

Rejection Sensitivity and Borderline Personality Disorder Features:
The Mediating Role of Attachment Anxiety, Need to Belong, and Self-Criticism

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Abstract

Rejection hypersensitivity has been considered to be the core feature of borderline personality disorder (BPD) patients. However, little is known about the possible developmental mechanisms that might explain the association between rejection sensitivity and BPD features. The current study investigated the mediating roles of adult attachment, need to belong, and self-criticism in the association between rejection sensitivity and BPD features in 256 healthy adults. Results indicated attachment anxiety, need to belong, and self-criticism mediated the association between rejection sensitivity and BPD features. However, attachment anxiety and self-criticism did not moderate the mediated association between rejection sensitivity and BPD features. The findings suggested that individuals with high rejection sensitivity were more likely to be anxiously attached to significant others, which might increase the desire to be accepted by others. To satisfy this elevated need to affiliate with others, they might become more self-critical which may contribute to high BPD features.

Keywords: Borderline personality features; Rejection sensitivity; Self-criticism; Need to belong; Attachment anxiety.

Interpersonal hypersensitivity has been described as a central feature of borderline personality disorder (BPD), a serious and complex mental disorder with a major disturbance in cognitive and affective capacities, and interpersonal relationships. Their interpersonal relationship style was found to be intense, but unstable, shifting from extreme idealisation to extreme devaluation (Gunderson & Lyons-Ruth, 2008). Within their interpersonal difficulties, hypersensitivity and intense fear of abandonment/rejection have been considered to be important factors underlying a number of BPD symptoms (Lazarus et al., 2014; Sanislow et al., 2002). Although their maladaptive cognitive and behavioural response to negative social interactions (i.e., social rejection) have been captured in many studies (Ayduk et al., 2008; Boldero et al., 2009; Ruocco et al., 2010), it is still not well understood how their developmental aspects may contribute to the link between heightened rejection sensitivity and BPD features.

From an evolutionary perspective, people have a fundamental desire and need to have a positive and lasting interpersonal relationship (DeWall, Deckman, Pond, & Bonser, 2011). This need to belong is a universal need of human beings as social species to feel secure about attachments to others (Baumeister & Leary, 1995; Bowlby, 1969, 1973; Downey & Feldman, 1996; Staebler et al., 2011). When the need to belong is not satisfied, people experience negative emotional, cognitive and behavioural consequences such as emotional distress (Staebler et al., 2011). Hence, it is considered to be evolutionally adaptive to be able to detect and respond to potential rejection cues (Leary & Baumeister, 2000). However, the individual's sensitivity and readiness to perceive and respond to those rejection-relevant cues vary across the spectrum (Downey & Feldman, 1996). When people experience repeated rejection from others, they are more likely to develop heightened rejection sensitivity and suffer from cognitive and affective impairments in interpersonal relationships (Staebler et al., 2011).

Rejection sensitivity was based on the attachment theory and defined as a cognitive-affective process with anxious expectations of future rejection and intense reactions in response to perceived rejection (Downey & Feldman, 1996; Downey, Freitas, Michaelis, & Khouri, 1998). When individuals with heightened rejection sensitivity perceived potential rejection, they were more likely to respond with hostility (Downey, Freitas, Michaelis, & Khouri, 1998), and aggressive behaviors (Ayduk et al., 2008; Gupta, 2008) as perceptions of rejection could elicit anger (Leary, Twenge, & Quinlivan, 2006; Renneberg et al., 2012). Past research has shown that females with high rejection sensitivity were more likely to have fights with their romantic partners and express verbal and non-verbal hostility when they perceived rejection (Ayduk, Downey, Testa, Yen, & Shoda, 1999). In addition, males with high rejection sensitivity were more likely engage in physical violence and intimacy-seeking behaviours towards their romantic partners compared to men with low rejection sensitivity (Downey, Feldman, & Ayduk, 2000). From a developmental perspective, whether caregivers reliably, consistently, and sensitively satisfy their children's needs might affect the children's development of secure working attachment-models. If the primary caregiver (i.e., mother) does not reliably and sensitively respond to the children's needs (i.e., neglect), the children may form expectations that they are more likely to be rejected when they seek support or acceptance from significant others. Hence, they tend to be more anxious about expressing their needs to significant others and hypervigilant for rejection-relevant cues (Downey & Feldman, 1996). It has been shown that early childhood traumatic experiences increased the risk of developing heightened rejection sensitivity (Feldman & Downey, 1994). Given that BPD patients frequently experience maladaptive childhood environments such as parental criticism (Crowell, Beauchaine, & Linehan, 2009), psychological or physical neglect (Widom, Czaja, & Paris, 2009), and psychological, physical and sexual abuse

(Ball & Links, 2009), they are predicted to be hypersensitive to rejection. An increasing number of studies indeed have supported this link between rejection sensitivity and BPD features (Gunderson, 2007; Renneberg et al., 2012), and have empirically investigated this link (Ayduk et al., 2008; Butler et al., 2002; Boldero et al., 2009; Fertuck et al., 2013; Meyer, Ajchenbrenner, & Bowles, 2005; Ruocco et al., 2010; Staebler et al., 2011). BPD patients or those with higher BP features were more likely to have heightened rejection sensitivity (Arntz, Dreessen, Schouten, & Weertman, 2004; Arntz, Dietzel, & Dreessen, 1999; Ayduk et al., 2008; Renneberg et al., 2012; Stanley & Siever, 2010) and preoccupation with issues related to interpersonal relatedness compared to either healthy control groups or people with social anxiety disorder (Staebler, Helbing, Rosenbach, & Renneberg, 2011). Although BPD patients had a heightened need to belong (Ayduk et al., 2008) and desire to maintain a stable relationship, their behaviours were more likely to be characterised as withdrawal, aggressive or impulsive, and dismissive (Rosenbach & Renneberg, 2011). Further, those with high BPD features experienced intense negative emotional reactivities in response to social rejection (Chapman et al., 2014; Lobbestael & McNelly, 2016) such as intense hostility and rage (Berenson, Downey, Rafaeli, Coifman & Paquin, 2011). Veen and Arntz (2000) investigated the effect of themes of rejection or abandonment in BPD patients. In the study, participants watched a series of film clips, which involved different themes including rejection. They found strong emotional reactions and extreme evaluations of others (i.e. all good/ all bad) in situations that were emotionally provoking for them (i.e., rejection) in BPD patients. Another study investigated whether BPD could be characterised by interpretation and attributional bias for ambiguous stimuli in favour of threatening attributions. They found that BPD patients exhibited rejection and anger related attributions and interpretation bias in ambiguous social situations (Lobbestael & McNelly, 2016).

