

# Out of the Frying Pan, Into the Fire: Mixed Affective Reactions to Social Proximity in Borderline and Avoidant Personality Disorders in Daily Life

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Social proximity typically helps individuals meet their belongingness needs, but several forms of psychopathology, including borderline and avoidant personality disorders (BPD and APD, respectively) are characterized by social difficulties. This experience-sampling study is one of the first to directly investigate the affective reactions of individuals with BPD and APD (compared with healthy controls [HC]) to social proximity in daily life. We examined both person-level and day-level reactions. At the person level, the rate of social proximity across the diary period was associated with diminished feelings of rejection, isolation, shame, and dissociation in the HC group. In contrast, it was not associated with any affective reaction in the BPD group, and was associated with decreased rejection and isolation on the one hand, but also with increased anxiety in the APD group. At the day level, we used multilevel regression to examine affective reactions when in social proximity. The HC group showed a consistent benefit when in social proximity. In contrast, both PD groups exhibited mixed affective reactions to social proximity; specifically, benefits (increased positive affect, decreased rejection, isolation, and dissociation) were interspersed with costs (increased shame for both PD groups; increased anger for BPD; increased anxiety for APD). The mixed reactions found in both PDs may contribute to the disturbed relationships of individuals with these disorders.

*Keywords:* BPD, APD, diary methods, emotion regulation, social proximity

The need for social belongingness is a basic human motivation (Baumeister & Leary, 1995; Downey & Feldman, 1996): individuals need frequent nonaversive social interactions in which they feel accepted and cared for. The perception that one is not alone—that is, that others are available to provide social support—has protective psychological (cf., Thoits, 2011) and physiological functions (cf., Uchino, 2009). Conversely, social exclusion is consistently found to lead to negative psychological consequences, including increased negative affect, decreased positive affect and self-esteem, and a reduced sense of meaningful existence (Perlman & Peplau, 1983; Rook, 1984; Tang & Richardson, 2013). Loneliness and exclusion are associated with various psychological and physiological costs (e.g.,

immune system dysregulation: Jaremka et al., 2013; physiological arousal: Kelly, McDonald, & Rushby, 2012; cardiovascular problems: Hawkey, Burleson, Bernston, & Cacioppo, 2003).

Most of the research on the need to belong focuses on the subjective state of loneliness and the interpersonal process of ostracism (or, conversely, support and acceptance), and not on the objective state of being alone—a state that does not necessarily lead to subjective loneliness (Hawkey et al., 2003). Although less powerful in influence than subjective loneliness, simply being alone does have significant effects on one's health (e.g., living alone has been tied to cardiovascular problems; Case, Moss, Case, McDermott, & Eberly, 1992). A recent study on both objective isolation and subjective loneliness shows that social isolation predicts mortality separately from loneliness (Steptoe, Shankar, Demakakos, & Wardle, 2013).

Recent studies on affective reactions to social proximity (vs. being alone) show that adolescents and college students are least happy when they are alone, and that those who spend more time alone are the unhappiest (Csikszentmihalyi & Hunter, 2003; Kashdan & Collins, 2010; Mehl, Vazire, Holleran, & Clark, 2010). Strikingly, sheer physical proximity in the form of hand-holding, even by a stranger, has been associated with some attenuation of neural response to threat (Coan, Schaefer, & Davidson, 2006).

Taken together, these findings highlight the important role of social proximity and its effect on individuals' affective states. However, for some, the effects of social proximity may be stronger, and in certain cases may become aversive. For example,

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individuals high in rejection sensitivity (RS), characterized by a high need for acceptance combined with a heightened awareness of the threat of rejection, may find being in social proximity less salutary (Downey & Feldman, 1996).

Individuals with borderline or avoidant personality disorders (BPD and APD, respectively) have been found to be high in RS (Berenson, Downey, Rafaeli, Coifman, & Leventhal Paquin, 2011; Staebler, Helbing, Rosenbach, & Renneberg, 2011) and prone to extreme interpersonal difficulties. Additionally, BPD is the most widely researched personality disorder in this context (cf., Gunderson, 2007; Gunderson & Lyons-Ruth, 2008), whereas APD is quintessentially interpersonal by its very definition (American Psychological Association, 2013). It is likely that for both groups, social proximity might cause ambivalent reactions. For these reasons, we set out to investigate the affective reactions of individuals with either disorder to the presence, or absence, of social proximity.

### Interpersonal Difficulties and Reactions to Social Proximity in BPD

BPD is defined as “a pervasive pattern of instability of interpersonal relationships, self-image, and affects, and a marked impulsivity beginning by early adulthood and present in a variety of contexts” (American Psychological Association, 2013). Some models of BPD conceive it as primarily interpersonal (Benjamin, 1996; Gunderson, 2001; Masterson, 1972); indeed, two of the disorder’s key diagnostic criteria (a pattern of unstable and intense interpersonal relationships and frantic efforts to avoid real or imagined abandonment) echo this conceptualization. Recent developmental neuroscience work suggests that BPD often follows an etiological trajectory marked by insufficient coregulation of affect—that is, by a long-standing difficulty in drawing comfort or support from close others (Hughes, Crowell, Uyeji, & Coan, 2012). In fact, individuals with BPD experience more anger, disagreement, and anxiety in reaction to daily interpersonal interactions (Stepp, Pilkonis, Yaggi, Morse, & Feske, 2009).

