Self-Compassion and Emotional Responses to Interpersonal Rejection in Individuals with Borderline Personality Features

by

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Ethics Statement

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Abstract

The primary aim of this study was to determine whether a self-compassion manipulation has promise in addressing a core interpersonal vulnerability (sensitivity to social rejection) in borderline personality disorder (BPD). Forty-nine participants with high BP features were randomly assigned to complete a state self-compassion writing induction or a neutral control writing task. Participants then experienced self-relevant interpersonal rejection through receiving feedback on personal profile questions from another (fictional) participant. Emotional state was assessed at baseline, pre-manipulation, and post-rejection. Participants in both conditions demonstrated heightened negative affect, hostility, and irritability and reduced positive affect following the rejection. Contrary to hypotheses, participants in the self-compassion group did not demonstrate significantly different changes in positive affect, negative affect, shame, hostility, or irritability compared to participants in the control group. These results suggest that more intensive self-compassion interventions may be critical in future research on BPD and interpersonal difficulties.

Keywords: borderline personality disorder; self-compassion; interpersonal rejection; shame; emotion regulation

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INTRODUCTION

Borderline personality disorder (BPD) is a serious mental illness associated with heightened emotionality and emotion dysregulation (the inability to control one's affective state; Linehan, 1993). The diagnostic criteria for BPD include frantic efforts to avoid abandonment and patterns of unstable and intense interpersonal relationships (American Psychiatric Association, 2013). These relational vulnerabilities are conceptualized as core features of the disorder (Gunderson, 2007). Although all evidence-based treatments for BPD incorporate strategies to reduce interpersonal distress, there is inconsistent evidence that these treatments improve interpersonal functioning (Sinnaeve, van den Bosch, & van Steenbergen-Weijenburg, 2015). In response to increasing awareness of the limitations of existing BPD treatments, researchers have suggested that self-compassion may be an effective emotion regulation strategy to directly address interpersonal dysfunction in BPD (Krawitz, 2012; Warren, 2015). Self-compassion involves reacting to one's suffering – such as perceived flaws, personal failures, or distressing life events – with kindness and empathy, similar to how one would respond to a close friend (Neff, 2003a, 2003b). Self-compassion may be related to healthier relational functioning, as higher levels of self-compassion predicted higher rates of perspective taking and forgiveness of others amongst an American sample of community participants and undergraduate students (Neff & Pommier, 2013). Furthermore, as self-compassion interventions directly target self-criticism, a cognitive precursor to shame, self-compassion may be especially effective to combat the high levels of shame demonstrated by individuals with BPD (Krawitz, 2012; Warren, 2015). The aim of this study is to determine whether strategies that enhance self-compassion have promise in mitigating a core interpersonal vulnerability in BPD: reactivity to social rejection.

BPD and Relational Dysfunction

The diagnostic criteria for BPD in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (*DSM-5;* American Psychiatric Association, 2013) include relational instability – often manifesting as "stormy relationships," marked by vacillation between devaluation and idealization of relationships – and a heightened sensitivity to perceived abandonment manifested by frantic efforts to prevent real (or imagined)

abandonment. Other non-relational criteria, such as affective instability, self-destructive impulsivity, and identity disturbances, likely further contribute to interpersonal dysfunction. For example, self-injury and suicidal behaviors commonly co-occur with social adjustment difficulties (e.g., Soloff & Fabio, 2008), and often precede or follow difficult interpersonal experiences (Brodsky, Groves, Oquendo, Mann, & Stanley, 2006; Brown, Comtois, & Linehan, 2002). Gunderson (2007) thus asserts that relational style is central to understanding the difficulties involved in BPD and conceptualizing effective BPD treatment modalities.

According to Linehan's (1993) biosocial theory, BPD symptoms arise from the interaction between an individual's biological predisposition toward *emotion vulnerability* and childhood experiences with an *invalidating environment*. Emotion vulnerability refers to emotional responding characterized by heightened emotional sensitivity (a low threshold for emotional response), emotional reactivity (strong emotional responses), and slow return to baseline (delayed recovery from emotional experiences). An invalidating environment is one that criticizes, punishes, minimizes or rejects the individual's communication of emotional experiences. Emotion vulnerability makes an individual more attentive to emotional stimuli (e.g., Easterbrook, 1959) and at greater risk of a "reactivating effect" whereby delayed emotional recovery predisposes the individual to sensitivity towards the next emotional experience. The invalidating environment creates a system wherein emotions are typically invalidated, but intense emotional expression is intermittently reinforced. Consequently, a pattern of emotional escalation may develop. The emotion dysregulation central to BPD has lasting effects on relational functioning. For example, extant research suggests that emotion dysregulation fully mediates the relationship between BPD symptoms and impairments in interpersonal functioning (Herr, Rosenthal, Geiger, & Erikson 2013).

Empirical evidence reveals a variety of relational difficulties associated with BPD, including poor functioning in friendships and significantly greater impairment in romantic relationships among individuals with BPD compared to individuals with other *DSM* diagnoses (Hill et al., 2008). Findings that the interpersonal difficulties related to BPD are among the slowest symptoms to remit are especially concerning (Choi-Kain, Zanarini, Frankenburg, Fitzmaurice, & Reich, 2010). A ten-year prospective study by Choi-Kain and colleagues tracked the interpersonal features of individuals who had been diagnosed with BPD and individuals who had been diagnosed with other Axis II

disorders (no BPD diagnosis) in an inpatient hospital setting. Interpersonal features were assessed using the Interpersonal Relationship Section of the Revised Diagnostic Interview for Borderlines (DIB-R; Zanarini, Gunderson, Frankenburg, & Chauncey, 1989). Behaviorally-oriented interpersonal features of BPD, such as recurrent breakups and boundary violations, remitted in 99% of participants who exhibited these symptoms when first assessed. In contrast, five features were more persistent: fear of abandonment, discomfort with care, dependency on others, and negative affect when alone (the fifth stable feature was an exception - active caretaking, which was conceptualized to be the least maladaptive feature by Choi-Kain and colleagues). At the ten-year follow-up, 15-25% of individuals who had endorsed these affective relational symptoms during the baseline clinical interview did not show reduction in these symptoms. Although this study did not control for treatment (most participants engaged in some form of treatment over the ten years), these findings suggest that some of the interpersonal difficulties associated with BPD may be less likely than other core BPD problems to remit spontaneously or with treatment.

This persistence of relational problems has also been addressed directly in the BPD treatment literature. Dialectical Behavior Therapy (DBT; Linehan, 1993) has the strongest empirical evidence as a psychotherapeutic treatment of BPD (Stoffers et al., 2012). Despite the inclusion of interventions aimed to improve relational functioning (specifically, interpersonal effectiveness skills; Linehan, 2014), a recent review of treatments for BPD concluded that there is not sufficient evidence that DBT improves quality of life associated with interpersonal problems (Sinnaeve et al., 2015). Furthermore, a randomized controlled trial of another well-supported treatment for BPD, Mentalization-Based Therapy (MBT), revealed that MBT does not result in significantly increased improvement in interpersonal functioning for individuals with BPD compared to a non-specific supportive group therapy (Jorgensen et al., 2012). Existing evidence indicates there is a need for treatments, or for interventions that can be incorporated into broader treatment packages, that better address interpersonal impairment in BPD.

BPD and Emotional Responses to Rejection

One common source of interpersonal distress for individuals with BPD that may not be adequately targeted in existing treatments involves sensitivity to perceived rejection (Zanarini, Gunderson, Marino, Schwartz, & Frankenberg, 1989). This sensitivity

is demonstrated through cognitive biases characterized by enhanced attention to rejection-related stimuli among individuals with BPD compared to non-BPD controls (Korfine & Hooley, 2000). Persons with BPD also experience heightened expectations of rejection and elevated intensity of emotional responses to rejection, compared to psychologically healthy controls (Ayduk, Gyurak, & Luerssen, 2008). In one study, undergraduate participants with BP features reported more negative interpersonal experiences and stronger negative reactions to daily interpersonal stressors (exemplified by greater increases in negative affect) than did undergraduates with low levels of BP features (Zeigler-Hill & Abraham, 2006). This growing body of research has led Gunderson and Lyons-Ruth (2008) to posit that heightened sensitivity to social rejection contributes substantially to the emotional and interpersonal difficulties associated with BPD.

A variety of social rejection paradigms have been used to examine and understand sensitivity to rejection in BPD. One common method is Cyberball, a computer game where the participant and two virtual players take turns tossing a ball to each other (Williams & Jarvis, 2006). In the exclusion condition, the participant rarely receives the ball; in the inclusion condition, the participant receives the ball as frequently as do the other players (Williams & Jarvis, 2006). Research using this paradigm has demonstrated that participants with BPD report receiving the ball a lower percentage of the time in the inclusion condition compared to non-BPD controls (Staebler et al., 2011), and that they report feeling excluded and ignored more than controls, regardless of the condition (Renneberg et al., 2011). Further, participants with BPD report more intense self-focused negative emotions, such as loneliness and sadness, before and after playing the game than do controls, regardless of the condition (Staebler et al., 2011). Of particular interest are the specific emotions experienced after exclusion. Unlike control participants, participants with BPD demonstrate an increase in other-focused negative emotions such as anger and resentment following exclusion (Staebler et al., 2011).

The broader literature on BPD and aggression also suggests anger or hostility are common responses to social rejection. Individuals with BPD self-report higher levels of aggression than do individuals with other personality disorders and healthy controls (McCloskey et al., 2009), and there is evidence of anger and aggression specifically in interpersonal contexts. A few studies, for example, have examined interpersonal aggression in BPD using the Point-Subtraction Aggression Paradigm (PSAP; Cherek,

1992). In the PSAP, subjects can choose to push a button to accumulate points (Button A) that can later be exchanged for money, take points away from another player (Button B), or protect their own points (Button C). An index of aggressive behavior is calculated by determining the proportion of B responses to total responses. Studies using the PSAP have found that BPD participants demonstrate more aggressive behavior than healthy controls (Dougherty, Bjork, Huckabee, Moeller, & Swann, 1999; McCloskey et al., 2009). Furthermore, in another study using the PSAP, individuals with BPD pushed the B button more often than healthy control participants when not being attacked, demonstrating increased aggression even without provocation (New et al., 2009).

