Highlights

- Rejection sensitivity is an important factor contributing to impairments in people with borderline personality disorder features.
- Hypersensitivity to potential threats such as ambiguous social cues may lead to an increase in cognitive impairments such as effortful control capacities.
- Impairments in effortful control capacities predict the individuals' level of borderline personality disorder features.
- Effortful control and intolerance of ambiguity partially mediated the association between rejection sensitivity and BPD features.

Rejection Sensitivity and Borderline Personality Disorder Features: A Mediation Model of Effortful Control and Intolerance of Ambiguity

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Abstract

Although past research suggests that borderline personality disorder (BPD) patients' rejection hypersensitivity may be an important factor underlying these patients' interpersonal problems, the role of cognitive factors in this association is still not well understood. The present study examined whether cognitive factors such as effortful control and intolerance of ambiguity mediated the association between rejection sensitivity and BPD features. A sample of 256 young adults completed self-report questionnaires assessing rejection sensitivity, effortful control, intolerance of ambiguity, and BPD features. Results showed that effortful control and intolerance of ambiguity mediated the association between rejection sensitivity and BPD features. The present study showed the role of cognitive aspects including both effortful control and intolerance of ambiguity in the relationship between rejection sensitivity and BPD features. However, there is a need for further research to experimentally investigate how rejection sensitivity may impact cognitive capacities in interpersonal contexts among individuals with BPD features.

Keywords: Borderline personality features; Cognition; Effortful control; Intolerance of ambiguity; Rejection sensitivity.

1. Introduction

Borderline personality disorder (BPD) is a serious and complex mental illness, which causes substantial challenges for patients, mental health professionals (Langley and Klopper, 2005), and their families (Lazarus et al., 2014). Disturbed interpersonal relationships are one of the core features and important factors underlying the variety of symptoms in BPD (Lazarus et al., 2014; Sanislow et al., 2002). Although robust evidence indicates that BPD patients experience interpersonal problems, the mechanisms underlying these problems are still not well understood. One of the factors which may explain BPD patients' interpersonal dysfunctions is their cognitive impairments, particularly effortful control and intolerance of ambiguity. Hence, the present study aimed to investigate the mediating roles of impairments in effortful control and intolerance of ambiguity in the relationship between rejection sensitivity and BPD features.

The desire to be accepted and avoid rejection is a fundamental need for human beings. Being able to detect rejection cues is essential to prevent ostracism (Downey and Feldman, 1998). Extant studies suggest that rejection hypersensitive individuals tend to respond to perceived rejection with intense negative affect (Downey and Feldman, 1996; Downey et al.,1998; Downey et al., 2004), hostility (Downey et al., 1998) and aggressive behaviours (Ayduk et al., 2008; Gupta, 2008), as perceptions of rejection can elicit anger (Leary et al., 2006; Renneberg et al., 2012). Such intense and negative reactions result in maladaptive interpersonal relationships, which may increase actual rejection from others owing to a self-fulfilling prophecy (Downey et al., 1998; London et al., 2007; Staebler et al., 2011).

Clinical reports and research show that individuals with BPD or borderline features have a tendency to make extreme efforts to avoid abandonment due to their extreme fear of rejection (Fonagy et al., 2003; Gunderson and Lyons-Ruth, 2008; Minzenberg et al., 2008; Renneberg et

al., 2012; Staebler et al., 2011). Several studies have investigated the relationship between BPD traits and rejection sensitivity (Ayduk et al., 2008; Boldero et al., 2009; Butler et al., 2002; Fertuck et al., 2013; Meyer et al., 2005; Miano et al., 2013; Rosenbach and Renneberg, 2011; Ruocco et al., 2010; Staebler et al., 2011). Consistent findings support the heightened rejection sensitivity in people with BPD features in the clinical (Arntz et al., 2004; Renneberg et al., 2012; Stanley and Siever, 2010) and non-clinical population (Ayduk et al., 2008). Previous research among clinical and non-clinical populations with BPD features has shown the intense affective reactions (Chapman et al., 2014; Lobbestael and McNally, 2016), cognitive disturbance (Renneberg et al., 2012), and behavioural reactions such as hostility (Berenson et al., 2011) in response to perceived rejection. Hence, maladaptive response to perceived rejection among people with BPD features has been well captured.