Paradoxically, the intense negative emotions within social relationships are countered by intense intolerance of being alone. This intolerance is considered a hallmark of BPD (Choi-Kain, Zanarini, Frankenburg, Fitzmaurice, & Reich, 2010; Gunderson & Links, 2008). Recent longitudinal work has shown the affective consequences of being alone to be the most persistent of BPDs interpersonal symptoms (Choi-Kain et al., 2010). Additionally, as Stiglmayr et al. (2005) demonstrated, moments without other people trigger aversive tension for individuals with the disorder.

What transpires between the desire for connection and the stressful or strained experience of actual connection? Despite the central role attributed to interpersonal dysfunction in the BPD literature, the effect of social proximity on the affective states of individuals with BPD has received scant empirical attention. The few extant studies on social proximity in BPD (cf., Stepp et al., 2009; Stiglmayr et al., 2005) highlight the great ambivalence felt by individuals with this disorder (though see Tomko et al., 2012 for null results).

### Interpersonal Difficulties and Reactions to Social Proximity in APD

APD is defined as “a pervasive pattern of social inhibition, feelings of inadequacy, and hypersensitivity to negative evaluation, beginning

by early adulthood and present in a variety of contexts” (American Psychological Association, 2013). Individuals with APD are considered to be in frequent expectation of degradation or humiliation, and their self-protective response to this possibility is social withdrawal (Benjamin, 1996). Accordingly, these individuals display functional impairments including social and occupational deficits (Sanislow, Bartolini, & Zoloth, 2012).

APD, though highly prevalent (American Psychological Association, 2013; Herbert, 2007; Mendlowicz, Braqa, Cabizuca, Land, & Figueira, 2006), has received scant research attention. Despite their centrality to the phenomenology of the disorder, little data exist regarding the interpersonal difficulties of individuals with APD (cf. Skodol et al., 2005), and none addresses their affective reactions to social proximity. Whereas individuals with BPD are known to respond in both positive and negative manners to social interactions, those with APD are thought to be uniformly fearful, and therefore avoidant, of social proximity (e.g., Staebler et al., 2011). However, the differential diagnosis of APD (in contrast to schizoid personality disorder) assumes that sufferers are motivated to belong (American Psychological Association, 2013)—a motivation that is likely to bring with it some ambivalence as well.

Support for this contention is evident in studies that focus on social anxiety (SAD, a disorder highly comorbid with APD, and arguably very similar to it; Reich, 2009). Higher social anxiety levels were found to be associated with avoidance of social interactions in a virtual reality environment (Rink et al., 2010), and less enjoyment of social situations (Brown, Silvia, Myin-Germeys, & Kwapil, 2007; Kashdan, Weeks, & Savostyanova, 2011). After social exclusion, individuals with fear of negative evaluation (a main characteristic in both SAD and APD) were less likely to attempt reconnecting with others (Maner, DeWall, Baumeister, & Schaller, 2007).

Importantly, a daily diary study comparing individuals with clinically diagnosed SAD to control subjects, found them to respond with greater submission in moments of anxiety, but also with more affiliative behaviors when experiencing security, compared to their nonclinical controls (Russell, Moskowitz, Zuroff, Bleau, Pinard, & Young, 2011). Similarly, in a daily diary study of undergraduates, SAD symptoms were associated with greater self-consciousness and a preference to being alone when interacting with unfamiliar (but not familiar) people (Brown et al., 2007). Taken together, these studies suggest that social interactions elicit ambivalent reactions in those with SAD, who experience social interactions as more aversive, but also as more desirable, than non-SAD individuals, at least under some conditions (e.g., Brown et al., 2007; Kashdan & Collins, 2010; Russell et al., 2011). It is likely that those with APD show a similar pattern of responses.

### The Present Study

The present study examines affective reactions to social proximity among individuals with BPD or APD, and among a control group of healthy individuals. Compared with this control group, we expect those with either BPD or APD to exhibit ambivalent reactions to social proximity—though different ones for each disorder. We focus on a set of affects that have emerged as relevant to social proximity in previous research: positive affect (e.g., Kashdan & Collins, 2010), isolation (e.g., Hawkey et al., 2003), rejection (e.g., Choi-Kain et al., 2010), anger (e.g., Stepp et al., 2009),

anxiety (e.g., Rinck et al., 2010), shame (e.g., Schoenleber & Berenbaum, 2012), and dissociation<sup>1</sup> (e.g., Klonsky, 2008).

The study makes use of experience sampling methods (ESM), which permit in vivo assessment of the association between social proximity and affect. Although based on self-report, the strengths of ESM include increased reliability because of repeated assessment and removal of retrospection, which is especially important in the study of PDs, because of their highly labile affect (Ebner-Priemer & Trull, 2009). This approach also allows for enhanced ecological validity, as data are gathered within participants' day-to-day settings (Bolger, Davis, & Rafaeli, 2003; Piasecki, Hufford, Solhan, & Trull, 2007).

Two hypotheses guide our work—one related to social proximity quantity, the other to the affective quality in and out of social proximity. Regarding quantity, we expect the number of social encounters to be comparable in the BPD and the HC groups (see also Stepp et al., 2009). Despite their social difficulties, individuals with BPD are quite sensitive to rewards, including social ones, and therefore not prone to use avoidance as a constant strategy. In contrast, we expect the number of social encounters to be lower in the APD group, which is characterized by greater social avoidance.