In other research examining emotional responses to rejection, participants with BPD self-reported that interpersonal rejection is often linked to experiences of rage (Berenson, Downey, Rafaeli, Coifan, & Paquin, 2011). In a novel paradigm developed by Chapman, Walters, and Dixon-Gordon (2014), individuals with high and low levels of BP features were instructed to fill out personal profile forms detailing their favorite movies, the person they most admire, and other information that might be shared in a typical online profile. Participants were led to believe this profile was being exchanged with another participant, who would provide feedback. All participants received the same negative feedback that the fictional participant found them to be unlikeable and uninteresting. Interestingly, individuals with high BP features responded to this social rejection with more irritability, hostility, and distress than did those with low BP features (Chapman et al., 2014). Although anger and aggression are common responses to rejection even in nonclinical samples (Bushman & Baumeister, 2002; Leary, Twenge, & Quinlivan, 2006; Twenge, Baumeister, Tice, & Stucke, 2001), this anger reactivity is more rapid and intense in BPD and may contribute to the aggression associated with BPD (e.g. Lejuez et al., 2003).

Despite this manifestation of intense anger and hostility, Rüsch and colleagues (2007) warn that ignoring the underlying shame in therapeutic contexts may limit the effectiveness of treatment. There has been some suggestion of an anger/shame cycle in interpersonal contexts in BPD (Gardner, Leibenluft, O'Leary, & Cowdry, 1991; Rüsch et al., 2007). In the context of an invalidating environment, individuals may learn to respond to emotional experiences with a secondary emotion of shame (Linehan, 1993). Evidence of this shame response is borne out in empirical literature. Compared to non-BPD controls, individuals with BPD show heightened emotional reactivity, particularly

demonstrated by higher levels of shame, when given negative feedback on task performance (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2010). Recent research suggests that shame may be central to BPD, underlying experiences of anger, impulsivity, nonsuicidal self-injury, and suicidality (Rüsch et al., 2007). Furthermore, there is evidence that anger and aggression often follow experiences of shame (e.g., Tangney & Salovey, 1999; Tangney, Wagner, Hill-Barlow, Marschall, & Gramzow, 1996, Thomaes, Stegge, Olthof, Bushman, & Nezlek, 2011), and that this pattern may be intensified for individuals with BPD. Scheel and colleagues (2013) found that, following a shame induction, women with BPD experienced higher levels of anger compared to healthy or depressed controls. This intense manifestation of anger may represent an attempt to deflect attention away from oneself (and the emotion of shame) and to direct blame to others (Stuewig, Tangney, Heigel, Harty, & McCloskey, 2010; Velotti, Elison, & Garofalo, 2014). In a study exploring emotional reactivity in response to social rejection, individuals high in BP features did not demonstrate a heightened shame response compared to individuals low in BP features (Chapman et al., 2014). It is possible that in some contexts anger may actually overshadow shame (Chapman et al., 2014), as supported by research positing that anger may be easier for an individual to accept, resulting in the individual expressing anger while suppressing shame (Tangney & Salovey, 1999; Tangney et al., 1996).

Another consequence of the persistence of invalidating environments is unreasonably high personal behavioral expectations and the adoption of a self-invaliding and self-critical cognitive style (Linehan, 1993). Self-criticism is a common cognitive precursor to shame, exacerbating the shame response. Patients with BPD demonstrate elevated levels of self-criticism compared to patients with depression (Southwick, Yehuda, & Giller, 1995; Westen et al., 1992). Furthermore, self-criticism has been linked to several key BPD symptoms in empirical research. One example is nonsuicidal self-injury (NSSI), which is the deliberate injury of one's own body tissue without suicidal intent (Klonsky, 2007). Although NSSI is associated with a variety of mental illnesses (Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006), it is especially prevalent in patients with BPD, evident in 65-80% of individuals with BPD (Clarkin, Widiger, Frances, Hurt, & Gilmore, 1983; Soloff, Lis, Kelly, Cornelius, & Ulrich, 1994). Consistently, research has demonstrated that individuals who engage in NSSI are more self-critical than healthy controls (Glassman, Weierich, Hooley, Deliberto, & Nock, 2007; Hooley,

Ho, Slater, & Lockshin, 2010). Individuals who self-injure report that these behaviors tend to co-occur with thoughts of worthlessness and self-criticism (Gilbert et al., 2010), and individuals who engage in NSSI are more self-critical than individuals who engage in less direct self-damaging behaviors, such as substance abuse (St. Germain, & Hooley, 2012). A study comparing community samples of individuals who self-injured and non-self-injuring controls, found that participants with highly self-critical cognitive styles had greater pain tolerance and were more likely to engage in NSSI behaviors (Hooley et al., 2010). These findings suggest that self-criticism may play a critical role in NSSI, a common symptom in BPD.

In summary, extant research has revealed connections between BP features and self-critical thoughts, feelings of shame and anger, and aggressive behavior. Furthermore, in response to social rejection, individuals with BPD are at an even greater risk of experiencing these problematic cognitions, emotions, and behaviors. Research has also implicated low levels of self-compassion in experiences of shame, anger, and self-criticism, motivating my interest in manipulating self-compassion to determine the impact on affective experiences to rejection.

Self-Compassion and Social Rejection

The construct of self-compassion is derived from Buddhist psychology (Neff, 2003b) and has gained increasing recognition in clinical psychology due to its established link to adaptive psychological functioning and decreased psychopathology (Neff, Rude, & Kirkpatrick, 2007; Barnard & Curry, 2011). Neff (2003b) has proposed three interconnected components of self-compassion: self-kindness (responding to oneself with compassion rather than judgment), common humanity (recognizing that failure is part of the human experience instead of feeling isolated by one's imperfections), and mindfulness (being aware of one's suffering without suppressing or amplifying one's thoughts or feelings). All three components interact, but are also independent. For example, when one is mindful of a negative feeling (mindfulness), perhaps embarrassment following a social blunder, one can more easily consider the experience in the context of being normal (common humanity), and can then respond kindly to oneself, instead of with self-criticism (self-kindness).

Self-compassion is linked to a variety of psychological benefits, including happiness, optimism, personal initiative, and emotional intelligence (Heffernan, Griffin, McNulty, & Fitzpatrick, 2010; Hollis-Walker & Colosimo, 2011; Neff et al., 2007). A meta-analysis found a large effect size for the relation between low levels of self-compassion and psychopathology (namely depression and anxiety; MacBeth & Gumley, 2012). Lower levels of self-compassion also are related to heightened suicidal ideation in university students (Basharpoor, Daneshvar, & Noori, 2016). Research examining interpersonal functioning in relation to self-compassion has revealed that individuals who are more self-compassionate are less likely to fear abandonment or rejection in their close relationships (Raque-Bogdan, Ericson, Jackson, Martin, & Bryan, 2011; Wei, Liao, Ku, & Shaffer, 2011).

Also relevant in the context of the current study, low self-compassion has been linked to emotion dysregulation (Vettese, Dyer, Li, & Wekerle, 2011). In experimental designs, self-compassion is an effective emotion regulation strategy for individuals with varying diagnoses. For example, in research examining emotional responses to a depressed mood induction participants with major depressive disorder who were instructed to use self-compassion strategies to regulate their mood demonstrated greater reduction in depressed mood compared to participants who were instructed to wait (Diedrich, Grant, Hofmann, Hiller, & Berking, 2014). Furthermore, self-compassion is an effective emotion regulation strategy for reducing shame for women in the context of an eating disorder (Kelly, Carter, & Borairi, 2013) and in the context of infertility (Galhardo, Cunha, Pinto-Gouveia, & Matos, 2013). As emotion dysregulation is often considered a central mechanism underlying BPD (Glenn & Klonsky, 2009; Linehan, 1993), these findings suggest that interventions that improve self-compassion may have promise in the treatment of BPD.

Theoretically, individuals with BPD may experience lower levels of self-compassion due to experiences in invalidating environments in childhood. Invalidating environments in childhood may not only prevent opportunities to learn emotion regulation skills, they may also teach children to distrust their own interpretations of emotional experiences – creating self-invalidation that can persist into adulthood (Linehan, 1993). The resulting self-hatred and self-distrust is incompatible with self-compassion, which is characterized by “unconditional self-acceptance” (Ellis’s term, cited in Neff, 2003b). This theoretical connection between self-compassion and

invalidating childhood environments has been borne out empirically. Research with adolescents and young adults has demonstrated a positive association between self-compassion and maternal support and healthy family functioning (Neff & McGehee, 2010). In contrast, adolescents who report a history of childhood maltreatment, such as emotional or physical abuse or neglect, demonstrate lower levels of self-compassion than their counterparts who have not experienced childhood maltreatment (Tanaka, Wekerle, Schmuck, Paglia-Boak, & the MAP Research Team, 2011; Vettese, Dyer, Li, & Wekerle, 2011). In work by Vetesse and colleagues (2011), self-compassion fully mediated the relation between childhood maltreatment and adolescent emotion dysregulation.

Recent research has also elucidated the connection between self-compassion, and emotional responses that are related to the interpersonal difficulties associated with BPD. One key area of research focuses on anger. Self-compassion is negatively associated with angry responses to hypothetical situations (Neff & Vonk, 2009). Furthermore, higher self-compassion predicted decreased anger responses when female athletes recalled emotionally upsetting, personally-relevant sports situations (Reis et al., 2015). Lower levels of self-compassion are associated with increased verbal aggression for men and women towards romantic partners (Neff & Beretvas, 2013). Research conducted with an undergraduate sample revealed that lower levels of self-compassion predicted heightened rumination, and this rumination mediated the relationship between self-compassion and anger as well as self-compassion and aggression (Fresnics & Borders, 2017).

The growing body of research connecting self-compassion to experiences of suicidality, fear of rejection, shame, emotion regulation, childhood maltreatment, anger, and aggression suggests a likely connection to the difficulties associated with BPD. Despite the possible utility of self-compassion approaches for treating BPD, to my knowledge, only one published study has examined the association of self-compassion with BPD (Rivera, 2013). Findings provided preliminary evidence of an inverse relationship between self-compassion and BPD features but were based on data from a small sample of forty undergraduate participants (Rivera, 2013). Self-compassion interventions have been hypothesized to be effective for BPD (Krawitz, 2012; Warren, 2015); however, there is little empirical evidence to support this suggestion, nor are there any self-compassion-focused treatments adapted to specifically address BPD

pathology. One recent study employed a three-week group loving-kindness and compassion meditation (LKM/CM) training program to examine the impact of self-compassion training on BPD patients (Feliu-Soler et al., 2017). Individuals with BPD completed ten weeks of mindfulness training, then were randomized to complete three weeks of LKM/CM or three weeks of continued mindfulness training (control condition). Individuals in the LKM/CM condition showed greater reductions in BPD severity and self-criticism, and greater elevations in mindfulness, self-kindness, and acceptance, compared to the control condition. These results are a promising indicator that self-compassion interventions may be effective in BPD populations, but further research is needed to address the exact mechanisms through which these positive changes develop. The current study will extend the research on outcomes of self-compassion by examining the specific impacts of a brief self-compassion induction on emotional experiences related to interpersonal vulnerability in BPD.

