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# BORDERLINE PERSONALITY DISORDER AND THE EFFECTS OF INSTRUCTED EMOTIONAL AVOIDANCE OR ACCEPTANCE IN DAILY LIFE

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This study examined the effects of avoidance- versus acceptance-oriented emotion regulation instructions among individuals with borderline personality disorder (BPD; *n* = 48), major depressive disorder (MDD; *n* = 54), and non-psychiatric controls (NPC; *n* = 50) using ecological momentary assessment. Participants were randomly assigned to either accept or avoid negative emotions, and monitored their moods, urges, and distress tolerance several times per day over 6 days. Avoidance instructions resulted in reduced negative affect and urges for maladaptive behaviors uniquely among BPD participants. Together with past research, and consistent with treatment approaches emphasizing the short-term use of skills to avoid or distract from emotions (e.g., DBT; Linehan, 1993b, 2015), these findings suggest that avoidance of negative emotions may have temporary benefits for individuals with BPD. Acceptance-oriented strategies may take longer or may require more extensive training to be beneficial for emotional functioning in everyday life in BPD.

Emotional functioning is widely considered to be impaired in borderline personality disorder (BPD; Linehan, 1993a; Livesley, Jang, & Vernon, 1998). Individuals with BPD report more intense and frequent negative emotions (Levine, Marziali, & Hood, 1997; Rosenthal et al., 2008; Rosenthal, Fang, & Chapman, 2015) and greater difficulty regulating negative affect (Bijttebier & Vertommen, 1999; Putnam & Silk, 2005) compared with non–BPD controls. This vulnerability to easily activated, intense, and persistent emotional distress, combined with difficulty regulating emotions, has been theorized to increase the use of escape and avoidance strategies to relieve negative emotions in individuals with BPD (Linehan, 1993a). Many of the maladap-

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tive behaviors that are common in populations with BPD, such as nonsuicidal self-injury and suicide attempts, are thought to represent extreme efforts to escape emotional distress (Chapman, Specht, & Cellucci, 2005). Accordingly, empirically supported treatments for BPD aim to enhance emotion regulation (Fonagy & Bateman, 2007; Linehan, 1993a), often by teaching clients new strategies for managing distress. Emotion regulation can be targeted by coaching clients to use change-based emotion regulation strategies, for example, teaching them adaptive ways to avoid or turn attention away from negative emotions (e.g., crisis survival strategies in dialectical behavior therapy [DBT]; Linehan, 1993a). In addition, emotion regulation can be targeted using acceptance-based interventions to develop the capability to experience emotions without changing their form, intensity, or duration. Examples of these strategies include mindful observation of emotions, acceptance of unpleasant thoughts, and self-validation.

Although change- and acceptance-based interventions for BPD are efficacious (e.g., Bateman & Fonagy, 2008; Kliem, Kröger, & Kosfelder, 2010), little is known about the day-to-day effects of instructing individuals with BPD to accept or avoid their experiences and expressions of negative emotions. It is particularly important to compare the effects of acceptance versus avoidant regulation strategies among those with BPD, as evidence is equivocal regarding which strategy may be most helpful in modifying the short-term experience of negative emotions in individuals with BPD.

Individuals with BPD and BPD features experience heightened tendencies toward avoidant emotion regulation (Bijttebier & Vertommen, 1999; Chapman et al., 2005; Cheavens et al., 2005; Rosenthal, Cheavens, Lejuez, & Lynch, 2005), even controlling for symptoms of other psychiatric disorders (Aldao & Dixon-Gordon, 2014). People with BPD may be especially likely to use emotional avoidance because, in the short term, it is easier to deploy in response to intense negative affect compared with more effortful alternatives, such as cognitive reappraisal (Henry, Rendell, Scicluna, Jackson, & Phillips, 2009; Sheppes & Levin, 2013; Sheppes, Scheibe, Suri, & Gross, 2011). It is also possible that, over the short-term, avoidance results in greater reductions in emotional distress and is therefore more reinforcing. We would anticipate that this reinforcing effect may be particularly strong for people with BPD, where elevated levels of emotional distress may serve as an establishing operation (Farmer & Chapman, 2007; 2016), increasing the reinforcing effect of avoidance or escape behavior. Whereas a dispositional tendency to avoid emotions is considered maladaptive and associated with psychopathology (Aldao, Nolen-Hoeksema, & Schweizer, 2010), the effect of *directed* use of emotional avoidance in BPD populations is far from clear. On the one hand, directed suppression of emotional expressions during standardized emotion inductions results in heightened negative affect (Xie, Tao, & Jiang, 2010) and increased activation of the right dorsolateral prefrontal cortex (Ruocco, Medaglia, Ayaz, & Chute, 2010) in both BPD and controls. On the other hand, recent research suggests that emotional avoidance or suppression in healthy samples may result in lower physiological arousal