Berenson and colleagues (2011) investigated the rejection-rage contingency in BPD patients compared with a healthy control group in a laboratory setting and in daily lives using electronic diary. They found that the triggering effect of rejection had a substantial contribution to rage in BPD participants. Self-injury behaviours and suicide attempts were more likely to occur in the context of interpersonal relations in BPD patients (Brodsky et al., 2006; Herpertz, 1995).

As described in the previous section, rejection sensitivity is based on the attachment theory which accounts for the importance of developmental aspects. Although there may be other theoretical explanations, Bowlby's attachment theory proposes that children develop mental models about themselves and others, which impact their interpersonal relationship style later in their adulthood (Bowlby, 1969, 1973). According to his theory, individuals with anxious-ambivalent or resistant attachment styles tend to have excessive demands on others (i.e., need to belong) and have anxious and clinging behaviours when their demands are not satisfied. Those with avoidant attachment style tend to be unable to make deep interpersonal relationships. Individuals with insecure attachment styles tend to be hypersensitive to threat in response to perceived insecurity and uncertainty/unpredictability of their attachment figures' (i.e., primary caregiver) behaviours and availability (Luyten & Fonagy, 2015). BPD patients have been more associated with a combination of the preoccupied and the unresolved/fearful attachment styles (Agrawal, Gunderson, Holmes, & Lyons-Ruth, 2004; Bakermans-Kranenburg & IJzendoorn, 2009; Levy, 2005; Nakash-Eisikovits, Dutra, & Westen, 2002). Adults with the preoccupied attachment style tend to display attachment related concerns which have an angry or passive quality. Those adults with the unresolved/fearful attachment style tend to display fearful or contradictory behaviours (i.e., desire emotional closeness, but feel uncomfortable with emotional

closeness). BPD patients with the unresolved attachment type were more likely to be associated with suicide tendency (Adam, Sheldon-Keller, & West, 1996).

Mikulincer and colleagues (Mikulincer & Shaver, 2012; Mikulincer, Shaver, Sapir-Lavid, & Avihou-Kanza, 2009) proposed that the two-dimensional concepts, attachment anxiety and avoidance, could reflect individuals' attachment security and the ways in which people deal with interpersonal threats and distress. According to their model, avoidant attachment style was associated with schizoid and avoidant personality disorders, whereas anxious attachment was associated with borderline, dependent, and histrionic personality disorders. Recent studies supported this model and have found the need to differentiate the effect of adult attachment depending on the attachment style. Past studies have shown that attachment anxiety and attachment avoidance seemed to affect differently on perceptions of conflict and support from romantic partners (Campbell, Simpson, Boldry, & Kashy., 2005) and how people reacted to perceived rejection (Besser & Priel, 2009). Campbell and colleagues (2005) conducted a two-part study. In the first study, dating couples completed diary questions regarding the amount of daily conflict, support, and perceived quality of their romantic relationship for 14 days. In the second study, they discussed possible solutions to their conflicts. They found that individuals who were more anxiously attached to their partners were more likely to perceive conflict, and their perceived conflict was higher than what their partners reported. Also more anxiously attached individuals felt that the conflict was more hurtful to them, and would have more negative and long-lasting impact on their relationships. When they discussed a serious conflict, more anxiously attached individuals reported a high level of distress. Besser and Priel (2009) investigated the responses to imagined romantic rejection by using a vignette. Participants in romantic relationships read a vignette of hypothetical situations with themes of romantic

rejection. Results indicated that individuals with the anxious attachment style, but not attachment avoidance, were related with more intense reactions. Those with high attachment anxiety reported more intense distress, anger, and vulnerability, and lower self-esteem after reading those scenarios. Those with the resistant/preoccupation attachment style (with attachment anxiety) tended to exhibit intense needs to be connected to others, seek a high level of intimacy, and express substantial anxiety in response to separation. On the other hand, people with the dismissive attachment style (with attachment avoidance) tended to make efforts to suppress their need for attachment and maintain detachment when they dealt with a loss (Agrawal et al., 2004). Further, neuroimaging studies also supported that individuals who were anxiously attached experienced heightened activities in the brain regions associated with rejection-related distress. However, those with the attachment avoidance style showed fewer activities in such brain regions. Hence, this suggests that heightened need to belong, or attachment need, may only persist in anxiously attached individuals. The strategies used in individuals with different attachment styles may differ to promote social bonds (DeWall et al., 2012).

As one of the strategies to satisfy the heightened need to belong, BPD patients may develop self-critical perfectionism. Self-critical perfectionism is described as extremely critical evaluation of one's own performance, inability to obtain satisfaction from their success, chronic worry about others' criticism (Dunkley, Blankstein, Masheb, & Grilo, 2006). Similar to attachment anxiety, but unlike attachment avoidance, self-critical individuals are ambivalent in their interpersonal relationships as they highly desire to belong to and to be approved by others, but strongly fear disapproval or rejection (Blatt & Shichman, 1983). A growing body of empirical evidence supported that perfectionism was a risk and maintaining factor for various psychological problems, including depression, anxiety disorders, and suicidal behaviours