The anxiety-related psychopathology, such as intense fears of rejection, has been suggested to be related to intolerance of ambiguity (Carleton et al., 2007). Individuals with hypervigilance to rejection are more likely to misinterpret ambiguous social signals from significant others, which often leads to overreactions (Harper et al., 2006). Consistent empirical evidence has suggested BPD patients have difficulties recognizing ambiguous social cues (Wagner and Linehan, 1999) and are more likely to have negative cognitive and affective biases to neutral or ambiguous social stimuli (Baer et al., 2012; Fertuck et al., 2013; Mitchell et al., 2014). For instance, BPD patients tend to be less accurate in judging neutral faces (Wagner and Linehan, 1999), perceive ambiguous facial expressions more negatively (Arntz and Veen, 2001; Domes et al., 2008; Dyck et al., 2009; Fertuck et al., 2013; Wagner and Linehan, 1999), and had more aversive affective and neurological reactions in response to neutral faces (i.e., amygdala hyperactivation) when they completed the Reading the Mind in the Eyes Test (Donegan et al.,

2003; Minzenberg et al., 2008). Further, a recent study using the Iowa Gambling Task found that BPD patients performed significantly worse than healthy controls suggesting that experiencing uncertainty or ambiguity leads to poor decision-making in BPD patients (LeGris et al., 2012). Together, these findings suggest that BPD patients are more likely to appraise uncertainty or ambiguous social cues as more threatening (Domes et al., 2008). When BPD patients experience ambiguous social cues, they are more likely to respond with negative affect as elevated levels of intolerance of uncertainty have been found to be associated with increased levels of worry (Dugas et al., 2003) and anger (Fracalanza et al., 2014). To respond more appropriately to ambiguous social cues, BPD patients need to suppress an initial negative response (i.e., worry), and reappraise the social cues by shifting attention to different aspects/possibilities of interpretations of those ambiguous cues. Hence, self-regulating capacities (i.e., effortful control) to regulate initial emotional, cognitive, and behavioural reactions are important. When BPD patients are constantly alerted by ambiguous cues that they learned to associate with threats, elevated emotional distress may lead to further cognitive impairments. However, the link between tolerance of ambiguity and effortful control is not well understood. In addition, intolerance of ambiguity has not been well investigated among people with BPD features.

Impairments in self-regulation capacities in individuals with BPD have been described in a number of clinical reports and research reports (Claes et al., 2009; De Panfilis et al., 2015; Gardner et al., 2010; LeGris et al., 2012). Effortful control is a temperament aspect of self-regulation, which enables individuals to voluntarily and skilfully regulate contingent emotions, attention, impulse, thoughts, and behaviours to achieve long-term goals and respond more appropriately (De Panfilis et al., 2015). Effortful control consists of three components: the capacity to inhibit inappropriate response/behaviours (inhibitory control), to act where there is a

strong tendency to avoid the action (activation control), and to focus and shift attention where it is desired to do so (attentional control) (Evans and Rothbart, 2007).

Effortful control has been suggested to be a mediator between interpersonal difficulties/distress and BPD features (De Panfilis et al., 2015). Research investigating the association between effortful control and BPD features has found that effortful control, particularly attentional control, was negatively associated with BPD features in student samples (Gardner et al., 2010) and clinical samples (Claes et al., 2009; LeGris et al., 2012). Attentional control has been conceptualized as the cognitive capacity to override and inhibit automatic or habitual reactions in favour of a more appropriate response produced in an effortful and controlled manner (Botvinick et al., 2001; Casey et al., 2002). Ayduk and colleagues (2008) found that among individuals with lower attentional controls, hyper-rejection sensitivity was associated with an increase in BPD features. However, among those with higher attentional control, rejection sensitivity was not associated with BPD features; these results suggesting that effortful control may moderate the relationship between rejection sensitivity and BPD features. The capacity to control one's attention might be impaired in those with higher BPD features due to their elevated rejection sensitivity. Individuals with higher rejection sensitivity who fail to control their attention may fail to disengage attention from perceived rejection cues, and excessive focus on rejection cues would make intentional rejection highly accessible as an interpretation for their significant others' behaviours (Dodge, 1980). In addition, this excessive focus on the rejection-relevant cues may elevate negative affect, which may in turn elicit impulsive and destructive reactions (Downey and Feldman, 1996). These impairments in effortful control may be an important factor contributing to impairments in BPD (Clarkin and

Posner, 2005) and indicated that BPD patients have impairments in attentional controls (LeGrist and van Reekum, 2006).