(Dunn, Billotti, Murphy, & Dalgleish, 2009) and, in BPD samples, may attenuate emotional reactivity (Evans, Howard, Dudas, Denman, & Dunn, 2013). To our knowledge, only one published study has examined the consequences of instructed emotional avoidance in naturalistic (versus laboratory) settings among persons with BPD features (Chapman, Rosenthal, & Leung, 2009). This study revealed that university students who were high in BPD features reported significantly greater positive emotions and lower urges for maladaptive behaviors when they were instructed to suppress versus simply observe their emotions. In contrast, students low in BPD features reported greater negative emotions on suppression days. Thus, evidence is mixed as to whether emotional avoidance would be expected to result in desirable (e.g., less emotional reactivity and maladaptive urges, greater positive emotions) or undesirable (e.g., greater negative affect) consequences in populations with BPD.

With respect to emotional acceptance, individuals with BPD report lower dispositional use of acceptance-based emotion regulation strategies (Sachse, Keville, & Feigenbaum, 2011), and these deficits mediate the association between BPD features and maladaptive behaviors (Wupperman, Fickling, Klemanski, Berking, & Whitman, 2013). Moreover, laboratory studies suggest that mindful observation/acceptance of emotions in BPD is associated with greater ability to tolerate distress, relative to rumination (Sauer & Baer, 2012), and with decreases in physiological reactivity to emotional films (Evans et al., 2013). Despite the utility of such strategies in circumscribed situations, individuals with BPD may have less practice and less success with acceptance-based strategies. A model of emotion regulation choice suggests that people generally tend to choose more avoidant-based emotion regulation strategies in response to intense distress (Sheppes & Levin, 2013; Sheppes et al., 2011) because avoidant strategies are more effective in modulating intense emotions (Sheppes & Gross, 2012). Given the chronic, intense distress experienced by those with BPD (Levine et al., 1997; Rosenthal et al., 2008; 2015), we might expect less frequent and effective use of acceptance-based strategies. In the absence of habitual practice and in the context of their characteristic intense emotions, individuals with BPD may struggle to implement acceptance-oriented strategies in day-to-day life (Perroud, Nicastro, Jermann, & Huguelet, 2012), potentially limiting their utility outside of brief, laboratory-based studies.

Given that emotion dysregulation is thought to be a core feature of BPD, and that teaching emotion regulation strategies represents a primary target in many treatments, examining the effects of instructed emotion regulation strategies such as emotional avoidance and acceptance has important clinical implications. The present study used ecological momentary assessments to examine the everyday effects of instructed avoidance versus acceptance of negative emotions in adults with BPD. We took several steps to extend previous research (e.g., Chapman et al., 2009), to address limitations in the extant literature, and to enhance the clinical relevance of this research. First, we used detailed instructions and rationales for the emotion regulation strategies to approximate clinical practice. Second, we ensured that participants received

practice with the relevant strategy (avoidance vs. acceptance) in the laboratory before the daily monitoring began. Third, instead of sampling university students, we recruited a community sample that met full diagnostic criteria for BPD. Fourth, given the high rates of co-occurring major depressive disorder (MDD) in BPD (McGlashan et al., 2000; Zanarini, Frankenburg, Hennen, Reich, & Silk, 2004) and the emotion regulation difficulties associated with MDD alone (Garnefski & Kraaij, 2006), we extended research that has largely compared people with BPD to non-psychiatric controls by including a psychiatric control group of individuals with MDD to examine whether results were unique to those with BPD. Fifth, to extend previous research that has focused almost exclusively on emotional responses to avoidance and acceptance, we included behavioral outcomes (Aldao & Christensen, 2015) relevant to BPD, including willingness to tolerate distress and urges for maladaptive behaviors. Given that emotional avoidance is expected to exhaust self-regulatory resources (Muraven, Tice, & Baumeister, 1998), an important but as of yet unanswered question is how emotional avoidance versus alternative (e.g., acceptance) emotion regulation strategies affect distress tolerance and maladaptive urges when they are applied for longer periods (i.e., one or more days) in the natural environment.