(Campos, Besser, & Blatt 2013; Flett & Hewitt, 2002). There are different theoretical frameworks for the aetiology of self-critical perfectionism. Blatt (1990) and colleagues described personality development as the result of the integration of two polarities involving dimensions of interpersonal relatedness (e.g., dependency) and self-definition (e.g., self-criticism). Blatt (2008) suggested that aversive experience in early childhood (i.e., parental rejection, severe judgmental parental criticism) resulted in different disruptive behaviours. One way for adolescents to control the issues of relatedness with their caregivers is an achievement-oriented psychological control, which leads to a preoccupation with perfectionism. Blatt and colleagues (Blatt & Auerbach, 1988) distinguished anaclitic BPD patients (dependency) from introjective BPD patients (self-criticism). According to their theory, anaclitic BPD patients are preoccupied with the fear of abandonment, whereas introjective BPD patients concern about criticism and self-worth. Another similar theoretical approach is Beck's sociotropy and autonomy (1983). Beck's constructs of sociotropy and autonomy are similar to Blatt's constructs of dependency and self-criticism (Morse, Robins, & Gittes-Fox, 2002; Ouimette, Klein, Anderson, Riso, & Lizardi, 1994). Beck and colleagues (1990) described BPD as a broader set of beliefs and behavioural patterns including both sociotropy and autonomy. Past research has shown that both autonomy and self-criticism were associated with borderline, paranoid, and self-defeating personality features. On the other hand, sociotropy was associated with avoidant, dependent, and histrionic personality disorder after controlling for severity of depression (Ouimette et al., 1994). A recent study found that the association between perceived maternal care and depressive symptoms was mediated by self-critical perfectionism (Campos, Besser, & Blatt, 2010). They also found among those with experience of parental rejection were at higher risk of suicide ideation which was mediated by self-critical perfectionism (Campos et al., 2013). Self-criticism was also found to mediate the

link between child maltreatment and non-suicidal self-injury behaviours (Glassman, Weierich, Hooley, Deliberto, & Nock, 2007). Past literature (Falgares et al., 2017) revealed that self-criticism, but not dependency, mediated the association between insecure attachment (anxiety and avoidance) and suicide-related behaviours. Further, past studies among clinical and nonclinical populations have shown that self-criticism had a negative impact on both intrapersonal and interpersonal functioning. On the other hand, dependency had a negative impact only on intrapersonal functioning (Besser, Flett, & Davis, 2003), but was unrelated to interpersonal functioning (Dimitrovsky, Levy-Shiff, & Schattner-Zanany, 2002). Moreover, other studies have shown that these effects remained significant even after controlling for the levels of depressive symptoms (Besser et al., 2003). Previous research has shown that people with borderline personality traits and perfectionistic traits had impaired interpersonal relationship (Ducasse, Courtet, & Olie, 2014; Flett & Hewitt, 2002), which had been linked to the risk of psychological distress (i.e., suicide ideation and self-harm). Perfectionistic traits in people with BPD traits were rarely investigated although growing evidence has shown the importance of perfectionistic traits in predicting maintained suicidal behaviours (O'Connor, 2007) and shared characteristics with people with BPD such as hypersensitivity to social rejection and interpersonal problems (Flett, Besser, & Hewitt, 2014). Hence the research investigating the link and mediating or moderating roles of self-critical perfectionism in the relationship between rejection sensitivity and BPD traits is needed. As self-criticism has been shown to be more associated with BPD features, particularly interpersonal problems and self-harm behaviours, self-criticism may be more relevant in explaining BPD features; hence, dependency was not included in the current proposed model.

Although an increasing number of studies have suggested that rejection sensitivity was an important contributing factor for interpersonal problems in BPD patients, the possible mediating and moderating roles of developmental factors in this association between rejection sensitivity and BPD features have not been well understood. The current study aimed to investigate whether adult attachment styles, need to belong, and self-criticism mediated the link between rejection sensitivity and BPD features. Further, it was tested whether the mediated association through the need to belong was moderated by attachment anxiety and self-criticism. The adult attachment styles were expected to be associated differently with the need to belong in which attachment avoidance was expected to be negatively associated, but attachment anxiety was expected to be positively associated with the need to belong. Further, only attachment anxiety was expected to be associated with BPD features.

Materials and Methods

Participants and procedure

A total of 256 healthy participants (172 females and 84 males; age range 18–52; mean 23.77, SD 6.67) were recruited from the University College London (UCL) psychology subject pool (SONA) system and partook in the study. Overall, participants were: White/Caucasian (37.1%), Asians (51.6%), mixed (5.5%), Hispanic (1.6%), African/Caribbean (3.9%), and others (0.4%). All participants completed informed consent forms, which was approved by the ethics board (University College London, UK). All self-reported questionnaires were administered using an online survey system, Qualtrics. Participating students were compensated with course credits and non-student participants were compensated with £10 after completing the study.

Materials

Need to Belong Scale

Need to belong Scale (Leary, Kelly, Cottrell, & Schreindorfer, 2013) is a 10-item self-reported questionnaire assessing the individuals' level of belonging needs. Participants answered the degree to which each statement characterises them on a 5-point scale. The past study (Leary et al., 2013) has shown the high test-retest reliability ($r = .87$).

Personality Assessment Inventory-Borderline Features Scale

Individuals' level of BPD features was assessed using the Personality Assessment Inventory –Borderline features scale (PAI-BOR; Morey, 1991). This is a 24-item self-report measurement that assesses four core factors of the construct of BPD using six items per subscale: affective instability, identity problems, interpersonal problems, and self-harm (Morey, 1991). Participants were asked to answer using a four-point scale. The previous study has shown the reliability (Cronbach's $\alpha = .93$), and convergent validity with the Personality Diagnostic Questionnaire Fourth Edition-BPD Scale (PDQ4-BPD) ($r = .86$) in a large non-clinical population (Gardner & Qualter, 2009).

Brief Symptom Inventory

The brief symptom inventory (BSI; Derogatis & Melisaratos, 2012) is a self-report questionnaire assessing psychological and physical symptoms using a four-point scale. The questionnaire contains 53 questions assessing 9 categories of psychopathology (i.e., anxiety, depression). A high internal consistency was found (Cronbach's $\alpha = .97$) in the current study. Depressive and anxiety symptoms were used in the main analysis as covariates.

Experiences in Close Relationships-Revised

Participants' adult attachment styles were assessed by using the Experiences in Close Relationships-Revised (ECR-R; Fraley, Waller, & Brennan, 2000). ECR-R is a 36-item questionnaire assessing attachment anxiety and attachment avoidance in intimate relationships.

Each item is rated on a 7-point scale. The high Cronbach's alpha in the current study for attachment anxiety (.91) and attachment avoidance (.92) was found.