Although an increasing amount of evidence has suggested that rejection sensitivity is an important contributing factor in impairments in cognitive-affective processes and interpersonal difficulties in BPD, little is known about the cognitive factors underlying these relationships. It is possible that individuals with higher rejection sensitivity are more likely to show BPD features due to elevated levels of intolerance of ambiguity and impairments in effortful control. Their anxious expectations of negative interpersonal consequences, such as future rejection, might decrease their tolerance of ambiguity in social situations and increase disturbance in effortful control. These cognitive tendencies to react negatively to uncertainty and impairments in self-regulating capacities to control initial negative responses might explain the positive association between rejection sensitivity and BPD features. In this study, we examine the potential roles of effortful control and intolerance of ambiguity as for the mediator (see Figure 1) in the association between rejection sensitivity and BPD features. As the previous study has suggested the mediating role of effortful control (De Panfilis et al., 2015), we hypothesize that effortful control and intolerance of ambiguity will mediate the association between rejection sensitivity and BPD features. Rejection sensitivity is expected to be more strongly associated with lower effortful control capacities, higher intolerance of ambiguity, and higher BPD features. Also, another study has suggested the effortful control as a moderator (Ayduk et al., 2008), we hypothesize that effortful control will also moderate the association between rejection sensitivity and BPD features (Figure 3).

2. Materials and Methods

2. 1. Participants and procedure

The study was advertised on the University College London (UCL) psychology subject pool (SONA) system. Once participants contacted researchers and signed up on the system, an online survey using the Qualtrics was sent to participants. A sample of 256 nonclinical participants (172 females and 84 males; age range 18-52 years; mean 23.77, SD 6.67) was recruited from the SONA system. Participants consisted primarily of White/Caucasian (37.1%), Asians (51.6 %), mixed (3.5%), Hispanic (1.6%), African/Caribbean (3.9%), and others (0.4%). All participants completed voluntary informed consent forms, and the study was approved by the ethics board (UCL, UK). Students were compensated with course credits after completing the survey.

2.2. Materials

2.2.1. Personality assessment inventory-borderline features scale

The Personality Assessment Inventory-Borderline Features Scale (PAI-BOR; Morey, 1991) is a 24-item self-report measure of BPD symptoms 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). A previous study reported 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 nonclinical population (Gardner & Qualter, 2009).

2.2.2. Rejection sensitivity questionnaire

The Rejection Sensitivity Questionnaire (RSQ; Downey and Feldman, 1996) contains 18 hypothetical scenarios in which an individual makes requests to friends or significant others (i.e., romantic partner). In each situation, there is a possibility that the individual will receive a rejection. Participants were asked to imagine they were in each situation, and 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 on a six-point scale. A past study (Downey and Feldman, 1996) showed a high internal consistency (Cronbach's α = .81) and high test-retest reliability (r_{tt} = .83 after two weeks, r_{tt} = .78 after four months).

2.2.3 Effortful control scale.

The Effortful Control Scale (ECS) involves 19 items and is a part of the Adult Temperament Questionnaire-short form **(**ATQ; Evans and Rothbart, 2007). The subscales of the EC are: activation control, attentional control, and inhibitory control. Participants completed the questionnaire using a seven-point Likert-scale. A high internal consistency was found in the current subjects (Cronbach's α =. 78).

2.2.4 Intolerance of ambiguity

Individual differences in the level of intolerance of ambiguity were assessed using the Need For Cognitive Closure Scale (NFCS; Webster and Krulanski, 1994). Past research has indicated that the NFCS has excellent convergent and discriminant validity, good test-retest reliability, and adequate internal consistency (Freeman et al., 2006). Intolerance of ambiguity (e.g., *I like to know what people are thinking all the time*) was assessed using a seven-point scale (1 = strongly disagree, 7 = strongly agree). A relatively high internal consistency was found in the current samples (Cronbach's α = .70).

2.2.5. Brief Symptom Inventory

Participants' psychopathology was assessed using the brief symptom inventory (BSI; Derogatis and Melisaratos, 1983), a self-report measurement using a five-point Likert scale (0 = Not at all to 4 = Extremely). The BSI consists of 53 questions assessing nine categories of

psychopathology where participants were asked to rate how much they were distressed by each symptom during the past seven days. Depressive and anxiety symptoms were treated as covariates in the main analyses. The current study found a high internal consistency (Cronbach's α =. 97).