The Current Study

The aim of the current study was to examine the impact of self-compassion on emotional responses to social rejection among individuals with elevated BP features. Participants with high levels of BP features were randomly assigned to complete a neutral writing task or a self-compassion writing task prior to a rejection induction. The current study focused both broadly on changes in positive and negative emotionality following rejection, as well as more narrowly on specific emotions that are especially relevant in the context of BPD: shame and anger. Emotions were assessed at baseline, prior to the writing task, and following the rejection induction. Hypothesis 1 was that participants who completed the self-compassion task would report smaller increases in negative emotionality and smaller decreases in positive emotionality following an experience of social rejection compared to participants who completed a neutral control task. Focusing further on specific emotional responses, Hypothesis 2 was that participants in the self-compassion condition would experience smaller increases in shame and anger following rejection compared to participants in the control condition. Secondary analyses examined whether baseline levels of trait self-compassion and rejection sensitivity moderated the influence of the self-compassion manipulation on emotional reactivity to rejection.

METHODS

Participants

Of the 543 participants invited to complete a pre-screen questionnaire, 494 were recruited from the undergraduate student population at Simon Fraser University (SFU) and 49 were recruited from the general community. Twenty-five community participants and 69 student participants met eligibility requirements. Of the eligible participants, 54 attended the laboratory portion of the study. In addition, although recruitment materials specified participants must be fluent in English, the data for five participants were excluded due to English language difficulties that prevented the participants from completing the manipulation task. The final sample consisted of 49 participants (41 university students and 7 community members) with useable data.

Demographic characteristics of the sample are summarized in Tables 1-3. The average age of the final sample was 22.47 (*SD* = 9.54, *range* = 18 - 63). Most participants self-identified as female (71.4%); the rest identified as male (24.5%) or other genders (4.1%). Most participants were born in Canada (57.1%) and identified English as their first language (61.2%). About half of the sample identified as Caucasian (36.7%) or Chinese/Chinese Canadian (14.3%). Most participants (85.7%) identified as heterosexual and 61.2% as single and never married. As is common in a primarily undergraduate sample, 81.6% of participants reported completing some college. There was a wide range in reported gross annual family income with the highest proportion of participants reporting $100,000 or more (24.5%), or $10,000 to $19,999 (18.4%).

Table 1. Demographics: Ethnicity and Acculturation Variables

	Total sample (*N* = 49)		Self-compassion (*N* = 28)		Control (*N* = 21)	
Variable	***N***	**%**	***N***	**%**	***N***	**%**
Ethnicity						
White/Caucasian	18	36.7	9	32.1	9	42.9
Chinese or Chinese-Canadian	7	14.3	4	14.3	3	14.3
Korean or Korean-Canadian	6	12.2	3	10.7	3	14.3
Other Asian or Asian-Canadian	8	16.3	6	21.4	2	9.5
Mexican, Mexican-Canadian or Chicano	1	2.0	0	0.0	1	4.8
South Asian	2	4.1	2	7.1	0	0.0
Middle Eastern/Arab	1	2.0	0	0.0	1	4.8
Other	6	12.2	4	14.3	2	9.5
Birthplace						
Canada	28	57.1	19	67.9	9	42.9
Other	21	42.9	9	32.1	12	57.1
First Language						
English	30	61.2	17	60.7	13	61.9
Other	19	38.8	11	39.3	8	38.1

Table 2. Demographics: Gender, Sexual Orientation, and Relationship Status

	Total sample (*N* = 49)		Self-compassion (*N* = 28)		Control (*N* = 21)	
Variable	***N***	**%**	***N***	**%**	***N***	**%**
Gender						
Male	12	24.5	9	32.1	3	14.3
Female	35	71.4	17	60.7	18	85.7
Other	2	4.1	2	7.1	0	0.0
Sexual Orientation						
Heterosexual/Straight	42	85.7	24	85.7	18	85.7
Homosexual/Gay/Lesbian	0	0.0	0	0.0	0	0.0
Bisexual	4	8.2	3	10.7	1	4.8
Queer	1	2.0	1	3.6	0	0.0
Other	2	4.1	0	0.0	2	9.5
Current Relationship Status						
Single/Never married	30	61.2	18	64.3	12	57.1
Married	0	0.0	0	0.0	0	0.0
Committed Relationship (Unmarried)	17	34.7	9	32.1	8	38.1
Divorced	1	2.0	1	3.6	0	0.0
Widowed	1	2.0	0	0.0	1	4.8

Table 3. Demographics: Education and Family Income

	Total sample (*N* = 49)		Self-compassion (*N* = 28)		Control (*N* = 21)	
Variable	***N***	**%**	***N***	**%**	***N***	**%**
Educational Attainment						
Eight grade or less	1	2.0	0	0.0	1	4.8
High school graduate	1	2.0	1	3.6	0	0.0
Business or technical training beyond high-school	1	2.0	1	3.6	0	0.0
Some undergraduate	40	81.6	25	89.3	15	71.4
Complete undergraduate	1	2.0	1	3.6	0	0.0
Some graduate or professional school beyond undergraduate	4	8.2	0	0.0	4	19.0
Masters degree	1	2.0	0	0.0	1	4.8
Annual Family Income						
Less than $9,999	6	12.2	3	10.7	3	14.3
$10,000 - $19,999	9	18.4	6	21.4	3	14.3
$20,000 - $29,999	4	8.2	3	10.7	1	4.8
$30,000 - $39,999	1	2.0	1	3.6	0	0.0
$40,000 - $49,999	3	6.1	0	0.0	3	14.3
$50,000 - $59,999	4	8.2	3	10.7	1	4.8
$60,000 - $69,999	3	6.1	2	7.1	1	4.8
$70,000 - $79,999	3	6.1	1	3.6	2	9.5
$80,000 - $89,999	1	2.0	1	3.6	0	0.0
$90,000 - $99,999	3	6.1	3	10.7	0	0.0
$100,000 or more	12	24.5	5	17.9	7	33.3

Procedures

All procedures were approved by the university's Research Ethics Board. Recruitment strategies included (a) advertisements posted on the online research participation system at SFU, (b) flyers posted around campus, around the community, and online (via forums such as Craigslist), and (c) emails directed to individuals who consented to be re-contacted following other laboratory studies. Interested participants were directed to an online pre-screening questionnaire assessing their level of BP symptoms (measured by the Personality Assessment Inventory – Borderline Features scale (PAI-BOR; Morey, 1991)). Participants scoring 38 or higher on the PAI-BOR were deemed eligible to complete the in-laboratory component of the study. This cut-off is associated with a predictive power of .97 for BPD diagnosis (Jacobo, Blais, Baity, & Harley, 2007). The online pre-screen questionnaire (consisting of the PAI-BOR and a demographic question assessing gender to allow gender-matching in the in-laboratory procedures) was designed to last approximately ten minutes, in exchange for which participants received one research participation credit (for university students) or an entry into a raffle to win a $150 Amazon.ca gift card. The data from the pre-screen were only used for recruitment, and were destroyed after eligibility was determined.

Participants who scored above the cut-off in the online pre-screen were invited to complete a two hour in-laboratory experiment. Participants were tested individually and were led to believe another participant was completing similar tasks in the next room. This study followed a similar procedure to that developed by Chapman et al. (2014) to test emotional responses to social rejection scenarios. Chapman et al. (2014) found effect sizes ranging from d = .55 (for increase in hostility), to d = 1.03 (for increase in negative emotions) using this social rejection paradigm with a high BP features group, suggesting this manipulation was likely to produce medium to large effects on mood in the current study. For a summary of procedures see Table 4.

Table 4. Procedural Flow

Order	Task	Average Duration	Measures and Materials
1	Consent and risk assessment	15 min	Consent UWRAP (risk assessment)
2	Baseline measures (administered in random order after demographics)	30 min	Demographics Adult Rejection Sensitivity Questionnaire (A-RSQ) Five Factor Mindfulness Inventory (FFMQ) Self-Compassion Scale (SCS)
3	Vanilla baseline mood assessment	8 min	Positive and Negative Affect Schedule (PANAS)
4	Social rejection set-up	10 min	Complete personal items "Swap" Provide impressions of fake profile
5	Pre-manipulation mood assessment	3 min	PANAS
6	Manipulation	20 min	Self-compassion or control exercise
7	Self-compassion assessment	5 min	Self-Compassion Scale (modified)
8	Social rejection	5 min	Receive negative feedback
9	Post-rejection mood assessment	3 min	PANAS
10	Wrap-up	15 min	Believability and suspicion questions Debrief UWRAP (risk assessment) Handouts – resource sheet Reimbursement

Baseline measures.

At the beginning of the study, participants completed computer-administered baseline measures assessing rejection sensitivity, self-esteem, mindfulness, trait self-compassion and demographic variables. The baseline measures included in the study assessed key factors that may have impacted how participants responded to the self-compassion task and the social rejection manipulation. Demographic variables were included in preliminary analyses and other baseline measures were included in

secondary analyses to determine if they moderated or accounted for the effects of condition on emotional responses to social rejection.

Vanilla baseline mood assessment.

Following completion of baseline measures, a vanilla baseline procedure was used to elicit a baseline emotional state. Participants viewed colors flashing on a computer screen for five minutes. They were instructed to choose a color and to count how many times it appeared. Prior research indicates this procedure is more effective at reducing emotions to elicit a neutral or baseline mood than five minutes of no activity (Jennings et al., 1992). After completion of the task, participants completed the first mood assessment ("vanilla baseline mood").

Social rejection set-up.

Next, the social rejection scenario was set-up (see "Appendix A" for the social rejection induction materials). Participants were instructed to complete a set of personal questions that were designed to reflect the questions commonly included in designing an online profile (on social networking sites like Facebook). These responses were collected and participants were told they were exchanged with the other participant, who was fictitious. Participants were also instructed that if responses were mutually favorable they would have the opportunity to interact with the fictional participant as part of the study. All participants received a gender-matched standardized profile that was rated as highly likable in the pilot work by Chapman et al. (2014). Participants who identified their gender as "other," in the pre-screen questionnaire were randomly assigned to receive either the male or female profile (participants who responded in a manner that indicated which gender they most identified with were matched based on their stated preference – for example, if a participant identified as a trans-woman, she would have been matched with the female profile). Participants then evaluated the fictitious participant's profile by rating how fun the other person seemed and how interested they were in meeting the person at the end of the study. This form was then taken away to be exchanged with feedback from the other participant and the second mood assessment was administered ("pre-manipulation mood").

Self-compassion or control task.