Rejection Sensitivity Questionnaire

Individuals' level of rejection sensitivity was measured by the Rejection Sensitivity Questionnaire (RSQ). It contains 18 hypothetical scenarios where one requests to a significant other (i.e., romantic partners/family member). In each situation, there is a possibility that the individual will receive a rejection (i.e., asking for a date). Participants were asked to imagine as if they were in each situation. Then they were asked to indicate how concerned or anxious they would be about how the other person(s) would respond to the request, and how they expected the other person would be likely to respond to the request by using a 6-point scale. Previous research has shown the convergent and discriminant validity of the RSQ (Downey & Feldman, 1996).

Depressive Experiences Questionnaire

Self-criticism was assessed using the Depressive Experiences Questionnaire (DEQ: Blatt, D'Afflitti, & Quinlan, 1976) which consists of 66 items. DEQ contains three factors: dependency, self-criticism, and efficacy. In the current study, self-criticism scores were used. Participants were asked to indicate how much they would agree or disagree with those statements using a 7-point Likert scale. Past research has shown that DEQ had high test-retest reliability (Zuroff, Moskowitz, Wielgus, Powers, & Franko, 1983), and high internal consistency and construct validity (Blatt et al., 1976).

Statistical Analytic Plan

Pearson correlation coefficients were first calculated (see Table 1) to determine the associations among rejection sensitivity, adult attachment styles, need to belong, self-criticism, and BPD features. To examine whether the need to belong mediated the association between

rejection sensitivity and BPD features and whether this mediated association was moderated by adult attachment and self-criticism, Hayes's bootstrapping procedure was conducted using the PROCESS macro (Hayes, 2013). PROCESS is a computation tool to analyse the mediation, moderation, and conditional process with observed variables (Hayes, Montoya, & Rockwood, 2017). The mediation model (see Fig. 1) was tested with attachment anxiety, need to belong, and self-criticism as mediators, rejection sensitivity as the independent variable, and BPD features as the dependent variable using the PROCESS macro model 6. The moderated mediation model (see Fig. 2) was tested with the need to belong as a mediator, attachment anxiety and self-criticism as moderators, rejection sensitivity as the independent variable, and BPD features as the dependent variable using the PROCESS macro model 28. Five thousand bootstrap samples were used to create 95% confidence intervals. In the analysis, anxiety and depressive symptoms were treated as covariates.

Results

Means and standard deviation of each measurement were presented (see Table 1). A series of simple linear regression analyses were conducted to assess whether primary variables predicted the level of BPD features (see Table 2). The results indicated that rejection sensitivity significantly predicted the level of BPD features ($R^2 = .15$, $\beta = .39$, $F(1, 254) = 44.51$, $p < .001$), attachment anxiety ($R^2 = .26$, $\beta = .51$, $F(1, 254) = 87.91$, $p < .001$), attachment avoidance ($R^2 = .04$, $\beta = .19$, $F(1, 254) = 9.84$, $p = .002$), self-criticism ($R^2 = .14$, $\beta = .38$, $F(1, 254) = 41.61$, $p < .001$), and need to belong ($R^2 = .03$, $\beta = .18$, $F(1, 254) = 8.02$, $p = .005$). Need to belong was significantly associated with BPD features ($R^2 = .12$, $\beta = .35$, $F(1, 254) = 34.38$, $p < .001$), attachment anxiety ($R^2 = .12$, $\beta = .35$, $F(1, 254) = 35.45$, $p < .001$), attachment avoidance ($R^2 = .02$, $\beta = -.14$, $F(1, 254) = 4.71$, $p = .03$), and self-criticism ($R^2 = .04$, $\beta = .20$, $F(1, 254) =$

10.67, $p = .001$). Attachment anxiety significantly predicted the level of BPD features ($R^2 = .29$, $\beta = .54$, $F(1, 254) = 102.36$, $p < .001$), and self-criticism ($R^2 = .26$, $\beta = .51$, $F(1, 254) = 87.18$, $p < .001$). Attachment avoidance was significantly related to self-criticism ($R^2 = .07$, $\beta = .25$, $F(1, 254) = 17.52$, $p < .001$), but was not associated with BPD features ($R^2 = .002$, $\beta = .05$, $F(1, 254) = .56$, $p = .46$). As attachment avoidance was not associated with BPD features, it was not included in the mediation model. Attachment anxiety, need to belong, and self-criticism were significantly associated with rejection sensitivity and BPD features; hence, the conditions for a mediation analysis were satisfied and the analysis was conducted.

A mediation model (Fig. 1) was tested to assess whether attachment anxiety, need to belong, and self-criticism mediated the association between rejection sensitivity and BPD features. Anxiety and depressive symptoms were treated as covariates in the analysis. It was found that there was an indirect effect of rejection sensitivity and BPD features through attachment anxiety, need to belong, and self-criticism ($R^2 = .55$, $F(6,249) = 50.53$, $p < .001$). The direct effect of rejection sensitivity on BPD features was no longer significant after controlling for those mediators ($b = .04$, $p = .42$) indicating that attachment anxiety, need to belong, and self-criticism mediated the association between rejection sensitivity and BPD features. The mediating role of attachment anxiety ($b = .16$, $p < .01$), need to belong ($b = .14$, $p < .01$), and self-criticism ($b = .33$, $p < .001$) were significant. Then the moderated mediation model (Fig.2) was further tested to examine whether the mediated association between rejection sensitivity and BPD features through the need to belong was moderated by attachment anxiety and self-criticism. Also, it was tested whether self-criticism moderated the direct association between rejection sensitivity and BPD features. The results found that there was an indirect effect of rejection sensitivity on BPD features through attachment anxiety, need to belong, and self-criticism (R^2

= .54, $F(7,248) = 41.00$, $p < .001$). It was found that mediating effect of need to belong ($b = .17$, $p < .01$), and the moderating effect of attachment anxiety on the association between rejection sensitivity and the need to belong was significant ($b = .33$, $p < .001$). However, the moderating effect of self-criticism on the association between the need to belong and BPD features ($b = .02$, $p = .57$) and between rejection sensitivity and BPD features was not significant ($b = .01$, $p = .86$).