Regarding affective quality, we expect the experiences of individuals in the three groups to differ in and out of social proximity, and we examine these differences in both person-level and moment-level analyses. At the person level, we expect that across diagnostic groups, individuals characterized by more frequent occurrence of social interactions would have higher positive affect on average than those characterized by less frequent occurrence. However, we expect this rise in PA to be dampened among individuals with APD. Similarly, we expect healthy individuals characterized by more frequent occurrence of social interactions to have lower negative affect on average than those characterized by less frequent occurrence. In contrast, we expect that individuals in the PD groups who are characterized by more frequent occurrence of social interactions to have higher negative moods on average; in particular, we expect higher anxiety in the APD group and higher anger in the BPD group.

At the day level, we have similar predictions. Specifically, for healthy control individuals, we expect social proximity to be associated with more positive mood and less negative mood when compared with being alone. For individuals with BPD, we expect social proximity to be associated both with increased positive mood and with increased negative affect (especially anger; cf., Berenson et al., 2011; Stepp et al., 2009), reflecting their ambivalence regarding proximity. For individuals with APD, we expect social proximity to be associated with moderately increased positive affect, which would be less pronounced than in the control or BPD groups. We also expect social proximity to be associated with increased negative affect (especially anxiety), again reflecting a different kind of mixed reaction to proximity.

## Method

### Participants and Recruitment

Adult individuals from the New York City area were recruited through newspaper ads, online forums, and flyers for a study on personality and mood in daily life. Ads particularly targeted at individuals with BPD or APD also described symptoms of the disorders (e.g., mood swings, shyness). Additional postings and

materials were distributed through treatment clinics, disorder specific support groups, and related research projects in area hospitals. Approximately 1,200 interested individuals were administered a brief telephone screening based on the Structured Clinical Interview for *Diagnostic and Statistical Manual for Mental Disorders—Fourth Edition (DSM-IV)* Personality disorders (SCID-II; First, Gibbon, Spitzer, Williams, & Benjamin, 1997).

Individuals likely to meet criteria for one of the study groups were invited to the lab for a thorough diagnostic interview (~46% of those screened). Written informed consent was obtained before the interview session, and all participants were paid \$30 for the interview regardless of eligibility.

Potential participants completed an extensive diagnostic interview to determine the presence of BPD and/or APD, or to exclude psychopathology (for inclusion in the healthy control group). Interviewers were 11 doctoral-level clinical psychologists or doctoral candidates in clinical psychology who received extensive training and supervision in the administration of the Structured Interview for the Diagnosis of Personality Disorders (SID-P-IV; Pfohl, Blum, & Zimmerman, 1997) and the Structured Clinical Interview for *DSM-IV* Axis I Disorders (SCID-I; First, Gibbon, Spitzer, & Williams, 1996). All interviews were videotaped to ensure reliability. Reliability was assessed by having each interviewer code the same set of five randomly selected interview videos; overall reliability for the assessment at the symptom and diagnostic level for Axis-II personality disorders was good (SID-P-IV average  $\kappa = 0.83$ ), as was the reliability at the diagnostic level for Axis-I disorders (SCID-I average  $\kappa = 0.86$ ).

Exclusion criteria for all groups were evidence of a primary psychotic disorder, current substance intoxication or withdrawal, cognitive impairment, or illiteracy. In addition, the healthy control (HC) group met no more than two criteria for any personality disorder (and no more than 10 in total), had no Axis-I diagnoses for at least 1 year before the date of the interview, were not currently taking any psychotropic medications, and had a Global Assessment of Functioning (*American Psychological Association, 2000*) score that was high (GAF > 79). Given the high comorbidity of BPD and APD with other disorders in actual patient populations (e.g., Skodol et al., 2002), relatively few exclusion criteria were used for the BPD or APD group. We did not exclude participants from either PD group for use of psychotropic medication.

The final study sample consisted of 153 individuals. Fifty-seven (46 female) had a current *DSM-IV-TR* diagnosis of BPD (15 of them meeting criteria for APD as well), 43 (23 female) had a current *DSM-IV-TR* diagnosis of APD (without BPD), and 53 (39 females) entered the HC group. Those meeting criteria for both BPD and APD were included in the BPD group given the evidence that in cases of BPD and APD comorbidity, BPD is usually the more robust and salient disorder of the two (McGlashan et al., 2000).<sup>2</sup> Table 1 presents Axis I diagnoses for the BPD and the APD groups. Table 2 presents demographic information for all three groups.

<sup>1</sup> Dissociation should probably be thought of as the absence of affect, rather than as an affect in its own right. Similarly, isolation and rejection are not prototypical affects. However, for the sake of brevity, we refer to all of the response scales as “affects” hereafter.

<sup>2</sup> As an alternative, we ran the analyses for the BPD group including or excluding those with comorbid APD and found the same pattern of results.