To address this study's primary aims, participants with BPD, MDD, and non-psychiatric controls (NPC) were randomly assigned to receive either avoidance- or acceptance-oriented instructions, and monitored their emotions, urges, and distress tolerance over six days (eight times per day). For the first two days, participants were instructed to regulate emotions as they normally do (baseline days). Subsequently, they were instructed to either avoid or accept their negative emotions for two days (instruct days). The study ended with two more days without instructions to use any specific strategy (post-instruct days). We aimed to capture avoidance broadly by including instructions that had been empirically tested and included elements of both the suppression of emotional expression and avoidance of emotional experience. Hypothesis 1 was that BPD participants (but not MDD or NPC participants) in the avoid condition would demonstrate reductions in negative emotions from baseline to instruct days, whereas BPD participants in the accept condition would not demonstrate reduced negative affect during the instruction phase. Based on previous investigations of emotional avoidance in MDD, we expected this group would demonstrate heightened negative emotions in response to avoidance instructions (Dalgleish, Yiend, Schweizer, & Dunn, 2009). Given that emotion regulation instructions focused on negative emotions, we did not have a priori hypotheses regarding the impact of these instructions on positive emotions, but included this domain to explore possible crossover effects. Hypothesis 2 was that BPD participants in the avoid condition would show decreases in willingness to tolerate distress and increases in urges for maladaptive behavior from baseline to instruction days, consistent with the depletion model of self-regulation (Muraven et al., 1998), whereas BPD participants in the accept condition would report lower urges and greater willingness to tolerate distress during the instruct versus baseline days.

## METHODS

### PARTICIPANTS

This study occurred at two sites: Simon Fraser University and the University of Mississippi Medical Center. Participants aged 18–60 were recruited to form three groups: (1) BPD (i.e., ≥ 5 BPD criteria), (2) MDD (i.e., major depressive episode in the past year and < 3 BPD criteria), and (3) nonpsychiatric controls (no psychiatric disorder history except alcohol abuse and < 3 BPD criteria). Those with any history of mania/hypomania or a specific psychotic disorder were excluded from all groups. A total of 416 individuals responded to recruitment advertisements, completed a telephone pre-screening, and attended a diagnostic assessment session. Of these, 203 were excluded because they did not meet the diagnostic criteria and 24 did not attend the subsequent lab session. Of the 189 participants who received a PalmPilot personal digital assistant to complete the daily monitoring, 35 were excluded due to technical difficulties with the device that resulted in data being erased or prompts being sent incorrectly, and two did not return the device. Thus, the final sample included 152 participants who returned handheld devices with usable data.

The final sample (BPD: $n$ = 48, MDD: $n$ = 54, NPC: $n$ = 50) included more participants from Site 1 ($n$ = 95 Site 1, $n$ = 57 Site 2). Participants were aged 18 to 59 (*Mage* = 32.57, *SD* = 11.20), predominantly female (82.9%, $n$ = 126), heterosexual (80.3%, $n$ = 122), and Caucasian (56.6%, $n$ = 86), African American (13.2%; $n$ = 20), or Asian (11.8%, $n$ = 18). Most participants had attended college or university (41.4% without obtaining a degree, 28.3% with a completed degree). Participants in the BPD group met criteria for a mean of 3.94 lifetime (*SD* = 1.67, range = 0 to 7) and 2.00 current (*SD* = 1.55, range = 0 to 5) Axis I disorders, and 2.06 current Axis II disorders (*SD* = 1.00, range = 1 to 5), whereas participants in the MDD group met criteria for 3.15 lifetime (*SD* = 1.73, range = 1 to 9) and 1.69 current (*SD* = 1.45, range = 0 to 8) Axis I disorders and 0.32 current Axis II disorders (*SD* = 0.64, range = 0 to 3) on average. For further information regarding co-occurring diagnoses, see Table 1.