Discussion

Considerable evidence suggested that there was a link between rejection sensitivity and BPD features (Ayduk et al., 2008; Boldero et al., 2009; Butler, Brown, Beck, & Grisham, 2002; Fertuck, Grinband, & Stanley, 2013; Meyer, Ajchenbrenner, & Bowles, 2005; Miano, Fertuck, Arntz, & Stanley, 2013; Ruocco et al., 2010; Staebler et al., 2011). The current study aimed to investigate the role of developmental aspects and possible coping strategies in those with high rejection sensitivity and BPD features. Although the current data was cross-sectional, results were consistent with the hypothesis. Highly rejection-sensitive individuals were more likely to seek closeness to others, be more anxiously attached, be more self-critical, and have higher BPD features.

As infants cannot survive if caregivers neglect to take care of their children, it is an evolutionally fundamental need to seek proximity to significant others. When this basic need is not satisfied, the cognitive-affective process is activated and increases anxiety and fear of future rejection. In response to repeated stressful events (i.e., neglect by caregivers), individuals develop heightened rejection sensitivity to detect potential rejection cues. Early detection of rejection-relevant cues will enable them to change their behaviour to avoid social ostracism. However, elevated negative affective reactions (i.e., anxiety) caused by excessive stressful life events (i.e., abuse) will lead to insecure attachment. Some individuals may suppress their need to

bond and tend to avoid intimacy as their coping strategy. Others may even elevate this need to belong and try to be over self-critical to be perfect so that they can achieve acceptance from others. These maladaptive coping strategies may increase interpersonal difficulties and BPD-related features.

To support that, adult attachment styles were found to be associated differently with the need to belong and BPD features. Although attachment anxiety was positively associated with the need to belong, attachment avoidance was negatively associated with the need to belong. In other words, people who tended to avoid closeness to significant others were less likely to seek belongingness to others. On the other hand, those who were anxiously attached were more likely to desire and seek closeness to others. As it was found that the increase in the need to belong was associated with an increase in self-criticism, anxiously attached individuals, not with avoidant attachment, were expected to be more self-critical. However, both individuals with anxious and avoidant attachment styles were more likely to be self-critical. The surprising finding was that those with the avoidant attachment style were also more likely to be self-critical although they did not want belongingness to others. Hence, the motivation to be self-critical was not the desire for acceptance by others. This finding suggests two things. First, although the need to belong to others is a basic human need, this need can be suppressed in individuals who avoid initiate relationships. Second, self-criticism may be used as a coping strategy in response to stressful interpersonal situations (i.e., social rejection) for some individuals. Those who want to be accepted by others may try to reduce the anxiety about possible future rejection and achieve acceptance by others through self-critical perfectionism. Hence, self-criticism may be more likely to be used as a self-improving strategy to satisfy the basic need to belong. On the other hand, the desire to be close to others may not be a motivation to be self-critical for those who

avoid intimate relationships. Given that attachment anxiety was more strongly associated with self-criticism than attachment avoidance, self-criticism might be strategically used more often among anxiously attached individuals such as people with BPD features. Further, as the attachment anxiety and self-criticism were only mediators, not moderators, the association between rejection sensitivity and BPD features existed regardless of the level of attachment anxiety and self-criticism.

The current study has several limitations. First, the study was a cross-sectional study using self-report measures; hence, this study design limited the capacity to draw any causal claim from this result. Although the current study proposed two models to describe the association between rejection sensitivity and BPD features, there were multiple other models that could be theoretically plausible. As the current data are cross-sectional, which are not ideal for examining directionality, future study should investigate the developmental accounts in a longitudinal study. In addition, as all constructs were assessed using self-report measures at the same point in time, there was possible common-method variance among all constructs that might confound interpretation of the results. However, attachment avoidance was not associated with BPD features as predicted, which indicated that there was a discriminant validity in the current study. Thus, the results may not only due to common-method variance. Second, the sample in the study was biased as there were only nonclinical participants who had low BPD features compared to the clinical population. This limits the generalizability of this results to a wider population with different demographic background and clinical population. However, past research has revealed substantial impairments in non-clinical individuals with high BPD features (Clifton & Pilkonis, 2007). Hence, the dimensional approach was appropriate to capture BPD traits on the spectrum in a nonclinical population. Third, the results showed that attachment anxiety was positively

correlated with the need to belong and self-criticism. On the other hand, attachment avoidance was negatively correlated with the need to belong and positively correlated with self-criticism. Given that the direction of the association with the need to belong was opposite, but same with self-criticism between attachment anxiety and avoidance, motivations to be self-critical might not be the desire to belong to others. Thus, a further longitudinal study is required to understand the drive for self-criticism in those who have different attachment styles and BPD features. Fourth, the current study tested the mediation and moderated mediation analyses using only one model, PROCESS macro. Although there were other approaches to test a path analysis such as structural equation modelling (SEM), PROCESS macro was selected as Hayes and colleagues (2017) argued that there would be no difference in using these two modelling (PROCESS and SEM) in a large sample.

Robust evidence has suggested that BPD patients had heightened rejection sensitivity (Ayduk et al., 2008; Butler et al., 2002; Boldero et al., 2009; Fertuck et al., 2013; Meyer, Ajchenbrenner, & Bowles, 2005; Ruocco et al., 2010; Staebler et al., 2011). The current study supported the hypothesis that the association between rejection sensitivity and BPD features was mediated by the level of need to belong, attachment anxiety, and self-critical traits. In addition, although past studies suggested that self-criticism was related to attachment avoidance (Sibley & Overall, 2008, 2010), this study found that the attachment anxiety was more strongly associated than attachment avoidance with self-criticism. Further, attachment anxiety and avoidance were differently associated with the need to belong and BPD features. Among individuals with high BPD features who were more likely to present attachment anxiety, the desire to be accepted by others might be the motivation to be self-critical. Although the current study has shown the role of attachment, need to belong, and self-criticism in explaining the association between rejection

sensitivity and BPD features, there may be other factors contributing to this link. The future longitudinal experimental study should investigate the potential coping strategies in response to rejection for those with different attachment styles in BPD patients.