Table 1  
Current Comorbid Axis I Diagnoses

	Borderline PD N = 57 (%)	Avoidant PD N = 43 (%)	
Major depressive disorder	24 (42.9)	13 (30.2)	$\chi^2(2, N = 99) = 1.65$
Bipolar disorder	7 (12.5)	2 (4.7)	$\chi^2(2, N = 99) = 1.81$
Dysthymic disorder	12 (21.4)	11 (25.6)	$\chi^2(2, N = 99) = 0.23$
Social phobia	24 (42.9)	42 (97.7)	$\chi^2(2, N = 99) = 32.89^{***}$
Posttraumatic stress disorder	18 (32.1)	1 (2.3)	$\chi^2(2, N = 99) = 13.94^{***}$
Panic disorder	5 (8.9)	3 (7.0)	$\chi^2(2, N = 99) = 0.12$
Agoraphobia without history of panic disorder	3 (5.4)	1 (2.3)	$\chi^2(2, N = 99) = 0.57$
Obsessive-compulsive disorder	5 (8.9)	3 (7.0)	$\chi^2(2, N = 99) = 0.12$
Generalized anxiety disorder	27 (48.2)	14 (32.6)	$\chi^2(2, N = 99) = 2.45$
Bulimia	1 (1.8)	0 (0)	$\chi^2(2, N = 99) = 0.37$
Binge eating disorder	2 (3.6)	2 (4.7)	$\chi^2(2, N = 99) = 0.07$
Substance dependence	11 (19.6%)	2 (4.7%)	$\chi^2(2, N = 99) = 4.79^*$
Substance abuse	7 (12.5%)	2 (4.7%)	$\chi^2(2, N = 99) = 1.81$

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

## Procedure

After the diagnostic interview, participants deemed eligible returned for a second session in which they were trained in using a personal digital assistant (PDA) on which they completed the experience-sampling diary. Participants practiced using the PDA in the laboratory and were provided a written manual and instructions to take home. In addition, participants received weekly reminders during the 21-day diary period. At the end of the period, participants returned to the lab, were debriefed, and paid up to \$100 (depending on the number of entries completed). During both the second and third lab visits, participants also completed a battery of social-cognitive tasks that are beyond the scope of this article. Several studies based on these data (e.g., Berenson et al., 2011; Coifman, Berenson, Rafaeli, & Downey, 2012; Zaki, Coifman, Rafaeli, Berenson, & Downey, 2013) have reported findings that do not overlap with the present analyses and that are related solely to the BPD group.

## Experience Sampling Diary

Daily variations in affect, interpersonal experiences, and behaviors were assessed using a computerized experience-sampling diary. The Intel adaptation of Barrett and Barrett's (2001) Experience Sampling Program software was configured to run on handheld Zire21 PDAs. Audible prompts were emitted by the PDA five times daily at random intervals, for a period of 21 days. The software program divides the participant's waking hours into five equal intervals and schedules a prompt to occur at randomly selected points within each interval.

The prompt was set to beep every 15 s for up to 10 min, or until the participant responded to the device. Each entry took ~5–10 min and all responses were automatically dated and time-stamped. Participants could complete up to 105 diary entries over the 21-day period. The mean number of completed entries for the entire sample was  $M = 73.57$  ( $SD = 19.55$ ) and there were no significant group differences in the number of entries completed. Participants with less than 27 completed entries (2  $SDs$  below the average) were removed from analyses ( $N = 8$ ).

## Measures

**Social proximity.** Participants noted on a single item whether they were alone or with others in the time of completing the diary (i.e., "How many people are around you?"). This item was coded 1 when at least one other person was with the respondent, and 0 when the respondent was alone. Kashdan and Collins (2010) in their ESM study about social anxiety utilized a similar dichotomous item.<sup>3</sup>

**Moods.** In each diary entry participants were asked to rate on 5-point Likert scales (0 = *not at all*, 4 = *extremely*) the extent to which they were currently experiencing different moods or emotions. For each mood scale, we calculated the between- and within-subjects reliabilities separately using procedures outlined in Cranford et al. (2006). For a given measure, the between-subjects reliability coefficient is the expected between-subjects reliability estimate for a single typical day. The within-subjects reliability coefficient is the expected within-subjects reliability of change within individuals over the 3 weeks of diary entries.

Below we detail the scales used, the items included in each one, and the between- and within-subjects reliabilities for that scale: Positive Affect (PA; satisfied, energetic, happy, enthusiastic, calm, and relaxed; .89 and .76); general Negative Affect (NA; disappointed, tense, afraid, sad, angry, and irritated; .90 and .82); Anxiety (tense, afraid; .77 and .55); Anger (angry, irritated; .76 and .76); Isolation (lonely, isolated; .90 and .72); Rejection (abandoned, rejected by others, accepted by others [reverse-scored], and my needs are being met [reverse-scored]; .91 and .54); Shame (ashamed, embarrassed, and humiliated; .88 and .73); and Dissociation (empty, unreal, grounded [reverse-scored], numb, and unsure of who I am; .91 and .55).

## Results

The results are presented in three sections. The first addresses overall group differences in rates of social proximity and affective

<sup>3</sup> Parallel analyses considered this item as a continuous variable were conducted. The results of these analyses were similar to those presented here.