### PROCEDURES

Study procedures were approved by the institutional research boards at both sites. Participants were recruited by advertisements placed around the university (Site 1) or medical center (Site 2), at coffee shops, at mental health clinics, and on local websites. Interested individuals completed an initial telephone screening to assess probable presence of MDD, mania, and BPD. Participants who met screening criteria (i.e., BPD group: ≥ 5 BPD screening items; MDD group: ≥ 1 depression screening item; NPC group: < 2 BPD items, < 1 depression item; all groups < 1 mania screening item) were invited to attend a diagnostic interview.

Following the diagnostic interview, participants who met study criteria completed a laboratory session for another study (Dixon-Gordon, Rosenthal,

**TABLE 1. Diagnostic Characteristics of the Sample**

| | | MDD | | BPD | |
|---|---|---|---|---|---|
| | | Accept *n* (%) | Avoid *n* (%) | Accept *n* (%) | Avoid *n* (%) |
| Major Depression | Lifetime | 27 (100.00) | 27 (100.00) | 19 (90.48) | 23 (85.19) |
| | Current | 16 (59.26) | 13 (48.15) | 10 (47.62) | 9 (33.33) |
| Dysthymia | Lifetime | 0 (0.00) | 4 (14.81) | 1 (4.76) | 5 (18.52) |
| | Current | 0 (0.00) | 2 (7. 41) | 0 (0.00) | 5 (18.52) |
| Psychosis NOS | Lifetime | 0 (0.00) | 4 (14.81) | 4 (19.05) | 1 (3.70) |
| | Current | 0 (0.00) | 0 (0.00) | 1 (4.76) | 0 (0.00) |
| AUD | Lifetime | 14 (51.85) | 10 (37.04) | 7 (33.33) | 14 (51.85) |
| | Current | 4 (14.81) | 2 (7.41) | 0 (0.00) | 4 (14.81) |
| SUD | Lifetime | 7 (25.93) | 6 (22.22) | 5 (23.81) | 8 (29.63) |
| | Current | 5 (18.52) | 4 (14.81) | 2 (9.52) | 3 (11.11) |
| Panic | Lifetime | 1 (3.70) | 2 (7.41) | 3 (14.28) | 6 (22.22) |
| | Current | 0 (0.00) | 2 (7.41) | 2 (9.52) | 4 (14.81) |
| Agoraphobia | Lifetime | 2 (7.41) | 1 (3.70) | 1 (4.76) | 2 (7.41) |
| | Current | 2 (7.41) | 1 (3.70) | 1 (4.76) | 0 (0.00) |
| Social Phobia | Lifetime | 4 (14.81) | 4 (14.81) | 3 (14.29) | 10 (37.04) |
| | Current | 3 (11.11) | 3 (11.11) | 2 (9.52) | 8 (29.63) |
| Specific Phobia | Lifetime | 4 (14.81) | 3 (11.11) | 4 (19.05) | 5 (18.52) |
| | Current | 3 (11.11) | 3 (11.11) | 4 (19.05) | 3 (11.11) |
| OCD | Lifetime | 2 (7.41) | 0 (0.00) | 6 (28.57) | 1 (3.70) |
| | Current | 2 (7.41) | 0 (0.00) | 5 (23.81) | 1 (3.70) |
| PTSD | Lifetime | 8 (29.63) | 6 (22.22) | 7 (33.33) | 6 (22.22) |
| | Current | 5 (18.52) | 1 (3. 70) | 4 (19.05) | 1 (3.70) |
| GAD | Lifetime | 7 (25.93) | 10 (37.04) | 6 (28.57) | 12 (44.44) |
| | Current | 7 (25.93) | 10 (37.04) | 6 (28.57) | 12 (44.44) |
| Eating Disorder | Lifetime | 2 (7.41) | 4 (14.81) | 6 (28.57) | 11 (40.74) |
| | Current | 0 (0.00) | 1 (3.70) | 5 (23.81) | 2 (7.41) |
| Avoidant PD | | 1 (3.70) | 5 (18.52) | 7 (33.33) | 7 (25.93) |
| Dependent PD | | 0 (0.00) | 0 (0.00) | 0 (0.00) | 2 (7.41) |
| Obsessive Compulsive PD | | 2 (7.41) | 1 (3.70) | 5 (23.81) | 6 (22.22) |
| Paranoid PD | | 4 (14.81) | 4 (14.81) | 7 (33.33) | 7 (25.93) |
| Schizotypal PD | | 0 (0.00) | 0 (0.00) | 1 (4.76) | 0 (0.00) |
| Schizoid PD | | 0 (0.00) | 0 (0.00) | 1 (4.76) | 0 (0.00) |
| Histrionic PD | | 0 (0.00) | 0 (0.00) | 0 (0.00) | 0 (0.00) |
| Narcissistic PD | | 0 (0.00) | 0 (0.00) | 0 (0.00) | 2 (7.41) |
| Antisocial PD | | 0 (0.00) | 0 (0.00) | 1 (4.76) | 3 (11.11) |