Before receiving profile feedback, participants were randomly assigned to complete a brief self-compassion task or a neutral time-filling task (see Appendix B for the manipulation materials). In both groups, participants were asked to recall a time when they felt inadequate or bad about themselves because of a social situation. They were instructed to spend five minutes describing the situation in detail, to consider what emotions were arising, and to feel them as they wrote. Then, in the control task, participants were asked to respond to three prompts for five minutes each. These prompts involved describing the events in their day that had already occurred, their plans for the rest of the day, and the appearance of their bedroom without discussing their feelings or opinions. In the self-compassion condition, participants were instructed to complete an adapted version of a self-compassion writing exercise (Leary, Tate, Adams, Allen, & Hancock, 2007) used by Johnson and O'Brien (2013) in a study of self-compassion and shame. This exercise involves responding to three prompts for five minutes each. The first prompt aims to evoke a feeling of common humanity. Participants were asked to list as many ways they could think of in which others also experience similar events to the one they previously described. Next, to encourage self-kindness they were prompted to write a few sentences expressing understanding and concern to themselves, as if they were expressing concern to a close friend who had shared the experience. Finally, to evoke mindfulness they were asked to re-describe their feelings about the experience in an unemotional and objective manner by simply expressing them as they are. To assess the effectiveness of the manipulation, participants completed an assessment of state self-compassion after completing the self-compassion or control exercise.

Social rejection induction and post-rejection mood assessment.

Next, the experimenter gave the participant the evaluation completed by the fictitious participant. To induce rejection, all participants received the same negative evaluation indicating that the other participant did not find them interesting and thought meeting them would be a waste of time. The researcher informed the participants that because the other participant was not interested, they would not be meeting up with the "other participant," and that there were only a few more questionnaires to complete

before the study concluded. Participants then completed the final mood questionnaire (third mood assessment, “post-rejection mood”).

Wrap-up and clinical management procedures.

Following the laboratory procedures, participants were fully debriefed, with specific questions asked about the believability of the social rejection scenario and the participant’s degree of suspicion about the true purpose of the study (see Appendix C). Participants received $20 or three research credits following debriefing. Because the study involved asking participants to recall instances of self-injury and trauma and was designed to evoke negative emotional responses to the rejection, research assistants were carefully trained to monitor signs of distress during the study. All participants completed the University of Washington Risk Assessment Protocol (UWRAP; Linehan, Comtois, & Ward-Cieselski, 2012) with the experimenter at the beginning and the end of the study. This allowed the research assistants to assess and manage distress and suicide risk. The primary investigator, the supervisor of this research (a registered clinical psychologist), and other clinical psychology trainees were available if a participant needed additional support. There were no incidences of a participant demonstrating elevated suicide risk or indicating the need for further intervention or support. Also, handouts with relevant community resources were provided to all participants to be used at their own discretion.

Measures

BP features.

BP features were assessed using the Personality Assessment Inventory – Borderline Features scale (PAI-BOR; Morey, 1991) as a pre-screen measure to determine eligibility for the study. As pre-screen data was destroyed after determination of eligibility, the PAI-BOR was re-administered at baseline. The PAI-BOR is a 24-item self-report measure with four subscales that reflect characteristics of BPD (affective instability, identity problems, negative relationships, and self-harm). Participants respond to each item using a 4-point Likert scale ranging from 0 (*false*) to 3 (*very true*). A total raw score of 38 or more is considered indicative of significant presence of BP features, and a score of 60 or more reflects typical borderline personality functioning. The PAI-

BOR has demonstrated test-re-test reliability of r = .73 of up to 12 weeks, and concurrent validity with the Personality Disorders Questionnaire Revised (Hyler & Rieder, 1987), indicated by a significant correlation of r = .68 (Trull, 1995). The PAI-BOR has also demonstrated concurrent validity with BPD criteria from the Structured Clinical Interview for DSM Disorders (SCID-II; First, 1994), and all four subscales showed significant relationships with these criteria (Jacobo et al., 2007). In research using an undergraduate sample, the PAI-BOR demonstrated test-retest reliability of r = .89 over one month and an internal consistency of α = .92 (Chapman et al., 2008). In this study, internal consistency for the PAI-BOR at baseline was α = .77.

Mood.

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was administered three times to assess changes in mood from baseline to post-rejection. The PANAS consists of 20 affective adjectives across two subscales (Positive Affect (PA): enthusiastic, interested, determined, excited, inspired, alert, active, strong, proud, attentive; Negative Affect (NA): scared; afraid; upset; distressed; jittery; nervous; ashamed; guilty; irritable; hostile) that participants rate using a 5-point Likert scale ranging from 1 ("*very slight or not at all*") to 5 ("*extremely*"), with high scores indicating greater intensity of each emotion. For this study, PA and NA subscales were used. In addition to their use in the NA subscale, the item "ashamed" was used as an indicator of shame, and the items "hostile" and "irritable" were used as indicators of anger. The PANAS has good validity across age, sex, and other demographic variables (MacKinnon et al., 1999). In a student sample, the PA subscale demonstrated test-retest reliability of r = .71 and the NA subscale demonstrated test-retest reliability of r = .68 over a period of eight weeks (Watson et al., 1988). In this study, the PA and NA subscales demonstrated internal consistency ranging from α = .83 to .91 across mood assessments.

Self-compassion.

At baseline, participants completed the Self-Compassion Scale (SCS: Neff, 2003b). The SCS is a 26-item self-report measure of trait self-compassion. Participants are asked to respond to items indicating how often they have behaved in the stated manner using a 5-point Likert scale from 1 ("*Almost never*") to 5 ("*Almost always*"). Overall self-compassion can be calculated in addition to scores for six subscales (self-

kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification). Following the self-compassion or control exercise, participants completed a modified version of the SCS created by Breines and Chen (2013) with items adjusted to reflect state instead of trait self-compassion. For example, the item "I try to be understanding and patient towards those aspects of my personality I don't like" is changed to "Right now, I'm being understanding towards myself." Some items that cannot be modified to make sense in a state context were removed, resulting in 16 items with at least two items representing each subscale. These 16 items are presented in Appendix D. Participants were instructed to reflect on the social situation they had previously written about and then to indicate the extent to which they agreed with each statement in the current moment, using a 7-point Likert scale from 1 ("*Strongly disagree*") to 7 ("*Strongly agree*"). The original scale has demonstrated good internal reliability, predictive validity, convergent validity, and discriminant validity (see Neff, 2016 for a full commentary). The adapted scale is highly correlated with the original SCS (r = .61) and has demonstrated internal consistency of α = .76 (Breines & Chen, 2013). In this study, the original scale demonstrated internal consistency of α = .93 and the modified scale demonstrated internal consistency of α = .83.

Other baseline measures.

Beyond trait self-compassion, possible covariates and variables that might moderate or account for the effect of condition were assessed at baseline.

Demographics.

Participants completed items assessing age, ethnicity, country of origin, first language, gender, sexual orientation, current relationship status, and educational attainment, and annual family income.

Mindfulness.

The Five Factor Mindfulness Questionnaire (FFMQ; Baer et al., 2006) was administered to assess participants' mindfulness in daily life. I included this measure because mindfulness is a key component of self-compassion (Neff, 2003a; Neff, 2003b) and trait levels of mindfulness may influence the effects of self-compassion on emotional responses to social rejection. Participants responded to 39 items using a 5-point Likert

scale from 1 ("*Never or very rarely true*") to 5 ("*Very often or always true*"). Scores are summed to provide a total score and scores on 5 subscales: non-reactivity to inner experiences (e.g., "I perceive my feelings and emotions without having to act on them"), observing (e.g., "When I'm walking, I deliberately notice the sensations of my body moving"), acting with awareness (e.g., "When I do things my mind wanders off and I'm easily distracted," reverse-scored), nonjudging of inner experiences (e.g., "I criticize myself for having irrational or inappropriate emotions," reverse-scored), and describing (e.g., "I'm good at finding the words to describe my feelings"). Psychometric analyses indicate the FFMQ has adequate reliability, incremental validity in predicting psychological symptoms, as well as convergent and discriminate validity (Baer et al., 2006). FFMQ subscales have demonstrated internal consistency ranging from α = .77 to α = .93 (Williams, Dalgleish, Karl, & Kuyken, 2014). In this study, the FFMQ demonstrated internal consistency of α = .86.

Rejection sensitivity.

Participants' rejection sensitivity was measured using the Rejection Sensitivity Questionnaire – Adult version (A-RSQ; Downey & Feldman, 1996). As rejection sensitivity is a key predictor of emotional responses to social rejection (Downey & Feldman, 1996), baseline levels of rejection sensitivity may influence the effects of self-compassion on the emotional responses of interest in this study. In the A-RSQ, nine hypothetical rejection situations are presented (e.g., "You ask your parents or other family members to come to an occasion important to you") and participants are asked to respond to items using a 6-point Likert scale regarding their level of anxiety about the situation ("*very unconcerned*" to *"very concerned*") and their expectation of acceptance ("*very likely*" to "*very unlikely*"). As there are two questions per scenario, there are eighteen questions total. Rejection sensitivity scores are calculated for each scenario by multiplying rejection concern by rejection expectancy (acceptance expectancy reversed). A total score is calculated using the mean of all nine rejection sensitivity scores. The scale has demonstrated internal consistency of α = .89 and test-retest reliability of Spearman-Brown coefficient = .91 across an average of 6.9 weeks in a sample of BPD participants and healthy community adults (Berenson et al., 2011). In this study, the A-RSQ demonstrated internal consistency of α = .71.

RESULTS

Preliminary Analyses

Missing data.

For measures of emotional state, five data points were missing. Additionally, one participant was unable to complete the FFMQ due to technical difficulties with the online questionnaires. Cases with missing data were excluded pairwise for each analysis.

Descriptive statistics and data transformations.

The descriptive statistics of baseline questionnaire measures and state self-compassion prior to the social rejection are presented in Table 5. Four independent sample *t*-tests were conducted to compare participants' baseline rejection sensitivity, mindfulness, trait self-compassion, and level of BP features in the self-compassion and the control groups. All *t*-tests indicated non-significant differences in mean scores on baseline measures across groups (see Table 6).

Descriptive statistics of emotional state variables are presented in Table 7. The distribution properties of all emotional state variables were examined. Twelve of the fifteen variables demonstrated significant non-normality (demonstrating standardized skew or kurtosis ≥ ±2.0; *skew* range = 0.54 - 3.15, *kurtosis* range = 0.91 - 8.28). Following logarithmic transformations, the distribution properties for ten of the fifteen variables were not substantially improved (*skew* range = 0.01 – 3.15, *kurtosis* range = -1.46 - 8.28). Thus, raw scores were used for all analyses. Extreme outliers, if determined to be influential, were moved to 3 *SD* units from the mean.