Table 2  
Participants' Demographics

	BPD <i>N</i> = 57; <i>M</i> ( <i>SD</i> )	APD <i>N</i> = 43; <i>M</i> ( <i>SD</i> )	HC <i>N</i> = 53; <i>M</i> ( <i>SD</i> )	
Age	31.1 (10.1)	32.9 (11.4)	34.8 (11.9)	$F(2, 150) = 1.87$
Year of education	15.5 <sup>a1</sup> (2.5)	15.9 <sup>a</sup> (2.4)	17.6 <sup>b</sup> (2.3)	$F(2, 150) = 11.6^{***}$
Gender	<i>N</i> (%)	<i>N</i> (%)	<i>N</i> (%)	
Female	46 (80.7%)	23 (53.5%)	38 (71.7%)	
Male	11 (19.3%)	20 (46.5%)	15 (28.3%)	$\chi^2(2, N = 153) = 8.47^*$
Race				
Asian	4 (7.1)	5 (11.6)	7 (13.2)	
Black	11 (19.6)	9 (20.9)	16 (30.2)	
White	34 (60.7)	22 (51.2)	29 (54.7)	
Other	8 (14.2)	7 (16.2)	1 (1.8)	$\chi^2(63, N = 153) = 14.4$
Current psychiatric treatment				
Psychotherapy	32 (57.1)	23 (53.1)	2 (3.8)	$\chi^2(2, N = 152) = 39.6^{***}$
Medication	24 (42.9)	16 (37.2)	0 (0)	$\chi^2(2, N = 99) = 29.46^{***}$

Note. <sup>1</sup> Means with different superscript are statistically different at  $p < .05$ .

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

states. The second and third examine the associations between social proximity and affective states, at the person and moment levels, respectively. The latter analysis yields estimates of the affect experienced when alone (i.e., at baseline) and of the affective changes experienced when in social proximity.

### Overall Group Differences

We tested the differences among diagnostic groups in the rate of social proximity throughout the diary period. The rate was computed as the ratio of entries in which the presence of others was reported, out of all the entries of each participant. One-way analysis of variances (ANOVAs) were conducted (BPD = 57, APD = 43, HC = 53) with group as the independent variable and the individuals' rates as the dependent variable. No differences between the three groups were found (BPD:  $M = 0.52$   $SD = .21$ ; APD:  $M = 0.48$   $SD = .24$ , HC:  $M = 0.56$   $SD = .22$ ;  $F(2, 150) = 1.32$ , ns). We then examined diagnostic group differences in the mean of each affective scale across the entire diary period. Both PD groups showed higher mean levels of negative affective states (i.e., anxiety, anger, rejection, isolation, shame, and dissociation) and lower levels of positive affect compared to the HC group.

Table 3  
Comparison of Mean Rate of Affective States Across the Entire Diary

	BPD <i>N</i> = 57	APD <i>N</i> = 43	HC <i>N</i> = 53	<i>F</i> <i>df</i> (2, 149)
Positive affect	1.36 <sup>a1</sup> (.57)	1.22 <sup>a</sup> (.51)	2.12 <sup>b</sup> (.53)	40.67 <sup>***</sup>
Anxiety	1.12 <sup>a</sup> (.66)	1.10 <sup>a</sup> (.80)	0.24 <sup>b</sup> (.26)	36.31 <sup>***</sup>
Anger	1.01 <sup>a</sup> (.69)	0.88 <sup>a</sup> (.62)	0.17 <sup>b</sup> (.17)	36.78 <sup>***</sup>
Rejection	1.93 <sup>a</sup> (.81)	2.06 <sup>a</sup> (.76)	0.73 <sup>b</sup> (.32)	63.04 <sup>***</sup>
Isolation	1.45 <sup>a</sup> (1.05)	1.30 <sup>a</sup> (1.06)	0.14 <sup>b</sup> (.29)	37.39 <sup>***</sup>
Shame	0.68 <sup>a</sup> (.73)	0.66 <sup>a</sup> (.87)	0.04 <sup>b</sup> (.06)	16.55 <sup>***</sup>
Dissociation	1.42 <sup>a</sup> (.79)	1.33 <sup>a</sup> (.79)	0.42 <sup>b</sup> (.21)	38.24 <sup>***</sup>

Note. <sup>1</sup> Means with different superscript are statistically different at  $p < .05$ .

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Differences between the BPD and the APD groups in all affective scales were not significant (see Table 3).

### Social Proximity and Affective States: Person-Level Results

To test the person-level associations between rates of social proximity and various affective states, a series of Pearson partial correlation analyses were conducted, adjusting for general NA.<sup>4</sup> Because the items composing the *Anxiety* and *Anger* scales were part of the general NA scale as well, we created modified NA scales for adjusting these two outcomes in which we removed the overlapping items. To test for group differences in the pattern of associations we compared the correlation coefficients using Fisher *r*-to-*z* transformations with each pair of groups compared separately.

Table 4 presents the results of the Pearson partial correlations between the rates of social proximity and the mean levels of each affective state across the entire diary period. In the BPD group, social proximity was not associated with any affective outcome. In the APD group, social proximity was associated with greater anxiety but with lower rejection and isolation. In the HC group, social proximity was associated with lower rejection, isolation, shame, and dissociation. The association between social proximity and anxiety in the APD group differed significantly from the counterpart (null) associations in the BPD and HC groups. The association between social proximity and rejection did not differ in the APD and the HC groups, but both differed from the counterpart (null) association in the BPD group. The negative associations between social proximity and shame and dissociation found in the HC group differed significantly from the counterpart (null) associations in the APD and BPD groups.

### Social Proximity and Affective States: Moment-Level Results

To test the moment-level associations between social proximity and affective states, multilevel regression analyses were

<sup>4</sup> We then conducted all analyses without controlling for NA. The results of these analyses were similar to those presented here.