2.3. Statistical analytic plan

First, Pearson correlation coefficients were calculated (Table 1) to determine the associations among rejection sensitivity, intolerance of ambiguity, effortful control, and BPD features. In order to examine whether effortful control and intolerance of ambiguity mediate the relationship between rejection sensitivity and BPD features, Hayes's bootstrapping procedure was conducted using the PROCESS macro (Hayes, 2013). The mediational model (see Figure 1) was tested with rejection sensitivity as an independent variable, BPD features as the dependent variable, and effortful control and intolerance of ambiguity as for the mediators. In order to determine whether effortful control capacities and intolerance of ambiguity mediate the association between rejection sensitivity and BPD features, it must be established first that effortful control is associated with rejection sensitivity and BPD features, and second, that intolerance of ambiguity is associated with rejection sensitivity and BPD features. Five thousand bootstrap samples were used to create 95% confidence intervals to test the indirect effect of rejection sensitivity using the PROCESS model 6. Then an alternative mediation model treating BPD features as an independent variable, rejection sensitivity as a dependent variable, and intolerance of ambiguity and effortful control as mediators was tested (Figure 2) using the PROCESS model 6. As previous research (Ayduk e al., 2008) has suggested the moderating effect of effortful control on the association between rejection sensitivity and BPD features, a

moderated mediation model treating effortful control as a moderator was also tested (Figure 3) using the PROCESS model 5.

3. Results

The means and standard deviation of each measurement are presented (see Table 1). A number of t-tests were conducted to assess the effect of gender on effortful control, intolerance of ambiguity, BPD features, and rejection sensitivity. The results indicated that the intolerance of ambiguity was significantly higher among females (M = 38.42, SD = 6.22) compared with males (M = 36.23, SD = 5.97); $t(254) = -2.68$, $p < 01$. Hence, gender was controlled in the main analyses. Bivariate correlational analyses for all variables with age were conducted. Age was significantly associated with identity problems ($r = -.23$), BPD total features ($r = -.17$), and intolerance of ambiguity ($r = -.20$). Hence, age was treated as a covariate in the main analysis.

A series of simple linear regression analyses was conducted to assess whether primary variables were associated the level of BPD feature. The results indicate that rejection sensitivity was significantly associated with BPD features (R^2 = .15, β = .39, $F(1,255) = 44.51$, $p < .001$), effortful control (R^2 = .06, $\beta = -.25$, $F(1,255) = 17.28$, $p < .001$), and intolerance of ambiguity (R^2 = .02, β = .14, $F(1,255) = 4.85$, $p < .05$). Effortful control was significantly associated with BPD features (R^2 = .34, $\beta = -.58$, $F(1, 255) = 128.30$, $p < .001$) and intolerance of ambiguity (R^2 = .03, $\beta = -.17$, $F(1,255) = 7.19$, $p < .01$). Intolerance of ambiguity was significantly associated with effortful control (R^2 = .03, $\beta = -.17$, $F(1, 255) = 7.19$, $p < .01$), and BPD features (R^2 = .13, β = .36, $F(1, 255) = 37.48$, $p < .001$) (see Figure 2). BPD features were associated with intolerance of ambiguity (R^2 = .13, β = .36, $F(1, 255) = 37.48$, $p < .001$), and effortful control (R^2 = .34, $\beta = -.58$, $F(1, 255) = 128.30$, $p < .001$). Effortful control was significantly associated with rejection sensitivity (R^2 = .06, $\beta = -.25$, $F(1, 255) = 17.28$, $p < .001$). Intolerance of ambiguity

was significantly associated with rejection sensitivity (R^2 = .02, β = .14, F(1, 255) = 4.85, p < .05).

Results of the mediation analysis (Figure 1) revealed an indirect effect of rejection sensitivity on BPD features through effortful control and intolerance of ambiguity (R^2 = .56, F(6, 249) = 53.72, p < .001). The direct effect of rejection sensitivity on BPD features was also significant after controlling for effortful control and intolerance of ambiguity (b = .12, p = .01, CI [.06, .40]), indicating that effortful control and intolerance of ambiguity mediated the relationship between rejection sensitivity and BPD features.

An alternative mediation model (Figures 2) was further tested (R^2 = .20, F(6,249) = 10.07, p < .001). The direct effect of BPD features on rejection sensitivity was also significant (b = .22, p = .01, CI [.05, .38]) after controlling for effortful control and intolerance of ambiguity.