*Note*. MDD = major depressive disorder; BPD = borderline personality disorder; NOS = not otherwise specified; AUD = alcohol use disorder; SUD = substance use disorder; OCD = obsessive-compulsive disorder; PTSD = posttraumatic stress disorder; GAD = generalized anxiety disorder; PD = personality disorder. Current disorders were defined as having met *DSM-IV* diagnostic criteria within the past month. Lifetime disorders were defined as ever having met *DSM-IV* diagnostic criteria.

Turner, & Chapman, 2016) during which they were randomly assigned to receive an audio-recorded rationale for and instructions on emotional avoidance or acceptance (Levitt, Brown, Orsillo, & Barlow, 2004). Participants then practiced accepting or avoiding emotions during a laboratory emotion induction. After completing these procedures, participants received instructions on using the handheld device (Palm Z21) to respond to daily prompts. Participants were prompted at eight random intervals within a 12-hour period outside of participants' normal sleep times (e.g., 9 a.m. to 9 p.m.) each day. The prompts proceeded in the following order: Day 0: practice (no data used); Days 1 and 2: no regulation instruction (*baseline* phase); Days 3 and 4: *instruction* to avoid or accept negative emotions; and Days 5 and 6: no emotion regulation instruction (*post-instruction* phase). To capture avoidance broadly, the avoidance instructions included elements of both expressive suppression and avoidance. Specifically, the avoidance instructions read:

"Whenever you feel NEGATIVE emotions (e.g., anxiety, sadness, fear, anger, etc.) TODAY, you can push those feelings away in order to get through the day. That's what we're encouraging you to do. Try not to feel negative emotions, and try not to think about negative emotions. In fact, you should try and behave in a way in which others, if they were in the room, would have no idea of how and what you are feeling. Try to get through the day with as little negative emotions as possible." The accept instructions read: "Whenever you feel NEGATIVE emotions (e.g., anxiety, sadness, fear, anger, etc.) TODAY, allow yourself to accept your emotions without trying to get rid of them. That's what we're encouraging you to do. Struggling against your natural emotions can actually make you feel more distressed. Simply allow yourself to experience your negative emotions and negative thoughts. Accept them, and let them come and go. Try to get through the day accepting your negative emotions as much as possible."

## DIAGNOSTIC INTERVIEWS

Participants were interviewed using the Structured Clinical Interview for Diagnostic and Statistical Manual-IV Axis I (SCID-I; First, Spitzer, Gibbon, & Williams, 2002) and Axis II disorders (SCID-II; First, Spitzer, Gibbon, Williams, & Benjamin, 1997). Both interviews have adequate inter-rater and test-retest reliability (Zanarini et al., 2000; Zimmerman, 1994). Diagnostic interviews were conducted by research program staff and graduate students who were trained to reliability by the lead assessor at each site. Assessors met on average once per month at each site to review interviews. Diagnostic discrepancies were discussed and resolved by consensus at these meetings. At Site 1, audio-recordings were randomly selected for reliability ratings of the presence or absence of inclusion and exclusion diagnoses, resulting in 100% agreement with the gold-standard rater.

We asked participants to complete measures of habitual emotion regulation tendencies to better characterize the sample. Specifically, participants completed the Acceptance and Action Questionnaire 1 (AAQ1; Hayes et al., 2004), a nine-item inventory of tendencies to engage in avoidance of unwanted emotional experiences or thoughts. Internal consistency on this scale was adequate ($\alpha = .80$). As well, participants completed the White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994), a 15-item inventory that assesses the tendency to suppress unwanted thoughts. This measure had adequate internal consistency ($\alpha = .95$). Finally, participants completed the Mindfulness Attention and Awareness Scale (MAAS; Brown & Ryan, 2003), a 15-item inventory assessing trait mindfulness. This measure had adequate internal consistency ($\alpha = .94$).

