.04 (0.01)	8.18***	-0.03 (0.02)	-1.69
ECR-R anxiety	0.58 (0.05)	11.42***	-0.14 (0.17)	-0.82
CTQ × ECRanx interaction			0.02 (0.01)	4.57***
R^2		0.226		0.226
<i>F</i> model			124.006***	91.387***

B, unstandardized regression coefficient; *t*, coefficient *t*-statistic; CTQ-SF, Childhood Trauma Questionnaire–Short Form; ECR-R, experiences in close relationships-revised; MSI-BPD, McLean Screening Instrument for Borderline Personality Disorder.

*** $p < 0.001$.

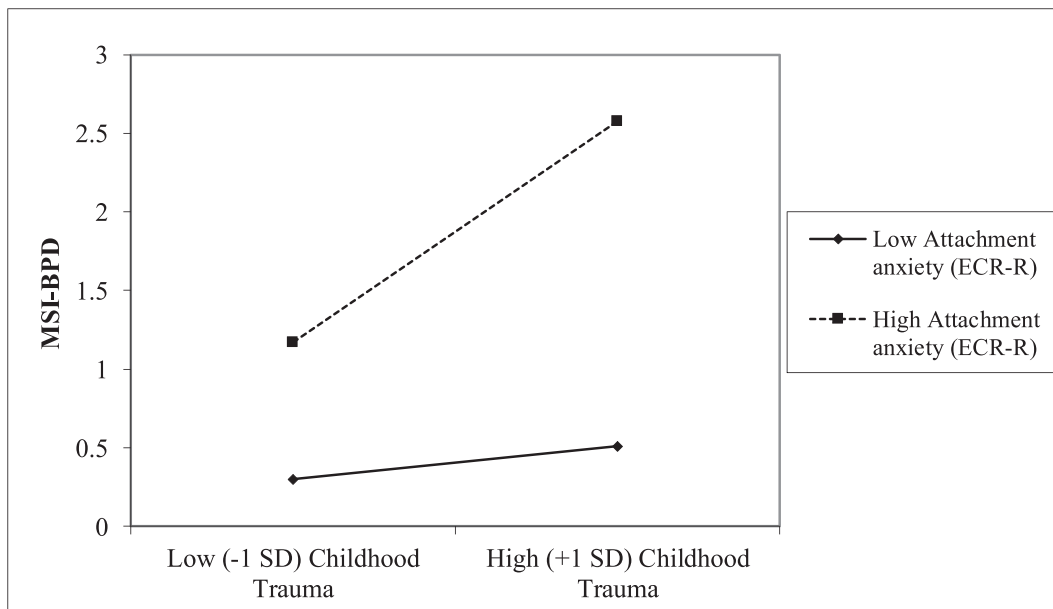


Figure 2: The relation between childhood trauma and BPD features is stronger in individuals high (+1 SD) on attachment anxiety. ECR-R, experiences in close relationships-revised; MSI-BPD, McLean Screening Instrument for Borderline Personality Disorder

reporting low attachment anxiety. These findings are consistent with the notion of attachment security as a protective factor against psychopathology,^{34,49,50} although attachment avoidance played no predictive role in our regression models. This suggests that, at least in the case of the childhood

maltreatment–BPD relation in non-clinical samples, attachment security may be protective only insofar as it entails low attachment anxiety.

Whereas features of BPD can typically be predicted by self-reports of childhood maltreatment,^{21,51} we found that, for the most part, this

was true only among study participants who reported increased preoccupation with others' availability (i.e. attachment anxiety). This suggests that attachment security—the capacity to represent others as safe and trustworthy—may buffer against the deleterious impact of childhood maltreatment on adulthood BPD features. Extended developmentally, these findings are consistent with the proposition that the development of secure attachment early in life is a protective factor against an abusive, neglectful or otherwise sub-optimal environment. Empirical research in developmental psychopathology has borne this out empirically. Masten and colleagues⁵² have highlighted the importance of adults' responses to children's stressors, as well as the presence of and modelling by a competent adult more generally, in fostering resilience both after stressors and during times of prolonged stress. In summarizing the 30-year longitudinal Minnesota study of at-risk mothers and their children, Sroufe⁵³ describes the many protective roles of secure attachment at multiple time points. Secure attachment not only buffered against stress within one time point but it predicted how well individuals recovered from the effects of stress when followed into the next time point many years later.