References

- Adam, K.S., Sheldon-Keller, A.E., & West, M. (1996). Attachment organization and history of suicidal behavior in clinical adolescents. *Journal of Consulting and Clinical Psychology, 64*, 264–272.
- Agrawal, H. R., Gunderson, J., Holmes, B. M., & Lyons-Ruth, K. (2004). Attachment studies with borderline patients: a review. *Harvard Review of Psychiatry, 12*, 94–104.
- Arntz, A., Dietzel, R., & Dreessen, L. (1999). Assumptions in borderline personality disorder: specificity, stability and relationship with etiological factors. *Behaviour Research and Therapy, 37*, 545–557.
- Arntz, A., Dreessen, L., Schouten, E., & Weertman, A. (2004). Beliefs in personality disorders: A test with the Personality Disorder Belief Questionnaire. *Behaviour Research and Therapy, 42*, 1215–1225.
- Ayduk, Ö., Downey, G., Testa, A., Yen, Y., & Shoda, Y. (1999). Does rejection elicit hostility in rejection sensitive women? *Social Cognition, 17*, 245–271.
- Ayduk, Ö., Zayas, V., Downey, G., Cole, A. B., Shoda, Y., & Mischel, W. (2008). Rejection sensitivity and executive control: Joint predictors of borderline personality features. *Journal of Research in Personality, 42*, 151–168.
- Bakermans-Kranenburg, M. J., & IJzendoorn, M. H. (2009). The first 10,000 adult attachment interviews: distributions of adult attachment representations in clinical and non-clinical groups. *Attachment & Human Development, 11*, 223–263.
- Ball, J.S., & Links, P.S. (2009). Borderline personality disorder and childhood trauma: evidence for a causal relationship. *Current Psychiatry Reports, 11*, 63–68.

- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin, 117*, 497–529.
- Beck, A. T. (1983). Cognitive therapy of depression: New perspectives. In: *Treatment of Depression: Old Controversies and New Approaches*, ed. New York: Raven, 265-290.
- Beck, A.T., Freeman, A., Pretzer, J., Davis, D.D., Fleming, B., Ottaviani, R., et al. (1990). *Cognitive therapy of personality disorders*. New York:Guiford.
- Besser, A., Flett, G. L., & Davis, R. A. (2003). Self-criticism, dependency, silencing the self, and loneliness: A test of a mediational model. *Personality and Individual Differences, 35*(8), 1735–1752.
- Besser, A., & Priel, B. (2009). Emotional responses to a romantic partner's imaginary rejection: the roles of attachment anxiety, covert narcissism, and self-evaluation. *Journal of Personality, 77*, 287–325.
- Berenson, K. R., Downey, G., Rafaeli, E., Coifman, K. G., & Paquin, N. L. (2011). The rejection-rage contingency in borderline personality disorder. *Journal of Abnormal Psychology, 120*, 681–690.
- Blatt, J., & Auerbach, J. S. (1988). Three Types of Borderline Patients. *Journal of Personality Disorders, 2*(3), 198–211.
- Blatt, S.J. (1990). Interpersonal relatedness and self-definition: Two personality configurations and their implications for psychopathology and psychotherapy. In: *Repression and Dissociation: Implications for Personality Theory, Psychopathology and Health*, ed. J.L. Singer. Chicago: University of Chicago Press, 299-335.
- Blatt, S. J. & Shichman, S. (1983). Two primary configurations of psychopathology. *Psychoanalysis and Contemporary Thought, 6*, 187-254.

- Blatt, S. J., D'Afflitti, J. P., & Quinlan, D. M. (1976). Experiences of depression in normal young adults. *Journal of Abnormal Psychology, 85*, 383–389.
- Blatt, S. J. (2008). *Polarities of experience: relatedness and self-definition in personality development, psychopathology, and the therapeutic process*. Washington, DC: American Psychological Association.
- Boldero, J. M., Hulbert, C. A., Bloom, L., Cooper, J., Gilbert, F., Mooney, J. L., & Salinger, J. (2009). Rejection sensitivity and negative self-beliefs as mediators of association between the number of borderline personality disorder features and self-reported adult attachment. *Personality and Mental Health, 3*, 248-262.
- Bowlby, J. (1969). *Attachment and loss, Vol.1: Attachment*. New York, NY: Basic Books
- Bowlby, J. (1973). *Attachment and loss, Vol. 2: Separation anxiety and anger*. New York, NY: Basic Books.
- Brodsky, B.S., Groves, S. A., Oquendo, M. A., Mann, J. J., & Stanley, B. (2006). Interpersonal precipitants and suicide attempts in borderline personality disorder. *Suicide and Life-Threatening Behavior, 36*, 313–322.
- Butler, A. C., Brown, G. K., Beck, A. T., & Grisham, J. R. (2002). Assessment of dysfunctional beliefs in borderline personality disorder. *Behaviour Research and Therapy, 40*, 1231–1240.
- Campbell, L., Simpson, J. A., Boldry, J., & Kashy, D.A. (2005). Perceptions of conflict and support in romantic relationships: the role of attachment anxiety. *Journal of Personality and Social Psychology, 88*, 510–531.

- Campos, R. C., Besser, A., & Blatt, S. J. (2010). The mediating role of self-criticism and dependency in the association between perceptions of maternal caring and depressive symptoms. *Depression and Anxiety, 27*, 1149–1157.
- Campos, R. C., Besser, A., & Blatt (2013). Recollections of parental rejection, self-criticism and depression in suicidality. *Archives of Suicide Research, 17*, 58–74.
- Chapman, A. L., Walters, K. N., & Dixon Gordon, K. L. (2014). Emotional reactivity to social rejection and negative evaluation among persons with borderline personality features. *Journal of Personality Disorders, 28*, 720–733.
- Clifton, A., & Pilkonis, P. A. (2007). Evidence for a single latent class of Diagnostic and Statistical Manual of Mental Disorders borderline personality pathology. *Comprehensive Psychiatry, 48*(1), 70–78.
- Crowell, S. E., Beauchaine, T. P., & Linehan, M. M. (2009). A biosocial developmental model of borderline personality: Elaborating and extending linehan's theory. *Psychological Bulletin, 135*(3), 495-510.
- De Moor, M. H. M., Distel, M. A., Trull, T. J., & Boomsma, D. I. (2009). Assessment of borderline personality features in population samples: Is the Personality Assessment Inventory-Borderline Features scale measurement invariant across sex and age? *Psychological Assessment, 21*, 125–130.
- Derogatis, L. R., & Melisaratos, N. (2012). The Brief Symptom Inventory : an introductory report The Brief Symptom Inventory : an introductory report, (July 2009), 595–605.
- DeWall, C. N., Deckman, T., Pond, R. S., & Bonser, I. (2011). Belongingness as a core personality trait: how social exclusion influences social exclusion influences social functioning and personality expression. *Journal of Personality, 79*, 1281–1314.