## ECOLOGICAL MOMENTARY ASSESSMENT (EMA) MEASURES

*Adherence to Emotion Regulation Instructions*. At the final two prompts of each day, participants reported on their use of various emotion regulation strategies using items compiled from established measures and previous re-

search. To assess the use of emotional avoidance, we combined three items from the Emotion Regulation Questionnaire (ERQ) expressive suppression subscale (Gross & Levenson, 1997) with two additional items from previous research (Chapman et al., 2009) that assess emotional avoidance more broadly (i.e., "pushed my emotions away," "suppressed them or bottled them up"). To assess the use of emotional acceptance, we combined two items from past work (Campbell-Sills, Barlow, Brown, & Hoffman, 2006; "I just let myself experience whatever emotions came up," "I didn't mind feeling uncomfortable") with two additional items used in Chapman and colleagues (2009) ("observed them and let them come and go," "just noticed my emotions"). All items were rated on the same Likert-type scale (1 = not at all or very slightly, 5 = extremely). Given that we conceptualized emotional avoidance and acceptance as opposite poles of a continuum, we reverse coded the acceptance items and calculated a composite by summing the average of the avoidance items and the average of the reversed acceptance items. Consistent with this conceptualization, multilevel models revealed that the two components were negatively correlated, $\beta = -.18$, $SE = .05$, $t(143) = -3.24$, $p = .002$. Reliability of this bipolar scale, computed for the multilevel data using generalizability theory (per Cranford et al., 2006; Shrout & Lane, 2012), was adequate (between-person reliability, across items and times = .91, within-person reliability of change, across items = .88).

*Daily Positive and Negative Affect.* At each prompt, the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) was used to assess participants' subjective positive affect (PA) and negative affect (NA). The PANAS consists of 10 negative and 10 positive affective adjectives scored on a 5-point Likert-type scale, with higher scores indicating greater intensity of that emotional state. Scores for PA and NA were derived by taking the mean of the corresponding items. Reliability of these scales was adequate (PA: between-person reliability, across items and times = .99, within-person reliability of change, averaged across items = .79; NA: between-person reliability = .99, within-person reliability = .79).

*Urges to Engage in Maladaptive Behaviors.* At each prompt, urges for maladaptive behaviors were assessed using an expanded, 14-item version of the 10-item scale used in Chapman and colleagues (2009), with the following instructions: "RIGHT NOW, how strong is your urge (e.g., how strongly do you desire) to engage in the following behavior(s)?" The items were based on the *DSM-IV-TR* (American Psychiatric Association, 2000) BPD criterion that involves impulsive, potentially self-damaging behavior, and included the following: Binge eating (eating much more than a regular meal); purging (vomiting, excessive exercise, laxative use); using drugs; using alcohol; harming yourself/self-injury (e.g., cut, burn, hit self); yell/screaming; hitting someone/throwing things; driving recklessly; spending money you don't have, or gambling; engaging in unprotected/risky sexual activity; getting away from emotions by going to sleep; escaping emotions; starting a fight; attempting

suicide. Participants rated their urges from 1 (not at all or very slightly) to 5 (extremely). A composite score was derived by taking the mean of the items, with higher scores indicating more intense urges. Reliability of this scale was adequate (between-person reliability, across items and times = .92, within-person reliability of change, across items = .85).

*Distress Tolerance.* At each prompt, participants rated their willingness to tolerate any current distress, using the Tolerance subscale of the Distress Tolerance Scale (DTS; Simons & Gaher, 2005). This subscale contains three items (e.g., "Feeling distressed or upset is unbearable to me"), which are rated on a 5-point scale from 1 (strongly agree) to 5 (strongly disagree). A total score was derived by taking the mean of the items, with higher scores indicative of greater willingness to tolerate distress. Reliability of this scale was adequate (between-person reliability, across items and times, .99; within-person reliability of change, across items, .82).