Although it is useful to know that attachment security may buffer against risk factors like childhood maltreatment, it is equally or more important to understand why. Unfortunately, our data do not shed light on possible mechanisms. As described before, there is evidence that securely attached individuals cope with stressors more adaptively than insecurely attached individuals.^{30,33} Coping, or emotion regulation more broadly, may thus be a central mechanism through which attachment has its protective effects. In fact, attachment theory as originally conceived by Bowlby²⁸ provided a developmental framework for understanding emotion regulation. Findings from the longitudinal Minnesota study are consistent with coping and emotion regulation as central mechanisms in the protective effects of secure attachment.⁵³ For example, not only were

securely attached children better able to cull support from adults in a flexible way but they were able to modify their behaviour and affect flexibly depending on the situation. They displayed less negative affect and were more effective socially, and they scored higher on measures of self-esteem and 'ego resilience', a measure specifically of regulation. These skills served them not only in childhood but throughout the lifespan: insecurely attached children were much more likely to succumb to stressors in the form of psychopathology including BPD.^{53,54}

Although our findings are broadly consistent with both attachment theory and a number of empirical studies on childhood maltreatment and BPD, we note a number of limitations to this study. First, these cross-sectional data preclude firm conclusions about causality. Although childhood maltreatment cannot be directly explored experimentally, the rich literature in attachment theory and developmental psychopathology more broadly has made clear that longitudinal, observational studies of variations in early environment can yield tremendous insights about how such variations impact later functioning.^{13,53,55} Our findings are consistent with those throughout that longitudinal literature, although we are limited here to self-reports of past experiences and current representations of self and other. This may impact the findings because individuals high in BPD features may be more likely to represent past memories negatively,⁵⁶ potentially confounding the examined effects on which some of our arguments rest. Although our data cannot easily address this problem, there is evidence to suggest that retrospective reports of childhood maltreatment, when inaccurate, are more prone to false negatives than false positives.^{57,58} If this is true among individuals with BPD, then it is counter to the idea of artificially inflated reports of maltreatment by BPD patients, although this question has not been specifically examined in a BPD sample to our knowledge. Furthermore, while there is some reason to believe that the disorganized attachment characteristic of BPD may lead to incoherent

accounts of childhood events,⁵³ we believe that controlling for attachment in our regression models should guard against such a confound to some degree. Finally, our sample is limited in racial and ethnic diversity, and thus, the generalizability of these findings across racial groups cannot be established.

Despite these limitations, we believe that this study is unique in its testing of multiple attachment variables as cross-sectional moderators of early risk factors (childhood maltreatment) and distal outcomes (adulthood BPD features). To our knowledge, only a few cross-sectional studies have examined attachment variables as moderators of the relation between childhood maltreatment and psychopathological outcomes,^{46,47,59,60} and some have examined social support, which may function similarly at a representational level.^{61,62} We believe that much data similar to ours exist that could use moderation analyses to probe the hypothesis that attachment security is protective. When two-dimensional measures of attachment are available in a data set, three-way interactions including both attachment dimensions and some risk factor should be probed in order to fully test this hypothesis. If only two-way interactions are significant in such a fully specified regression or ANOVA, this should be noted in the text or figures, because it is of theoretical importance.

Surprisingly, few published studies have tested adult attachment as a moderator in this way, placing it in a model between risk factor and pathological outcome. More often, adult attachment is instead positioned as a mediator in the relation between a childhood stressor and a psychopathological outcome,⁶³ because the developmental literature clearly shows a deleterious effect of early maltreatment on attachment style.⁶⁴ Nevertheless, we suggest that these and other authors should also test attachment variables as moderators in their data. In fact, because attachment can be taken as a mediator or a moderator, depending on the question, best practice in this case is to create more complete statistical models that

can adequately account for these complexities. However, we recognize the limitations of more complex statistical models in the case of retrospective self-report data; utilizing such models in the context of well-rounded longitudinal data sets will ultimately yield the richest findings. Motivated researchers should therefore continue to channel efforts towards conducting or supporting such longitudinal studies to better elucidate the mechanisms through which secure attachment may be protective.

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