DeWall, C. N., Masten, C. L., Powell, C., Combs, D., Schurtz, D. R., & Eisenberger, N.I. (2012).

Do neural responses to rejection depend on attachment style? An fMRI study. *Social Cognitive and Affective Neuroscience*, 7, 184–192.

Dimitrovsky, L., Levy-Shiff, R., & Schattner-Zanany, I. (2002). Dimensions of Depression and

Perfectionism in Pregnant and Nonpregnant Women: Their Levels and Interrelationships and Their Relationship to Marital Satisfaction. *The Journal of Psychology*, 136(6), 631–646.

Downey, G., & Feldman, S. I. (1996). Implications of Rejection Sensitivity for Intimate

Relationships. *Journal of Personality and Social Psychology*, 70, 1327–1343.

Downey, G., Feldman, S., & Ayduk, O. (2000). Rejection sensitivity and male violence in

romantic relationships. *Personal Relationships*, 7, 45–61.

Downey, G., Freitas, A. L., Michaelis, B., & Khouri, H. (1998). The self-fulfilling prophecy in

close relationships: Rejection sensitivity and rejection by romantic partners. *Journal of Personality and Social Psychology*, 75, 545–560.

Ducasse, D., Courtet, P., & Olié, E. (2014). Physical and social pains in borderline disorder and

neuroanatomical correlates: a systematic review. *Current Psychiatry Reports*, 16.

Dunkley, D. M., Blankstein, K.R., Masheb, R. M., & Grilo, C. M. (2006). Personal standards and

evaluative concerns dimensions of “clinical” perfectionism: a reply to Shafran et al. (2002, 2003) and Hewitt et al. (2003). *Behaviour Research and Therapy*, 44, 63–84.

Dutton, D. G. (1995). Intimate abusiveness. *Clinical Psychology: Science and Practice*, 2, 207–

224.

Falgares, G., Marchetti, D., De Santis, S., Carrozzino, D., Kopala-Sibley, D. C., Fulcheri, M., &

Verrocchio, M. C. (2017). Attachment styles and suicide-related behaviors in

- adolescence: The mediating role of self-criticism and dependency. *Frontiers in Psychiatry*, 8(MAR), 1–9.
- Feldman, S., & Downey, G. (1994). Rejection sensitivity as a mediator of the impact of childhood exposure to family violence on adult attachment behavior. *Development and Psychopathology*, 6, 231–247.
- Fertuck, E. A., Grinband, J., & Stanley, B. (2013). Facial trust appraisal negatively biased in borderline personality disorder. *Psychiatry Research*, 207, 195–202.
- Flett, G. L., Besser, A., & Hewitt, P. L. (2014). Perfectionism and interpersonal orientations in depression: an analysis of validation seeking and rejection sensitivity in a community sample of young adults. *Psychiatry: Interpersonal and Biological Processes*, 77, 67–85.
- Flett, G. L., & Hewitt, P. L. (2002). *Perfectionism: theory, research, and treatment*. Washington, DC: American Psychological Association.
- Fraley, R. C., Waller, N. G., & Brennan, K. A. (2000). An item response theory analysis of self-report measures of adult attachment. *Journal of Personality and Social Psychology*, 78, 350–365.
- Glassman, L. H., Weierich, M. R., Hooley, J. M., Deliberto, T. L., & Nock, M. K. (2007). Child maltreatment, non-suicidal self-injury, and the mediating role of self-criticism. *Behaviour Research and Therapy*, 45(10), 2483–2490.
- Gunderson, J. G. (2007). Disturbed relationships as a phenotype for borderline personality disorder. *American Journal of Psychiatry*, 164, 1637–1640.
- Gunderson, J. G., & Lyons-Ruth, K. (2008). BPD's interpersonal hypersensitivity phenotype: A gene-environment-developmental model. *Journal of Personality Disorders*, 22, 22–41.

- Gupta, M. (2008). Functional links between intimate partner violence and animal abuse: Personality features and representations of aggression. *Society & Animals, 16*, 223–242.
- Hayes, A. (2013). *Introduction to mediation, moderation, and conditional process analysis: a regression-based approach*. New York: Guilford press.
- Hayes, A. F., Montoya, A. K., & Rockwood, N. J. (2017). The analysis of mechanisms and their contingencies: PROCESS versus structural equation modeling. *Australasian Marketing Journal, 25*(1), 76–81.
- Herpertz, S. C. (1995). Self-injurious behaviour psychopathological and nosological characteristics in subtypes of self-injurers. *Acta Psychiatrica Scandinavica, 91*, 57–68.
- Lazarus, S. A., Cheavens, J. S., Festa, F., & Rosenthal, M. Z. (2014). Interpersonal functioning in borderline personality disorder: A systematic review of behavioral and laboratory-based assessments. *Clinical Psychology Review, 34*, 193–205.
- Leary, M. R., & Baumeister, R. F. (2000). The nature and function of self-esteem: Sociometer theory. *Advances in Experimental Social Psychology, 32*, 1–62.
- Leary, M. R., Kelly, K. M., Cottrell, C. A., & Schreindorfer, L. S. (2013). Construct validity of the Need to Belong Scale: Mapping the nomological network. *Journal of Personality Assessment, 95*, 610–624.
- Leary, M. R., Twenge, J. M., & Quinlivan, E. (2006). Interpersonal rejection as a determinant of anger and aggression. *Personality and Social Psychology Review, 10*, 111–132.
- Levy, K. N. (2005). The implications of attachment theory and research for understanding borderline personality disorder. *Development and Psychopathology, 17*.