Further, a moderated mediation model (Figure 3) found an indirect effect of rejection sensitivity on BPD features through intolerance of ambiguity and effortful control (R^2 = .56, F(7,248) = 45.88, p < .001). The direct effect of rejection sensitivity on BPD features was still significant (b = .12, p = .01, CI [.03, .21]) after controlling for the mediator and moderator.

4. Discussion

The aim of the current study was to investigate whether the individuals' level of effortful control capacities and intolerance of ambiguity mediated the positive association between rejection sensitivity and BPD features. The results revealed that rejection sensitivity was associated with the level of effortful control, intolerance of ambiguity, and BPD features. Individuals with higher rejection sensitivity are more likely to have lower effortful control capacities, lower tolerance of ambiguity, and a higher level of BPD features. These results supported the hypothesis that effortful control mediates the positive association between

rejection sensitivity and BPD features. Given that the effect size of the mediation model (Figure 1) and the moderated mediation model (Figure 3) was same, effortful control mediated and moderated the association between rejection sensitivity and BPD features.

Owing to the earlier negative experiences, such as rejection by caregivers during childhood, people develop sensitivity to detect potential threats and learn to associate ambiguous social cues with negative intentions and rejection cues. As highly rejection-sensitive individuals hold anxious expectations of future negative consequences (Feldman and Downey, 1994), they may be more likely to pay attention to ambiguous social cues (e.g., insensitive behaviours of their partners), consider such ambiguous cues as potential threats, and expect negative outcomes (e.g., rejection). If they focus on those potential threats, this may increase negative affect, such as anxiety, which may lead to difficulties in effortful control. As an elevated level of intolerance of ambiguity was related a decrease in effortful control, those who were less tolerant of ambiguous social cues were more likely to experience difficulties in inhibiting an inappropriate initial response, shifting attention shift from the potential threats, and performing actions in a more appropriate manner in interpersonal situations. In addition, given that the lower level of effortful control was associated with an increased level of intolerance of ambiguity, those with deficits in effortful control were more likely to respond to ambiguous cues with more profound intolerance. These cognitive negative biases (i.e., anxious expectation) and impairments in the capacities for tolerance and self-regulation increase the risk of BPD features developing. The indirect association between rejection sensitivity and BPD features through effortful control was consistent with the previous findings (Ayduk et al., 2008). However, no study has investigated the role of intolerance of ambiguity in the association between rejection sensitivity, effortful control, and BPD features. In sum, the current findings indicate that rejection-sensitive

individuals are more likely to be intolerant of ambiguity because they expect negative consequences when faced with uncertainty. Although ambiguous situations contain the possibility of positive and negative outcomes, rejection-sensitive individuals are more likely to focus on the possibility of negative consequences. As there is always uncertainty in social situations, for example, about the true intentions underlying other people's behaviours, rejection-sensitive people are more likely to expect negative intentions of others and/or negative outcomes, and so respond in a less tolerant manner (e.g., with anger or worry). As these individuals are less likely to inhibit their initial inappropriate response (i.e., anxious expectations, worry), shift attention to different aspects/possibilities, or avoid inappropriate actions, this negative and maladaptive response to social situations may lead to a development of maladaptive personality traits, such as BPD features.

There are some limitations in this study. First, although we established a meditation and moderated mediation models, the current study was cross-sectional in design. Therefore, we cannot make any causal claims; experimental studies are required to establish causation. Second, although we investigated the association between rejection sensitivity and BPD features, the study sample contained insufficient individuals with a high level of BPD features. Further, the current study used a small number of nonclinical participants; hence, it is not clear whether these findings can be generalized to a wider population and clinical samples. Future studies should compare clinical and nonclinical subjects to assess the effects of rejection sensitivity on BPD features. In addition, gender was not equally distributed in our current sample. Although gender was controlled in the analyses, this gender imbalance might be an issue, as BPD is more prevalent in women than men; hence, gender might have some effects on the association between BPD features and rejection sensitivity. Although previous studies measuring the age and sex