Table 4  
Correlation Coefficients of Social Proximity (Together/Alone)  
and Affective States Adjusting for General NA, Presented  
Separately for Each of the Diagnostic Groups

	BPD (N = 57)	APD (N = 43)	HC (N = 53)
Positive affect	.08 <sup>a1</sup>	.03 <sup>a</sup>	-.03 <sup>a</sup>
Anxiety	-.09 <sup>a</sup>	.32 <sup>*b</sup>	.04 <sup>a</sup>
Anger	.09 <sup>a</sup>	.02 <sup>a</sup>	.22 <sup>a</sup>
Rejection	-.18 <sup>a</sup>	-.50 <sup>**b</sup>	-.44 <sup>**b</sup>
Isolation	-.18 <sup>a</sup>	-.39 <sup>*a</sup>	-.35 <sup>*a</sup>
Shame	.14 <sup>a</sup>	.07 <sup>a</sup>	-.26 <sup>*b</sup>
Dissociation	-.05 <sup>a</sup>	.09 <sup>a</sup>	-.31 <sup>*b</sup>

Note. <sup>1</sup> Correlations with different superscript are statistically different at  $p < .05$ .

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

computed using the SAS PROC MIXED procedure. This procedure accounts for the nonindependence of day-level data, prevents inflation of the effects, and uses a weighted algorithm to adjust and account for unbalanced missing data. This procedure allowed us to model the outcome variables (i.e., various affective scales) as a function of diagnosis (BPD, APD, or HC, dummy coded), of the social proximity item (person-centered), and of their interaction. The generic Level 1 equation was:

$$Y_{ij}(\text{affective state}) = \beta_{0i} + \beta_{1i}(\text{social proximity}) \\ + \beta_{2i}(\text{concurrent general NA}) \\ + \beta_{3i}(\text{lagged affective state}) + e_{ij}$$

Table 5  
Estimated Affective States When Alone, and Change When Others Are Present, Adjusted for the  
Individual's (Average) Rate of Social Proximity, the Lagged Value of the Particular Outcome  
Variable, and the Concurrent General NA

	Alone (intercept)			Change when others are present (slope)		
	BPD	APD	HC	BPD	APD	HC
Positive affect						
Estimate	1.22 <sup>**a1</sup>	1.22 <sup>**a</sup>	2.12 <sup>**b</sup>	0.11 <sup>**</sup>	0.10 <sup>**</sup>	0.11 <sup>**</sup>
SE	0.19	0.19	0.21	0.02	0.02	0.02
Anxiety						
Estimate	1.24 <sup>***a</sup>	0.70 <sup>***a</sup>	0.28 <sup>b</sup>	-0.01 <sup>a</sup>	0.07 <sup>**b</sup>	-0.00 <sup>a</sup>
SE	0.21	0.20	0.22	0.02	0.02	0.02
Anger						
Estimate	0.99 <sup>***a</sup>	0.71 <sup>***a</sup>	0.15 <sup>b</sup>	0.06 <sup>**a</sup>	-0.02 <sup>b</sup>	-0.01 <sup>b</sup>
SE	0.19	0.19	0.20	0.02	0.03	0.02
Rejection						
Estimate	2.22 <sup>**a</sup>	2.55 <sup>**a</sup>	1.08 <sup>**b</sup>	-0.11 <sup>**a</sup>	-0.08 <sup>**a</sup>	-0.02 <sup>b</sup>
SE	0.22	0.22	0.24	0.02	0.02	0.02
Isolation						
Estimate	1.84 <sup>**a</sup>	1.58 <sup>**a</sup>	0.37 <sup>b</sup>	-0.27 <sup>**a</sup>	-0.19 <sup>**b</sup>	-0.02 <sup>c</sup>
SE	0.29	0.29	0.32	0.02	0.03	0.02
Shame						
Estimate	0.57 <sup>*a</sup>	0.35 <sup>a</sup>	0.09 <sup>a</sup>	0.06 <sup>**a</sup>	0.05 <sup>**a</sup>	0.01 <sup>b</sup>
SE	0.22	0.22	0.24	0.02	0.02	0.02
Dissociation						
Estimate	1.55 <sup>**a</sup>	1.06 <sup>**ab</sup>	0.58 <sup>b</sup>	-0.08 <sup>**a</sup>	-0.04 <sup>**b</sup>	-0.01 <sup>c</sup>
SE	0.23	0.22	0.25	0.01	0.02	0.01

Note. Values in parentheses are SEs of the  $\beta$  coefficients.

<sup>1</sup> Coefficients with different superscript are statistically different at  $p < .05$ .

\*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

The Level 2 equations were:

$$\beta_{0i} = \gamma_{00} + \gamma_{01}(\text{BPD}) + \gamma_{02}(\text{APD}) \\ + \gamma_{03}(\text{rate of social proximity}) + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + \gamma_{11}(\text{BPD}) + \gamma_{12}(\text{APD}) + u_{1i}$$

$$\beta_{2i} = \gamma_{20} + \gamma_{21}(\text{BPD}) + \gamma_{22}(\text{APD}) + u_{2i}$$

$$\beta_{3i} = \gamma_{30} + \gamma_{31}(\text{BPD}) + \gamma_{32}(\text{APD}) + u_{3i}$$

The analyses adjusted for the individual's (average) rate of social proximity, as recommended by Bolger and Lauranceau (2013). Doing so allows us to distinguish between-person differences from within-person variability. Additional adjustments were made for the lagged value of the particular outcome variable, and for concurrent general NA. As in the person-level analyses, because the items composing the *Anxiety* and *Anger* scales were part of the general NA scale as well, we created modified NA scales for adjusting these two outcomes in which we removed the overlapping items.