Table 5. Descriptive Statistics of Baseline Questionnaire Measures and State Self-Compassion Across Conditions

	Total sample (*N* = 49)			Self-compassion (*N* = 28)	Control (*N* = 21)
Variable	**Min**	**Max**	**M(SD)**	**M(SD)**	**M(SD)**
Five Factor Mindfulness Questionnaire	44.00	128.00	97.65(14.50)	96.54(14.79)	99.20(14.32)
Personality Assessment Inventory – Borderline Features Subscale	22.00	61.00	42.38(8.77)	41.79(8.88)	43.20(8.77)
Rejection Sensitivity Questionnaire – Adult version	6.00	25.78	15.13(4.46)	14.97(4.84)	15.34(4.00)
Self-Compassion Scale (trait)	1.16	3.68	2.30(0.62)	2.39(0.61)	2.16(0.63)
Self-Compassion Scale (state)	2.18	5.97	4.30(0.91)	4.36(0.86)	4.23(0.99)

Table 6. Independent Samples T-Tests Comparing Baseline Variables Across Conditions

Variable	***t***	***df***	***p***
Five Factor Mindfulness Questionnaire	-0.62	46	.536
Personality Assessment Inventory – Borderline Features Subscale	-0.55	46	.587
Rejection Sensitivity Questionnaire – Adult version	-0.29	47	.774
Self-Compassion Scale (trait)	0.49	47	.628
Self-Compassion Scale (state)	1.29	47	.208

Table 7. Descriptive Statistics of Emotional State Variables

		Total sample (*N* = 49)		Self-compassion (*N* = 28)	Control (*N* = 21)
Variable	**Min**	**Max**	**M(SD)**	**M(SD)**	**M(SD)**
Positive Affect - 1	10.00	34.00	19.43(6.13)	18.86(6.15)	20.19(6.17)
Negative Affect - 1	10.00	34.00	17.43(6.33)	17.93(5.93)	16.76(6.92)
Shame - 1	1.00	5.00	1.55(1.00)	1.68(1.06)	1.38(0.92)
Hostility - 1	1.00	2.00	1.10(0.31)	1.07(0.26)	1.14(0.36)
Irritability - 1	1.00	5.00	1.94(1.07)	1.82(0.90)	2.10(1.26)
Positive Affect - 2	10.00	40.00	20.98(8.08)	19.46(7.88)	23.00(8.09)
Negative Affect - 2	10.00	42.00	16.39(6.88)	17.11(7.28)	15.43(6.35)
Shame - 2	1.00	5.00	1.53(0.94)	1.57(1.00)	1.48(0.87)
Hostility – 2	1.00	2.00	1.08(0.28)	1.07(0.26)	1.10(0.30)
Irritability - 2	1.00	3.00	1.49(0.65)	1.54(0.64)	1.43(0.68)
Positive Affect - 3	10.00	45.00	17.41(8.57)	15.68(7.33)	19.71(9.70)
Negative Affect – 3	10.00	44.00	19.18(9.12)	19.64(9.04)	18.57(9.42)
Shame - 3	1.00	5.00	1.73(1.30)	1.89(1.47)	1.52(1.03)
Hostility - 3	1.00	5.00	1.82(1.32)	1.40(1.07)	2.24(1.51)
Irritability - 3	1.00	5.00	2.41(1.37)	2.32(1.33)	2.52(1.44)

Note. Emotional states labelled “1” indicate measurement at vanilla baseline, “2” indicate measurement pre-manipulation, and “3” indicate measurement post-rejection.

Power.

The literature on very brief laboratory-based self-compassion interventions is sparse, has not yet examined responses to social rejection, and is non-existent using participants with high BP features. Research using a similar brief self-compassion writing exercise to induce state self-compassion increases in undergraduate students found a large effect of condition (self-compassion, expressive writing, or control) on negative affect and a medium effect on shame (Johnson & O’Brien, 2013). Thus, for this study,

medium to large effect sizes were anticipated. A power analysis was conducted using G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007). It was expected that 28 participants per group would provide power > .80 (medium effects, f2 =.10; a = .05; two-tailed) for a 2 (self-compassion vs. control) x 3 (Time) mixed-model ANOVA. The originally planned sample size of 60 did not come to fruition given slower than expected recruitment in the Spring 2017 semester, the inherent challenges recruiting high BP individuals primarily within the university, and the need to complete data collection and defend this thesis expeditiously. Therefore, the overall sample size of 49 participants may be underpowered to detect medium effects, but adequate for detecting large effects.

Potential covariates.

Three possible covariates – participant age, gender, and ethnicity – were considered. Correlation analyses were performed on age with each measure of emotional state. Participants' age was not related to their emotional state (*p*s > .136). One-way ANOVAS were conducted to compare means of change in emotional state from vanilla baseline to post-rejection across ethnicities. There were no significant differences in change in emotional state between ethnic groups (*p*s < .149). Independent samples *t*-tests were conducted to compare means on change in emotional state variables across gender. Only mean change in negative affect from vanilla baseline to post-rejection differed significantly across gender ($t(45) = 2.25$, $p = .003$, $d = 0.67$). Specifically, women experienced greater increases in negative affect following rejection compared to men. Because there were so few male participants in the sample ($n = 12$), gender differences were not further examined.

Sample differences.

As participants were recruited using varied methods, I initially intended to examine differences between undergraduate and community participants. Due to the small number of community participants in the sample ($n = 7$), meaningful comparisons could not be calculated.

Manipulation check.

A manipulation check was used to determine whether participants in the self-compassion group experienced heightened state social compassion compared to participants in the control group. State self-compassion was not significantly different across conditions, $t(47) = 0.50$, $p = .628$, but was significantly associated with change in negative affect from baseline to post rejection ($r = -.46$, $p = .001$) and change in hostility from baseline to post-rejection ($r = -.33$, $p = .019$).

Believability.

Fifty-one percent ($n = 25$) of participants reported believing the profile feedback was real, 44.9% ($n = 22$) reported they did not believe the feedback was real, and 4.1% ($n = 2$) did not respond to the believability question. Chi-square analysis revealed that there were not differences by condition in the number of participants that believed the feedback was real ($\chi^2(1) = 2.43$, $p = .119$). Believability scores were not significantly correlated with shift in emotional state from vanilla baseline to post-rejection (rs = -.28 - .21, ps = .054 - .720).

Secondary analyses.

For each emotional state variable, three way interactions between Baseline Variable X Time X Condition were examined to determine whether rejection sensitivity, mindfulness, and trait self-compassion moderated the effects of the self-compassion intervention on emotional responses to rejection.

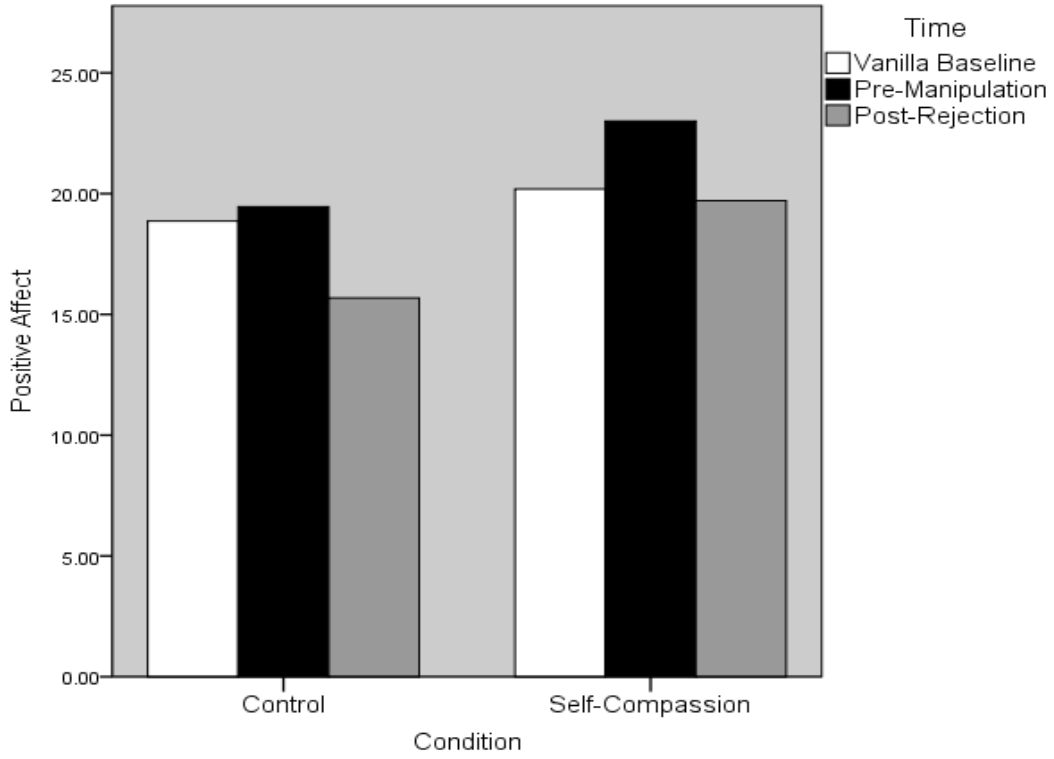
Positive and Negative Affect

To test Hypothesis 1, two Condition (self-compassion vs. control) x Time (baseline vs. pre-manipulation vs. post-rejection) ANOVAs were conducted with negative affect (NA subscale of the PANAS) and positive affect (PA subscale of the PANAS) entered as the dependent variables. Secondary analyses were conducted for positive and negative affect with median-split rejection sensitivity, mindfulness, and trait self-compassion entered separately into three ANOVA models as independent variables. For

all analyses, Levene's test for equality of error variances was non-significant, indicating the assumption of equality of variances was met.

For positive affect, Mauchly's test of sphericity was significant ($p < .05$); thus, Greenhouse-Geisser corrections were used. Mean positive affect across conditions is depicted in Figure 1. There was a significant effect of time, $F(1.71, 46) = 6.69$, $p = .003$, $\eta^2 = 0.12$. Planned comparisons revealed that post-rejection positive affect ($M = 17.41$, $SD = 8.57$) was significantly lower than pre-manipulation positive affect ($M = 20.98$, $SD = 8.08$). In addition, there was a non-significant Time x Condition interaction, $F(1.71, 46) = 1.11$, $p = .328$ $\eta^2 = 0.02$.