differences in the PAI-BOR scale have found that females were more likely than males to score higher on affective instability, identity problems, and negative relationships (De Moor et al., 2009), the current study did not replicate the effect of gender on BPD subscales. Males and females scored equally on all subscales and on total scores for BPD features. This may raise a question whether our current sample was representative, as clinical and research findings suggest there is a strong gender effect on BPD features (Lieb et al., 2004). However, past research has shown that prevalence of BPD features across genders is equal among healthy samples whereas the gender bias often found in clinical samples is due to overall greater levels of females presenting to treatment rather than a characteristic of BPD (Morey et al., 2002). Hence, the gender difference was not found in the current study as the current subjects were non-clinical population. Third, the current study used only self-report measurements which were collected at the same point in time. Hence, there was possible common-method variance among all constructs assessed in the current study. This may confound the interpretation of the results. Also, BPD features of participants were assessed using only self-report measurements. Although using the self-report measurement is not ideal to assess clinical BPD features, the PAI-BOR was selected as it has been widely acknowledged for its clinical utility and substantial psychometric evaluations (Blais et al., 2011). Also, it has been well validated as it has demonstrated sufficient internal consistency, test-retest reliability, and convergent (Morey, 2007) and concurrent (Sharp et al., 2012) validity. Fourth, although rejection sensitivity has been shown in other disorders, the current study did not examine the relationship between rejection sensitivity and other psychology. However, anxiety and depressive symptoms were controlled in the main analyses. Finally, as this study was a cross-sectional study, we did not assess participants' emotional state, such as anxiety in social interactions. Although we suspected that rejection-sensitive people are more likely to

have impaired effortful control due to negative emotional reactions in response to ambiguity in social situations and due to their intolerance of ambiguity, we could not assess emotional response. To investigate whether there is negative emotional arousal in response to negative/ambiguous social situations, future studies should empirically investigate subjects' emotional response, including assessment of the state of anxiety in the presence of potential social threats.

There is considerable evidence suggesting that rejection sensitivity and BPD features share similar characteristics in terms of aetiology and negative consequences, such as interpersonal difficulties. Past research and clinical reports have shown that individuals with higher rejection sensitivity are more likely to present higher BPD features. Although some level of rejection sensitivity is adaptive to avoid negative outcomes (i.e., social ostracism), these individuals' fear and anxious expectation of future rejection seem to be abnormal to the point where they increase the risk of impairments in effortful control capacities and tolerance of ambiguity. As fear of abandonment, impairments in effortful control, and intolerance of ambiguity are core features of BPD, how those cognitive-affective factors contribute to the interpersonal relationship difficulties needs to be further investigated. Future research should experimentally investigate the impacts of rejection sensitivity on cognitive capacities, particularly self-regulation, in those with BPD features in ambiguous social situations.

Table 1
Bivariate correlations among the main study variables

Variable	Mean	SD	1	2	3
1. PAI-BOR total	24.99	10.77	-	-	-
2. Effortful control total	4.29	.80	– .58**	-	-
3. Rejection sensitivity	9.50	3.38	. 39**	– .25**	-
4. Intolerance of ambiguity	37.70	6.22	. 36**	– .17**	.14*

Note. PAI-BOR = Personality Assessment Inventory-Borderline Feature scale.
* $p < .05$, two-tailed. ** $p < .01$, two-tail

Figure 1. Indirect effect of rejection sensitivity on borderline personality features through intolerance of ambiguity and effortful control

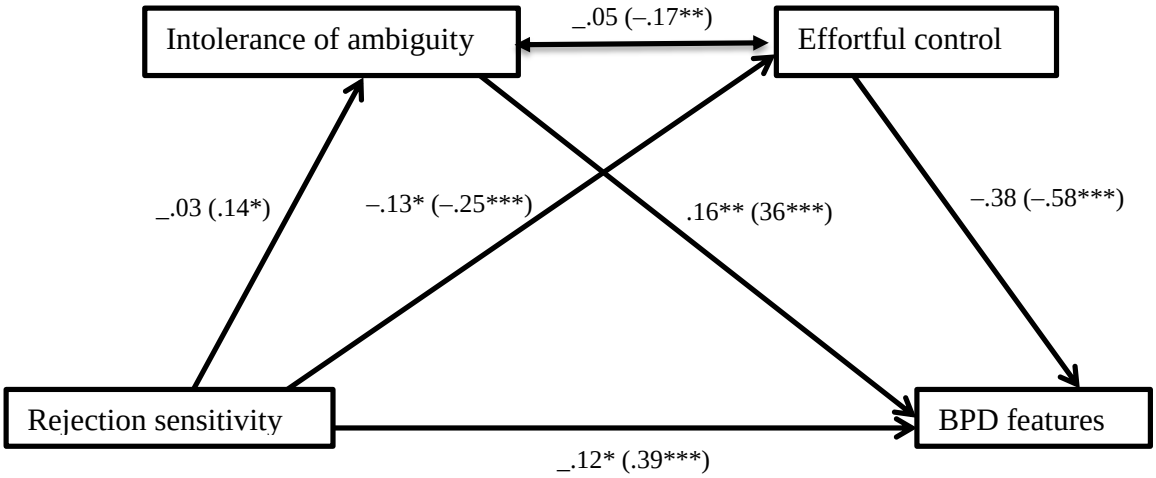


Figure 2. Indirect effect of borderline personality features on rejection sensitivity through intolerance of ambiguity and effortful control