- Lobbestael, J., & McNally, R. J. (2016). An empirical test of rejection- and anger-related interpretation bias in borderline personality disorder. *Journal of Personality Disorders, 30*, 307–319.
- Luyten, P., & Fonagy, P. (2015). The neurobiology of mentalizing. *Personality Disorders: Theory, Research, and Treatment, 6*, 366–379.
- Meyer, B., Ajchenbrenner, M., & Bowles, D. P. (2005). Sensory sensitivity, attachment experiences, and rejection responses among adults with borderline and avoidant features. *Journal of Personality Disorders, 19*, 641–658.
- Miano, A., Fertuck, E. A., Arntz, A., & Stanley, B. (2013). Rejection sensitivity is a mediator between borderline personality disorder features and facial trust appraisal. *Journal of Personality Disorders, 27*, 442–456.
- Mikulincer, M., & Shaver, P. R. (2012). An attachment perspective on bereavement. *Handbook of Bereavement Research and Practice: Advances in Theory and Intervention.*, (8), 87–112.
- Mikulincer, M., Shaver, P. R., Sapir-Lavid, Y., & Avihou-Kanza, N. (2009). What's Inside the Minds of Securely and Insecurely Attached People? The Secure-Base Script and Its Associations With Attachment-Style Dimensions. *Journal of Personality and Social Psychology, 97*(4), 615–633.
- Morey, L. C. (1991). *Personality assessment inventory*. Odessa, FL: Psychological Assessment Resources.
- Morse, J. Q., Robins, C. J., & Gittes-Fox, M. (2002). Sociotropy, autonomy, and personality disorder criteria in psychiatric patients. *Journal of Personality Disorders, 16*(6), 549–560.

- Nakash-Eisikovits, O., Dutra, L., & Westen, D. (2002). Relationship between attachment patterns and personality pathology in adolescents. *Journal of the American of Child & Adolescent Psychiatry, 41*, 1111–1123.
- O'Connor, R. C. (2007). The relations between perfectionism and suicidality: a systematic review. *Suicide and Life-Threatening Behavior, 37*, 698–714.
- Ouimette, P. C., Klein, D. N., Anderson, R., Riso, L. P., & Lizardi, H. (1994). Relationship of sociotropy/autonomy and dependency/self-criticism to DSM-III-R personality disorders. *Journal of Abnormal Psychology, 103*(4), 743–749.
- Renneberg, B., Herm, K., Hahn, A., Staebler, K., Lammers, C.-H., & Roepke, S. (2012). Perception of Social Participation in Borderline Personality Disorder. *Clinical Psychology & Psychotherapy, 19*, 473–480.
- Rosenbach, C., & Renneberg, B. (2011). Abgelehnt, ausgeschlossen, ignoriert: Die Wahrnehmung sozialer Zurückweisung und psychische Störungen – Eine Übersicht. *Verhaltenstherapie, 21*, 87–98.
- Ruocco, A. C., Medaglia, J. D., Tinker, J. R., Ayaz, H., Forman, E. M., Newman, C. F., ... Chute, D. L. (2010). Medial prefrontal cortex hyperactivation during social exclusion in borderline personality disorder. *Psychiatry Research - Neuroimaging, 181*, 233–236.
- Sanislow, C. A., Grilo, C. M., Morey, L.C., Bender, D. S., Skodol, A. E., Gunderson, J. G., ...McGlashan, T. H. (2002). Confirmatory factor analysis of DSM-IV criteria for borderline personality disorder: Findings from the collaborative longitudinal personality disorders study. *American Journal of Psychiatry, 159*, 284–290.

- Sibley, C. G., & Overall, N. C. (2008). The boundaries between attachment and personality: Localized versus generalized effects in daily social interaction. *Journal of Research in Personality, 42*, 1394-1407.
- Sibley, C. G., & Overall, N. C. (2010). Modeling the hierarchical structure of personality-attachment associations: Domain diffusion versus domain differentiation. *Journal of Social and Personal Relationships, 27*, 47-70.
- Staebler, K., Helbing, E., Rosenbach, C., & Renneberg, B. (2011). Rejection sensitivity and borderline personality disorder. *Clinical Psychology & Psychotherapy, 18*, 275–283.
- Stanley, B., & Siever, L. J. (2010). The interpersonal dimension of borderline personality disorder: toward a neuropeptide model. *The American Journal of Psychiatry, 167*, 24–39.
- Veen, G., & Arntz, A. (2000). Multidimensional dichotomous thinking characterizes borderline personality disorder. *Cognitive Therapy and Research, 24*, 23–45.
- Widom, C. S., Czaja, S. J., & Paris, J. (2009). A prospective investigation of borderline personality disorder in abused and neglected children followed up into adulthood. *Journal of Personality Disorders, 23*, 433-446.
- Zuroff, D. C., Moskowitz, D. S., Wielgus, M. S., Powers, T. A., & Franko, D. L. (1983). Construct validation of the Dependency and Self-Criticism Scales of the Depressive Experiences Questionnaire. *Journal of Research in Personality, 17*, 226–241

Table 1

Means, standard deviations, and bivariate correlations between rejection sensitivity, self-criticism, need to belong, adult attachment, and BPD features.

Variable	Mean	SD	1	2	3	4	5
1. Rejection Sensitivity	9.50	3.38	-	-	-	-	-
2. Self-criticism	.05	.99	.38**	-	-	-	-
3. Need to belong	33.78	6.94	.18**	.20**	-	-	-
4. Attachment Anxiety	3.57	1.10	.51**	.51**	.35**	-	-
5. Attachment Avoidance	3.45	1.07	.19**	.25**	-.14*	.27**	-
6. BPD features	24.99	10.77	.39***	.63***	.35**	.54***	.05

Note. PAIBOR = Personality Assessment Inventory-Borderline Feature scale.

* $p < .05$, two-tailed, ** $p < .01$, two-tailed, *** $p < .001$, two-tailed.

Table 2

Results of regression analysis predicting borderline personality disorder features.

Independent variable	<i>B</i>	<i>R</i> ²	<i>SE</i>	<i>t</i>	<i>β</i>
Rejection sensitivity	1.22	.15	.18	6.67	.39***
Need to belong	.54	.12	.09	5.87	.35***
Attachment Anxiety	5.27	.29	.52	10.12	.54***
Attachment Avoidance	.47	.00	.63	.75	.45
Self-criticism	6.87	.40	.53	12.89	.63***

Note. PAIBOR = Personality Assessment Inventory-Borderline Feature scale.

p* < .05, two-tailed, *p* < .01, two-tailed, *** *p* < .001.