Figure 1. Mean Positive Affect Scores Across Conditions

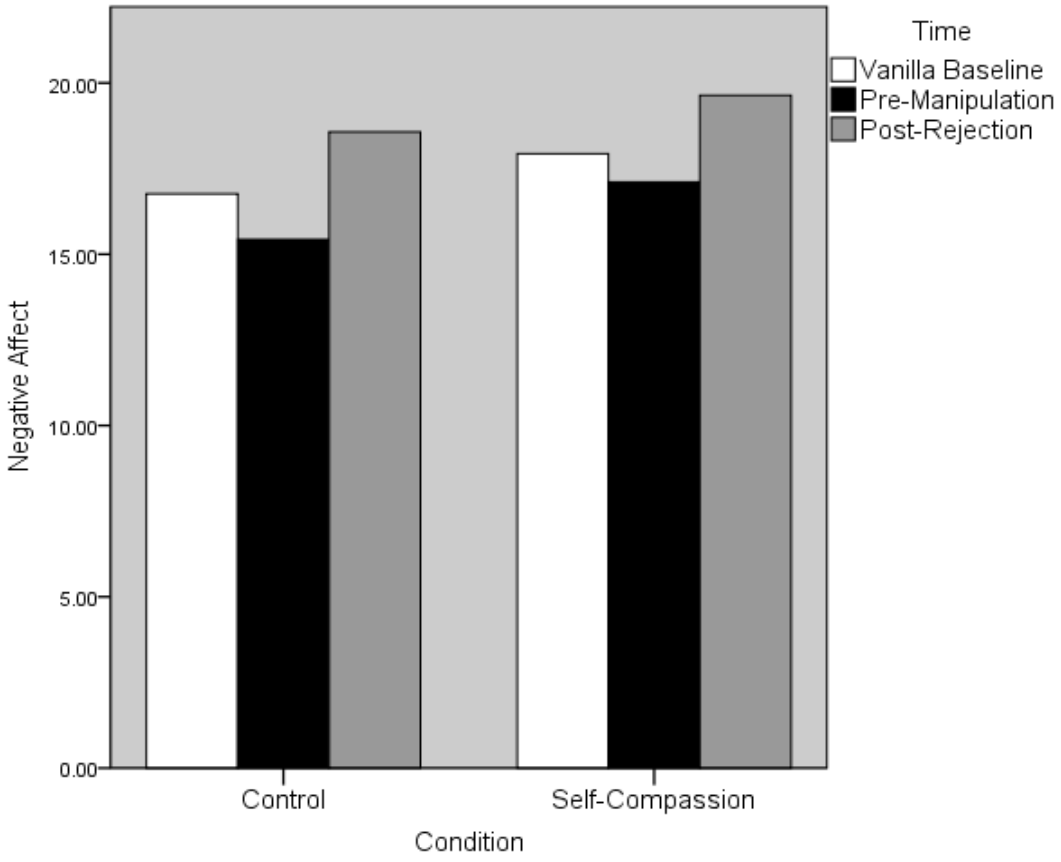


For positive affect, when rejection sensitivity was included as an independent variable in secondary analyses, the Time X Condition X Level of Rejection Sensitivity interaction was non-significant, $F(1.71, 46) = 0.12$, $p = .855$ $\eta^2 = 0.02$. When trait self-compassion was included as an independent variable, the Time X Condition X Level of Self-Compassion interaction was non-significant, $F(1.73, 46) = 0.96$, $p = .376$ $\eta^2 = 0.03$. When mindfulness was included as an independent variable, the Time X Condition X

Level of Mindfulness interaction was non-significant, $F(1.73, 46) = 0.66$, $p = .501$ $\eta^2 = 0.02$.

For negative affect, Mauchly's test of sphericity was significant ($p < .05$); thus, Greenhouse-Geisser corrections were used for the ANOVA. Mean negative affect across conditions is depicted in Figure 2. There was a significant effect of time $F(1.65, 46) = 6.41$, $p = .005$, $\eta^2 = 0.12$. Planned comparisons revealed that post-rejection negative affect ($M = 19.81$, $SD = 9.12$) was significantly greater than vanilla baseline ($M = 17.43$, $SD = 6.33$) and pre-manipulation ($M = 16.39$, $SD = 6.88$) negative affect. There was a non-significant Time x Condition interaction, $F(1.65, 46) = 0.08$, $p = .887$, $\eta^2 = 0.001$.

Figure 2. Mean Negative Affect Scores Across Conditions



For negative affect, when rejection sensitivity was included as an independent variable in secondary analyses, the Time X Condition X Level of Rejection Sensitivity

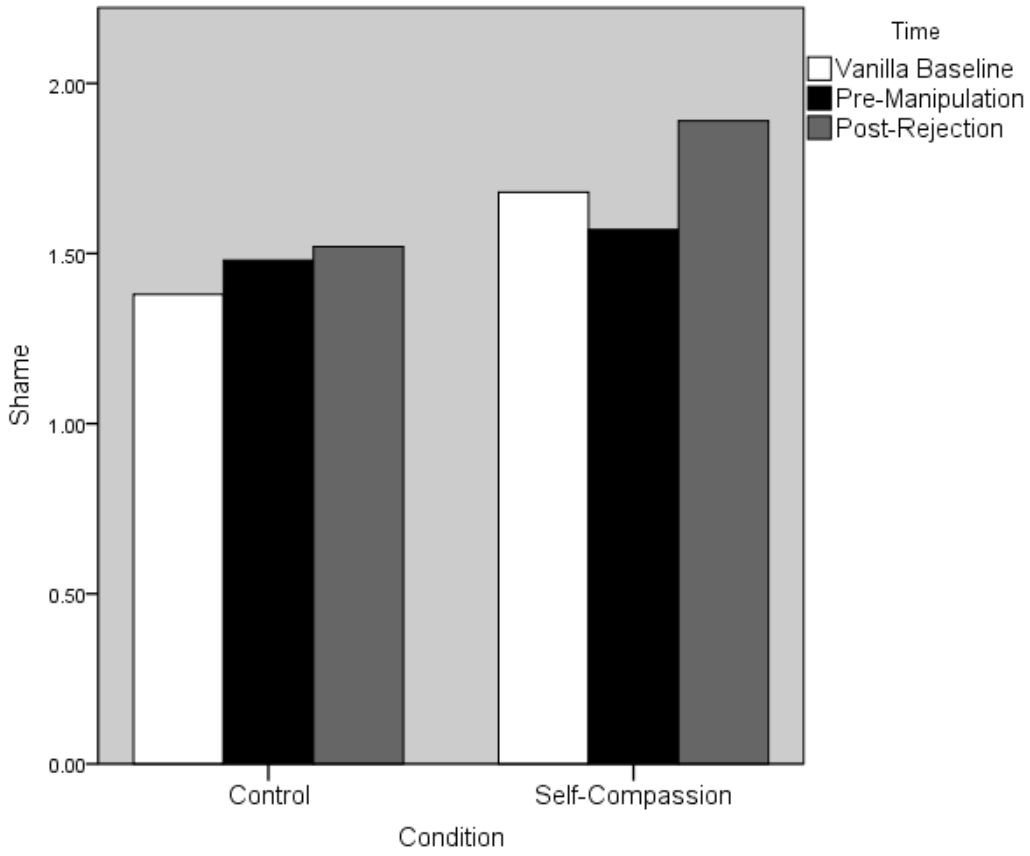
interaction was non-significant, $F(1.64, 46) = 1.15$, $p = .313$ $\eta^2 = 0.03$. When trait self-compassion was included as an independent variable, the Time X Condition X Level of Self-Compassion interaction was non-significant, $F(1.65, 46) = 1.81$, $p = .176$ $\eta^2 = 0.05$. When mindfulness was included as an independent variable, the Time X Condition X Level of Mindfulness interaction was non-significant, $F(1.68, 46) = 1.12$, $p = .313$ $\eta^2 = 0.01$.

Shame, Hostility, and Irritability

Hypothesis 2, that participants in the self-compassion group would show smaller increases in shame and anger following social rejection compared to participants in the control group, was tested with three Condition x Time ANOVAs with changes in the "shame," "hostility," and "irritability" items from the PANAS as the DVs. Secondary analyses were conducted for each emotional state variable with median-split rejection sensitivity, mindfulness, and trait self-compassion entered separately into three ANOVA models as independent variables.

For shame, Mauchly's test of sphericity was not significant ($p > .05$), indicating assumptions of sphericity were met. There was a non-significant effect of time $F(2, 46) = 1.01$, $p = .367$, $\eta^2 = 0.02$, and a non-significant Time x Condition interaction $F(2, 46) = 0.47$, $p = .630$, $\eta^2 = 0.01$. Mean shame scores across condition are presented in Figure 3.

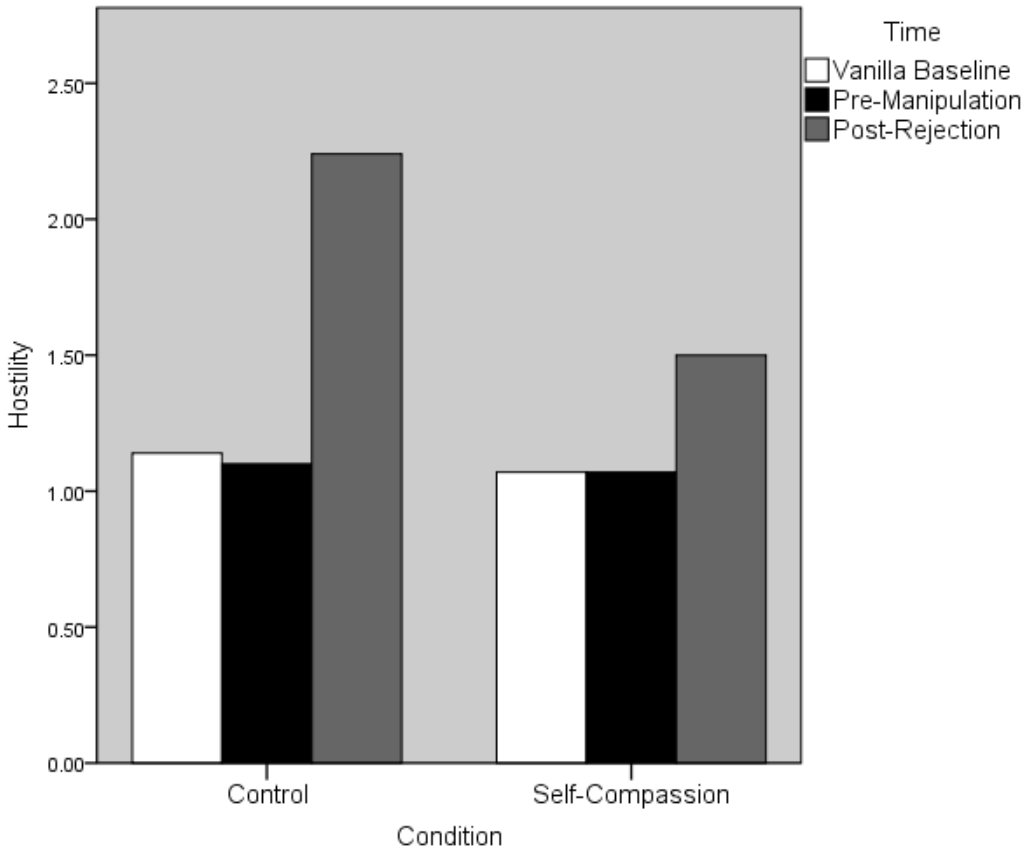
Figure 3. Mean Shame Scores Across Conditions



For shame, when rejection sensitivity was included as an independent variable in secondary analyses, the Time X Condition X Level of Rejection Sensitivity interaction was non-significant, $F(2, 46) = 2.28$, $p = .108$ $\eta^2 = 0.04$. When trait self-compassion was included as an independent variable, the Time X Condition X Level of Self-Compassion interaction was non-significant, $F(2, 46) = 0.17$, $p = .841$ $\eta^2 = 0.02$. When mindfulness was included as an independent variable, the Time X Condition X Level of Mindfulness interaction was non-significant, $F(2, 46) = 0.05$, $p = .954$ $\eta^2 = 0.02$.