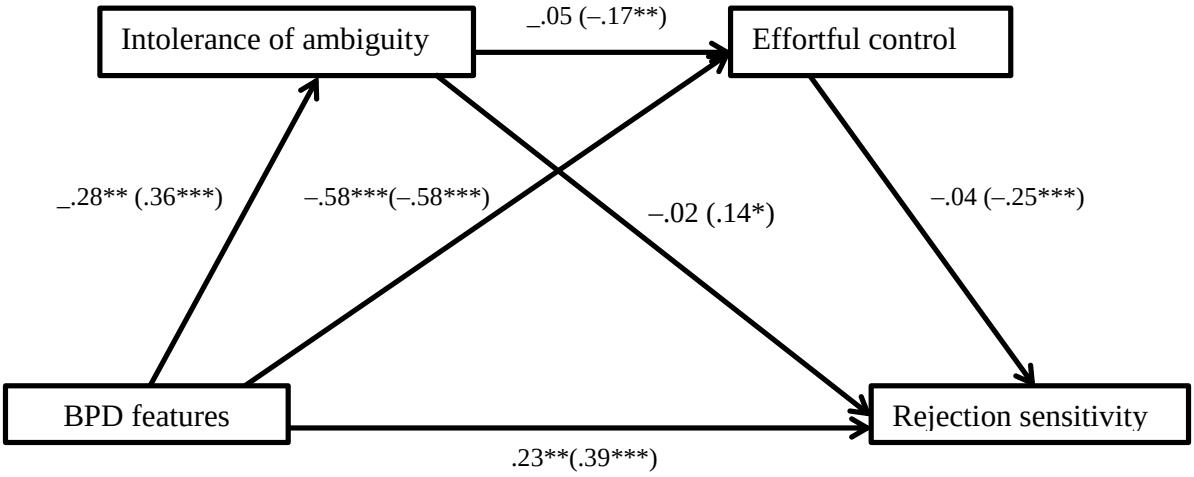
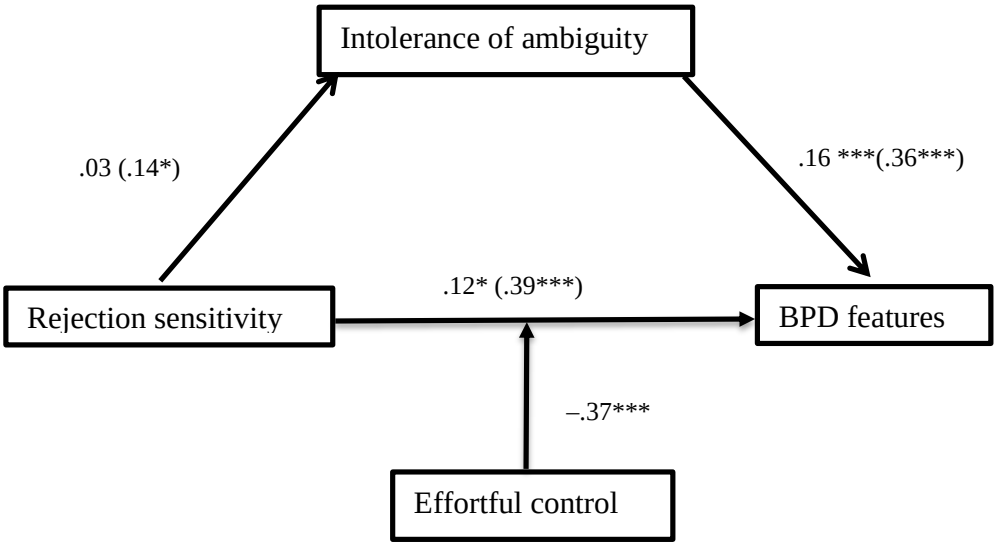


Figure 3. A moderated mediation model between rejection sensitivity and BPD features.



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