Table 5 presents the estimated levels of all outcomes for the three study groups when alone (i.e., the intercepts of the multilevel model), along with the change experienced when moving from being alone to being in social proximity (i.e., the slopes of the multilevel model). For brevity's sake, we report only these intercepts and slopes, and not the ones for general NA or for the lagged outcome. The person-level rates of social proximity did not contribute uniquely to the models.

**Affect when alone: Group differences.** When alone, participants in the BPD and in the APD groups exhibited significantly

lower levels of *positive affect* and higher level of anxiety, anger, rejection, and isolation compared with the HC group. Differences between the BPD and the APD groups were not significant. In addition, participants in the BPD group exhibited higher levels of *dissociation* compared with the HC group; the APD group was not statistically distinguishable from either group in dissociation levels.

**Affective reactions to social proximity: Group differences.** Participants in all three groups experienced increased levels of positive affect when in social proximity (vs. when alone). As expected, participants in both the PD groups, but not in the HC group, also experienced increased shame, and decreased rejection, isolation, and dissociation; the decrease in isolation and dissociation was greater for the BPD group than the APD group. Two unique affective reactions, one for each of the PD groups, were found: the BPD group exhibited an increase in anger, whereas the APD group exhibited an increase in anxiety, when in social proximity versus being alone.

## Discussion

The present study is one of the first to explore affective reactions to social proximity in individuals with BPD compared with HC, and the first to study this in individuals with APD. In line with our hypotheses and with the literature on the ambivalent response to social proximity in both BPD (Stepp et al., 2009; Stiglmayr et al., 2005) and social anxiety disorder (that is highly comorbid with APD; Brown et al., 2007; Russell et al., 2011), we found participants with BPD or APD to display mixed affective reactions to social proximity: Some moods improved; other got worse. This ambivalent pattern stood in contrast to more uniformly positive reactions found among HCs when in social proximity.

We found that when alone individuals in either PD group experienced more negative affect (specifically anxiety, anger, rejection, and isolation in both groups, as well as dissociation in the BPD group), and less positive affect compared with HCs. We then examined the effects of social proximity at both at the person level and at the moment level. The differences in social proximity effects between the HC group and the PD groups were found at both levels. Below, we discuss the patterns found for each group.

Within the HC group, we found uniformly positive or at least nonnegative results. Person-level analyses revealed that individuals with more frequent social proximity experienced less negative affect (rejection, isolation, shame, or dissociation) as expected. However, they did not experience more positive affect. Additionally, moment-level analyses indicated that being in social proximity was associated with increase in positive affect, as expected. No decrease was found in components of negative affect, a finding to which we will return later.

Within the APD group, we found mixed affective reactions to social proximity both at the person and the moment levels, as expected. Person-level analyses revealed that individuals with more frequent social proximity experienced higher levels of anxiety, along with lower levels of rejection and isolation. Similarly, moment-level analyses indicated that being in social proximity was associated with decreases in rejection, isolation, and dissociation, alongside increases in shame and anxiety. Importantly, the increase in anxiety (at both the person and the moment levels) was a reaction unique to APD (compared with HCs and BPDs); a

specificity we had predicted. Finally, the APD group experienced increased positive affect, similar in size to that found in the HC and BPD groups.

Within the BPD group, we found contrasting patterns of affective reactions at the person level and the moment level. At the person level, social proximity was not associated with any reaction (either positive or negative). In contrast, at the moment-level, we found the expected mixed affective reaction: when in social proximity, individuals with BPD experienced decreases in rejection, isolation, and dissociation, alongside increases in shame. These effects were similar to those found in the APD group, although the decrease in isolation and dissociation was stronger than that found in APD. Moreover, as expected, those with BPD also displayed increases in anger, a reaction unique to BPD (compared with HCs and APDs). Finally, the BPD group experienced increased positive affect, similar in size to that found in the other two groups.

As is evident, the groups differed, sometimes dramatically, in their negative affective reactions to social proximity. In contrast, no such differences were found in positive affective reactions, both in person-level analyses (that indicated that frequency of social proximity was unrelated to average positive affect) and in moment-level analyses (that indicated that all three groups responded with greater positive affect to social proximity). This finding is in line with considerable previous work (e.g., Csikszentmihalyi & Hunter, 2003; Kashdan & Collins, 2010; Mehl et al., 2010). We were, however, surprised to see the APD group react just as positively as the two other groups. If this result replicates, it will certainly warrant further investigation.

The person-level and moment-level effects of social proximity were quite similar both within the HC group (where effects were positive or nonnegative) and within the APD group (where effects were mixed). Interestingly, the person-level and moment-level effects in the BPD group were strikingly different. The person level seems to suggest that those with BPD are indifferent to the frequency of social proximity. In contrast, the moment level reveals strongly mixed reactions.

Methodologically, this discrepancy highlights the importance of going beyond average (aggregated) scores, which may obscure important within-person associations. At the aggregate level, specific effects of social proximity may wash out for the BPD group; this may be because for the BPD group (and to a lesser extent, the APD group), affective reactions vary more within-person than between-person. Because the moment-level analyses rely on scores centered on each person's mean, they reflect only this within-person variance, central to the phenomenology of individuals with PDs (and BPD in particular).