For hostility, Mauchly's test of sphericity was significant ($p < .05$), thus Greenhouse-Geisser corrections were used for the ANOVA. There was a significant effect of time on hostility $F(1.15, 46) = 18.14$, $p < .001$, $\eta^2 = 0.26$. Planned comparisons revealed that post-rejection hostility ($M = 1.82$, $SD = 1.32$) was significantly greater than vanilla baseline ($M = 1.10$, $SD = 0.31$) and pre-manipulation ($M = 1.08$, $SD = 0.28$) hostility. For hostility, there was a non-significant Time x Condition interaction $F(1.15, 46) = 3.62$, $p = .057$, $\eta^2 = 0.05$.

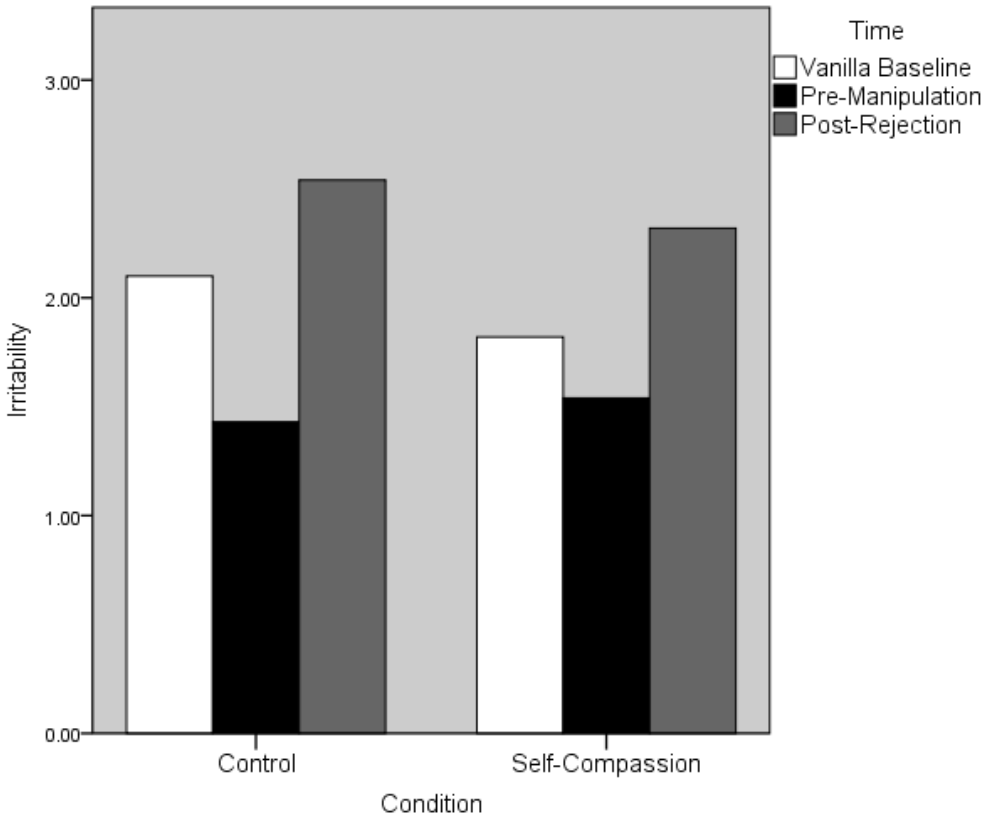
Figure 4. Mean Hostility Scores Across Conditions



For hostility, when rejection sensitivity was included as an independent variable in secondary analyses, the Time X Condition X Level of Rejection Sensitivity interaction was non-significant, $F(1.16, 46) = 0.34$, $p = .592$ $\eta^2 = 0.01$. When trait self-compassion was included as an independent variable, the Time X Condition X Level of Self-Compassion interaction was non-significant, $F(1.15, 46) = 0.84$, $p = .381$ $\eta^2 = 0.01$. When mindfulness was included as an independent variable, the Time X Condition X Level of Mindfulness interaction was non-significant, $F(1.16, 46) = 0.49$, $p = .515$ $\eta^2 = 0.01$.

For irritability, Mauchly's test of sphericity was significant ($p < .05$), thus Greenhouse-Geisser corrections were used for the ANOVA. There was a significant effect of time $F(1.63, 46) = 14.46$, $p < .001$, $\eta^2 = 0.23$. Planned comparisons revealed that post-rejection irritability ($M = 2.41$, $SD = 1.37$) was significantly greater than vanilla baseline ($M = 1.94$, $SD = 1.07$) and pre-manipulation ($M = 1.49$, $SD = 0.65$) irritability. For irritability, there was a non-significant Time x Condition interaction $F(1.63, 46) = 0.67$, $p = .486$, $\eta^2 = 0.01$.

Figure 5. Mean Irritability Scores Across Conditions



For irritability, when rejection sensitivity was included as an independent variable in secondary analyses, the Time X Condition X Level of Rejection Sensitivity interaction was non-significant, $F(1.63, 47) = 0.15$, $p = .823$ $\eta^2 = 0.001$. When trait self-compassion was included as an independent variable, the Time X Condition X Level of Self-Compassion interaction was non-significant, $F(1.66, 46) = 0.77$, $p = .443$ $\eta^2 = 0.01$. When mindfulness was included as an independent variable, the Time X Condition X Level of Mindfulness interaction was non-significant, $F(1.66, 46) = 0.15$, $p = .822$ $\eta^2 = 0.01$.

DISCUSSION

Despite growing discussion about the possible benefits of interventions targeting self-compassion for individuals with BPD, few studies have investigated the impact of self-compassion on functioning in BPD. In this study, I examined the impact of a brief self-compassion induction on emotional responses to interpersonal rejection for individuals with high levels of BP features. The social rejection manipulation resulted in the expected effect; reported negative affect was higher post-manipulation compared with both baseline measurements. Similarly, there was a significant effect of time on positive affect, revealing that post-rejection positive affect was lower than pre-manipulation positive affect. Inconsistent with Hypothesis 1, participants who completed the self-compassion induction did not report smaller increases in negative emotionality or smaller decreases in positive emotionality post-rejection, compared to participants in the control group.

Results regarding increases in shame, hostility, and irritability for the self-compassion group compared to the control group did not support Hypothesis 2. Although post-rejection hostility and irritability were significantly higher than at vanilla baseline or pre-manipulation, the interactions between time and condition were nonsignificant for both anger emotions, indicating that participants in the self-compassion group did not experience smaller increases in hostility and irritability compared to the control group. Levels of shame did not change post-rejection, and changes in shame did not differ between conditions. Secondary analyses did not reveal any significant impact of baseline level of rejection sensitivity, trait self-compassion, or mindfulness on changes in emotional state across conditions.

The original study hypotheses were based on evidence from Johnson and O'Brien (2013) that this brief writing exercise induced state self-compassion in an undergraduate sample. In the current study, there were nonsignificant differences in state self-compassion between the control and self-compassion group following the writing exercises. Thus, it cannot be concluded that inducing state self-compassion does not result in changed emotional reactivity to rejection. Instead, these results suggest that in this sample of participants with high BP features, the twenty-minute writing induction was not sufficient to increase state self-compassion. One explanation for this result is

that individuals with BP features likely have a long history, perhaps beginning in early childhood, of a self-critical or self-invalidating attitude (Linehan, 1993). Although brief self-compassion inductions may be effective in a typical undergraduate sample, individuals with BP features may require more intensive training to reduce longstanding patterns of invalidation and to increase self-compassion.

Although the self-compassion induction did not produce differences in state self-compassion across groups, both groups demonstrated emotional responses to the rejection scenario. As in the original research using this rejection paradigm (Chapman et al., 2014), individuals with high levels of BP features demonstrated heightened negative affect, hostility, and irritability, and reduced positive affect post-rejection. This study's results for shame differed from results found by Chapman and colleagues. In the original research, participants with high levels of BP features demonstrated increases in shame following the rejection, whereas in the current study, there was not a significant change in shame post-rejection. As this study was underpowered to detect medium effects, it is possible that a change in shame may be evidenced in a larger sample size. If shame does not change in research with a larger sample, this result may suggest that shame is not a key emotional response to social rejection for individuals with BP features. Alternatively, these findings may support the theory that individuals with BP features may view anger as a more tolerable or acceptable emotion compared to shame, supressing shame and endorsing anger (Chapman et al., 2014).

Limitations and Future Directions

Several study limitations warrant consideration. First, the sample collected was smaller than originally planned, resulting in a sample underpowered to detect medium effects. Furthermore, the sample consisted of more women than men, resulting in inadequate power to include gender in secondary analyses. As gender was associated with change in negative affect such that in this study women experienced greater increases in negative affect post-rejection compared to men, gender should be included in future research as a variable of interest. This study also lacked a clinical control group, and without such a group, how these results relate to BP features specifically cannot be determined. To address these limitations, data collection is ongoing and has been expanded to include a low BP features group (determined by scores below 24, the mean score for undergraduates (Morey, 1991) on the PAI-BOR) and to continue

recruitment of male participants with high BP features to increase power. Continued data collection will allow for future analyses that examine gender as a covariate and are powered to detect medium effects. Furthermore, I will examine whether the self-compassion induction fails to induce state self-compassion in all participants, or only in high BP features participants.

Another limitation of this study was the use of a nonclinical sample. BP can be conceptualized as a spectrum, from low features to those meeting criteria for diagnosis. Participants' levels of BP features were assessed using a self-report questionnaire, rather than a diagnostic interview. Consequently, results may not be generalizable to a clinical sample of individuals diagnosed with BPD. Future research should examine the role of self-compassion in responses to rejection in individuals on the clinical diagnosis end of the BPD spectrum.

Finally, this study employed a brief (twenty minute) self-compassion induction exercise. Although similarly brief inductions have effectively induced state self-compassion in typical undergraduate samples (e.g., Johnson & O'Brien, 2013) and samples of individuals who engage in restrictive eating (Adams & Leary, 2007), it is possible the brevity is not suitable for inducing self-compassion in individuals with BP features. The only study I am aware of to date that has examined the impact of self-compassion training on individuals with BPD used a three-week training program (preceded by ten weeks of mindfulness training) that involved weekly group sessions and daily homework practice (Feliu-Soler et al., 2016). The program successfully increased participants' self-compassion, beyond increases observed in the control group that continued mindfulness training for three weeks and did not receive self-compassion training. Recently, Finlay-Jones, Kane, and Rees (2016) developed a six-week online self-compassion training program that was delivered to 37 post-graduate Australian psychology trainees. Participants reported significant increases in self-compassion and happiness, and decreases in emotion regulation difficulties, depression, and stress at post-treatment compared to pre-treatment. These promising results should encourage future research examining the acceptability and feasibility of such programs with clinical populations. Future research investigating self-compassion and BPD could use similar online programs to provide more intensive self-compassion training to determine the effects on responses to rejection.

Implications

This study contributes to the empirical literature on emotional responses to rejection in BPD by exploring the impact of a self-compassion induction on emotional responses to rejection in individuals with high levels of BP features. Similar to results in the original research using this rejection paradigm (Chapman et al., 2014), participants with high levels of BP features demonstrated decreases in positive affect and increases in negative affect, hostility, and irritability post-rejection. These results support the utility of this paradigm in inducing emotional responses to rejection in individuals with BP features. Results did not support the hypothesis that compared to participants who completed a control writing task participants who completed the self-compassion induction would experience smaller decreases in positive affect and smaller increases in negative affect, including hostility, irritability, and shame, specifically. The failure of the brief self-compassion exercise in inducing heightened state self-compassion in individuals with high levels of BP features and in impacting emotional responses to rejection has important implications for future research. Research seeking to further elucidate the impact of self-compassion in the context of BPD may benefit from more intensive self-compassion protocols, such as online or in-person programs that span several weeks. The results of this study emphasize the intractability of the rejection sensitivity associated with BPD and highlight the importance of continued research into treatments to alleviate the resulting interpersonal dysfunction.

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Appendix A: Rejection Induction Materials

Social Rejection Induction – Personal Profile Form

In this study we are interested in people's first impressions. Therefore, you will be interacting with another participant throughout this study and completing tasks that will allow you to form an impression of each other. At the end of the experiment you may have the opportunity to meet the other participant.

Write a few sentences answering each of the following questions. This information will be given to your partner so they can get to know you.

1) What are your hobbies?

_____

_____

_____

2) What is your favourite movie or TV series? Why?

_____

_____

_____

3) What is your favourite book? Why?

_____

_____

_____

4) Who is the person you admire most? Why?

_____

_____

_____

_____

5) If you were left alone on a desert island, what would you take with you?

_____

_____

_____

6) If there were only 10 minutes left until the end of the world, what would you do?

_____

_____

_____

7) The 5 words that describe you best are:

_____

_____

Social Rejection Induction – Personal Profile of a Female Fictitious Participant (handwritten)

1) What are your hobbies?

In the little spare time I have I love watching/playing sports, cooking, daydreaming, swimming, traveling, and shoe shopping. I LOVE SHOES! I'm always up for doing new things.

2) What is your favourite movie or TV series? Why?

Oh so many! SUPERSTAR! Snatch, Half baked, Bowling for Columbine, Orange is the New Black, Game of Thrones, Braveheart, Coyote Ugly, I Am Sam, and How to Lose a Guy in 10 Days!

3) What is your favourite book? Why?

People still read books these days? Crazy! Just kidding. Harry Potter, A Boy Called It, Old classics, cheesy mysteries and Harlequin romances. Oh and Simpson comics! ☺

4) Who is the person you admire most? Why?

My brother, no matter what he goes through in his life he always comes out on top. My mom, she had a rough life. Oh, and anyone with mega talent and passion.

5) If you were left alone on a desert island, what would you take with you?

Usually when you are stranded somewhere it's not planed, so all I would have is what's in my bag: phone, notebook, keys, lipgloss, and a couple slices of gum.

6) If there were only 10 minutes left until the end of the world, what would you do?

Freak out cuz we're all gonna die in 10 minutes! Then I'd tell everyone how much I love them, kiss as many cute boys as possible, then hug my best friends while eating all the desserts I can 'til we explode

7) The 5 words that describe you best are:

Sarcastic, caring, cheerful, naughty, friendly.

Social Rejection Induction – Personal Profile of a Male Fictitious Participant (handwritten)

1) What are your hobbies?

Riding dirt bikes, quads, playing guitar, "managing" my best friends' band, Basketbal l(coaching and playing), cars, friends, University, and general chaos

2) What is your favourite movie or TV show? Why?

Anything funny or offensive, Gattaca, Eyes wide shut, Pay it Forward, American History X, Fight Club, Game of Thrones, all the Marvel movies, Walking Dead

3) What is your favourite book? Why?

Rising Sun, Chrysalides, Brave New World, Lord of the Rings

4) Who is the person you admire most? Why?

You…if you're superman. If not, then it's superman. Seriously though, without a doubt my father is a person I really admire, for so many reasons.

5) If you were left alone on a desert island, what would you take with you?

Usually when you become stranded somewhere, you're not given a choice of what to bring. However, I would bring a b-ball and hoop, a blanket, and a girl. Then do everything I could NOT to be found.

6) If there were only 10 minutes left until the end of the world, what would you do?

Go out with a bang! Sacrifice myself to save the world, or eat some ice cream, which ever is easier.

7) The 5 words that describe you best are:

Funny, athletic, mysterious, intelligent, sarcastic.

Social Rejection Induction – Profile Feedback Form

You have just read the personal profile of another participant you have been paired with in this study. Please reflect on this information and answer the following questions as honestly as possible.

1) Does this sound like the kind of person you would want to be friends with?

_____

_____

_____

2) Do you think this would be a fun person to be around?

_____

_____

_____

3) Did you find this person unique, creative, and/or interesting?

_____

_____

_____

4) After reading this profile information, would you want to get to know this person better?

_____

_____

5) Would you like an opportunity to meet this person after the study session today?

_____

_____

6) Overall, on a scale of 1 to 10, how would you rate the likability of this person?

_____

Social Rejection Induction – Profile Feedback from the Fictitious Other Participant (handwritten)

1) Does this sound like the kind of person you would want to be friends with?

Not so much. My friends are cooler.

2) Do you think this would be a fun person to be around?

He/She sounds kind of dull and average.

3) Did you find this person unique, creative and/or interesting?

Not really.

4) After reading the profile information, would you want to get to know this person better?

Probably not. I don't think we'd click.

5) Would you like an opportunity to meet this person after the study session today?

I really have no desire to meet this person. Waste of my time.

6) Overall, on a scale of 1 to 10, how would you rate the likability of this person?

3

Appendix B: Self-Compassion and Control Interventions

Social Failure Reflection (first prompt in both conditions)

Before your feedback is exchanged with the other participant we'd like you to take the time to complete the following questions. Please note, these questions will NOT be exchanged with the other participant or reviewed by the research assistant. You'll be given five minutes for each question and the researcher will indicate when you are to move to the next question.

Take a few moments to think of a negative social situation that occurred in the last five years that made you feel bad about yourself – as if you were a completely awful or worthless person. This could be something that involved failure, humiliation or rejection.

Please describe the experience. Include such things as: what led up to it; who was present; precisely what happened; and most importantly, how you felt and behaved at the time.

[Please wait to move on until instructed by the researcher]

Self-Compassion Writing Exercise

Bearing in mind the experience you just described, please provide a written response to each of the following three instructions. It is important for you to really make an effort with your responses and to write down everything that is relevant.

List as many ways as you can think of in which other people also experience similar events to the one you described.

[Please wait to move on until instructed by the researcher]

Write a paragraph expressing understanding, kindness, and concern to yourself the way you might express concern to a friend who had undergone the experience.

[Please wait to move on until instructed by the researcher]

Describe your feelings about the experience in an objective fashion without over-exaggerating or minimizing the intensity of your feelings.

[Please wait to move on until instructed by the researcher]

Control Writing Exercise

Please provide a written response to the following instructions. It is important for you to really make an effort with your responses and to write down everything that is relevant. You will be given five minutes to respond to each prompt, and the researcher will let you know when to move to the next question.

Describe the events that have occurred in your day so far, in an objective and unemotional fashion.

[Please wait to move on until instructed by the researcher]

Describe your plans for the rest of the day in an objective and unemotional fashion.

[Please wait to move on until instructed by the researcher]

Please describe your bedroom (or the room you typically sleep in) in as much detail as possible. This can include details of décor, furniture, etc. Please describe the room as objectively and unemotionally as possible.

[Please wait to move on until instructed by the researcher]

Appendix C

Believability Questionnaire

INSTRUCTIONS: This questionnaire asks you about your experiences during the study. Please circle your answer for each of the questions below.

Did the feedback you received on the writing task make you upset?	Very much so	Moderately	Not at all
Did the feedback you received on the writing task hurt your feelings?	Very much so	Moderately	Not at all
Do you feel angry at the other participant in the previous writing task?	Very much so	Moderately	Not at all
Did you believe that the feedback you were given from the other participant was real?	Yes	No	
Do you believe the feedback came from another participant in this study?	Yes	No	
Would you be willing to participate in this same study again at a later date?	Yes	No	

Appendix D

Items in the State Version of the Self-Compassion Scale

Right now . . .

1) I'm trying to be kind and reassuring to myself. (SK)
2) I'm being understanding towards myself. (SK)
3) I'm trying to take a supportive attitude towards myself. (SK)
4) It's okay to make mistakes. (SK)
5) I'm being hard on myself. (SJ)
6) I'm being intolerant towards those aspects of my personality that I don't like. (SJ)
7) I feel stupid. (SJ)
8) A lot of people have negative experiences. I'm not the only one. (CH)
9) Everyone makes mistakes sometimes. (CH)
10) Everyone feels bad about themselves sometimes. (CH)
11) I feel like other people have it easier than me. (IS)
12) These types of things seem to happen to me more than to other people. (IS)
13) In the scheme of things, this is not that big of a deal. (MI)
14) I'm taking a balanced perspective on the situation. (MI)
15) I keep thinking about what happened. (OI)
16) I feel consumed by feelings of inadequacy. (OI)

Note. SK = self-kindness, SJ = self-judgment, MI = mindfulness, OI = overidentification, CH = common humanity, and IS = isolation (Breines & Chen, 2013).