One explanation for why it is the within-person, and not the between-person, variance in social proximity that matters in BPD, touches on the regulatory effects that concrete versus cumulative presence of others may have on affect. Though both concrete and cumulative presence may regulate affect, they are likely to operate differently. The former involves the direct soothing effects of actually present others (cf., Coan, 2008). In contrast, the latter reflects an adaptive development of emotion regulation skills that goes beyond direct soothing. In the course of such development, individuals gradually internalize positive and soothing others, and are then able to evoke these internalized representation even when the objects are not actually present, an ability referred to as object

constancy (Adler & Buie, 1979; Masterson, 1972; Winnicott, 1965) or positive internal working models (Bowlby, 1988).

Indeed, priming or retrieval of internally represented soothing attachment figures has been shown to engender positive affective reactions (e.g., Carnelley & Rowe, 2010). However, individuals with BPD are thought to lack such internalizations (Richman & Sokolove, 1992). This lack has been cited as a reason for their intolerance of aloneness (Choi-Kain et al., 2010). It may also explain the discrepancy we find between the strong (and mixed) reactions to social proximity at the moment level, and the null effect of cumulative contact with others. Specifically, our results show that the actual presence of others is strongly felt by individuals with BPD, but that this presence does not have a cumulative effect. We suggest that this reflects the capacity of individuals with this disorder to draw (some) comfort from actual contact, alongside an impaired capacity for retrieving internalized security figures—or an absence of such stable internalized figures (cf., Bradley & Westen, 2005; e.g., Agrawal, Gunderson, Holmes, & Lyons-Ruth, 2004).

Indeed, recent work based on the present data (Kushnir-Shafran, Gadassi, Berenson, Downey, & Rafaeli, 2013) shows that individuals with BPD have less stable internal working models of soothing others than those with APD or HC, even though both PD groups exhibit equally negative levels of attachment anxiety and avoidance. Thus, those with BPD have unstable internal representations of significant others. In contrast, those with APD seem to have more stable internalized representations, yet ones that are just as tainted by negativity. The persistent discomfort and increased anxiety of the APD group when others are present may, in fact, reflect the activation of these ambivalent attachment representations.

These results provide an important opportunity to compare BPD and APD, two disorders that share certain characteristic features (e.g., sensitivity to rejection; Ayduk et al., 2008; Berenson et al., 2011; Meyer, Ajchenbrenner, & Bowles, 2005; Staebler et al., 2011), yet are rarely studied together (though see Skodol et al., 2005). In fact, APD itself has received scant research attention, despite its high prevalence (American Psychological Association, 2013).

Our results indicate that APD sufferers, like BPD sufferers, experience social proximity as a mixed blessing, involving both benefits and costs. The groups did differ in three respects. First, social proximity was associated with increased anger in BPD alone, but with increased anxiety in APD alone. These disorder-specific moods are very much to be expected—anger is a defining feature of BPD (American Psychological Association, 2013; cf., Berenson et al., 2011) whereas anxiety is a defining feature of APD (American Psychological Association, 2013). Second, the reductions in dissociation and isolation when in social proximity were greater in BPD than in APD. Third, the person and moment level effects were similar in the APD group, but dissimilar in the BPD group, as discussed earlier. These differences, together, point to a somewhat pessimistic take on the ability of individuals with APD to extract positive value from social connection (including, possibly, from therapy; Arntz, 2012).

### Limitations and Future Directions

The present study has two main limitations. First, we rely on self-reported affect, and are, therefore, limited to experiences consciously available to the individual. Future research should apply indirect (e.g., observational and/or physiological) measures

to assess individuals' reactivity to social proximity. Second, our assessment of social proximity was limited to the mere presence of others. As such, it does not inform us about the quality of the interactions (e.g., their length, significance, etc.) or of the interaction partner(s). Moreover, we did not obtain relationship-specific data; indeed, we cannot ascertain whether the mixed reactions to social proximity of individuals with PDs are experienced within the same relationship or across different relationships. It is possible that proximity to a close other (e.g., a romantic partner) elicits stronger reactions than does proximity to acquaintances or strangers. Future studies examining specific relationships in greater detail will shed more light on this question.

### Conclusion

Individuals' affective reactions to social proximity serve as guides for their social behavior (Kashdan & Collins, 2010). When reactions are positive, they signal rewards or safety (Gilbert et al., 2008) and foster positive approach behaviors. When they are negative, they signal punishments or danger, and foster avoidance behaviors. Among healthy individuals, for whom the primary reactions are positive, progress toward meeting their belongingness (Baumeister & Leary, 1995) and acceptance (Downey & Feldman, 1996) needs moves in a relatively unimpeded manner.

For individuals with personality disorders, for whom affective reactions to social proximity are mixed, the progress toward acceptance is much more bumpy. They sense the rewards, and at times feel the safety. However, these are often laced with anxiety (in APD), anger (in BPD), and shame (both disorders). Clinically, these results suggest that interventions for BPD or APD should devote considerable attention to the regulation of these particular negative emotions as they arise within relationships (including the therapy relationship itself; cf., Levy et al., 2006; Rafaeli, Bernstein, & Young, 2011).

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