## DATA ANALYSIS

Prior to examining primary hypotheses, descriptive statistics were examined to ensure the data were consistent with distributional assumptions. We used chi-square and *t*-tests to examine potential baseline differences between the sites, groups, and conditions. Intraclass correlation coefficients were examined for each outcome to ensure sufficient within- and between-person variability to warrant multilevel models. Primary analyses were conducted using multilevel modeling (Bryk & Raudenbush, 1992) with HLM 7.01 software, which allows the separate modeling of between-person (Level 2) and within-person (Level 1) regression coefficients using maximum likelihood estimation. This approach is advantageous for use in repeated measures data sets because HLM uses maximum likelihood estimation, allowing participants with missing values to contribute to the estimation of the residual error and random intercept terms (Black et al., 2012; Krueger & Tian, 2004). This estimation provides unbiased estimates provided that data are missing at random; Little's (1988) missing-at-random test supported the null hypothesis that missing data on the dependent variables was not systematically missing in this study, $\chi^2(6) = 8.20$, $p = .22$. Modeling the effects as random allowed slopes and intercepts to vary.

To examine the primary hypotheses (i.e., the effects of group and condition over distinct phases of time), we compared changes from baseline to instruction phase, and from instruction to post-instruction phase in each group and condition. For each of the primary outcomes, we included two dummy-coded variables indicating the effect of time (*baseline* and *post-instruction*) at Level 1, and six dummy-coded variables indicating group and condition membership at Level 2. Intercepts were not included at Level 2. Because there was no dummy variable indicating the instruction phase, the Level 1 intercepts reflect the instruction phase, while the baseline and post-instruct dummy variables reflect slopes, or change, from baseline to instruction phase

and from instruction to post-instruction phase for each group, respectively. For instance:

Level 1: $Yij = \pi_0 + \pi_{1i}(\text{Baseline_dummy}_{ti}) + \pi_{2i}(\text{PostInstruct_dummy}_{ti}) + e$

Level 2: $\pi_0\iota = \beta_{01}(\text{Grp1}_i) + \beta_{02}(\text{Grp2}_i) + \beta_{03}(\text{Grp3}_i) + \beta_{04}(\text{Grp4}_i) + \beta_{05}(\text{Grp5}_i) + \beta_{06}(\text{Grp6}_i) + eij$

$\pi_{1i} = \beta_{11}(\text{Grp1}_i) + \beta_{12}(\text{Grp2}_i) + \beta_{13}(\text{Grp3}_i) + \beta_{14}(\text{Grp4}_i) + \beta_{15}(\text{Grp5}_i) + \beta_{16}(\text{Grp6}_i) + eij$

$\pi_{2i} = \beta_{21}(\text{Grp1}_i) + \beta_{22}(\text{Grp2}_i) + \beta_{23}(\text{Grp3}_i) + \beta_{24}(\text{Grp4}_i) + \beta_{25}(\text{Grp5}_i) + \beta_{26}(\text{Grp6}_i) + eij$

We used the hypothesis testing option to compare the slope coefficients by group (i.e., MDD avoid vs. BPD avoid) and by condition (i.e., BPD accept vs. BPD avoid). Thus, where Grp1 represents the NPC participants in the Accept condition and Grp3 represents the MDD participants in the Accept condition, comparing $\beta_{11}$ and $\beta_{13}$ tests whether the magnitude of change from baseline to instruction phase differs between these two groups, while comparing $\beta_{21}$ and $\beta_{23}$ compares change from instruction to post-instruction.

To put these primary analyses into context, we also conducted secondary analyses in which we calculated one-way ANOVAs with group as the independent variable and habitual emotion regulation on the AAQ1, WBSI, and MAAS as dependent variables.

## RESULTS

### PRELIMINARY ANALYSES

*Data Inspection.* Participants responded to a mean of 62.5% of the PalmPilot prompts across the study (*SD* = 23.0%), consistent with past work in BPD samples (58%; Links et al., 2007). Compliance was lower during the post-instruction phase (59.8% of prompts completed, SD = 26.0%), compared to in the pre-instruction (66.1% of prompts completed, *SD* = 23.9%) and instruction phase (66.8% of prompts completed, *SD* = 24.5%). Descriptive statistics of the outcome variables suggested that the distributions were consistent with the assumption of normality (skew < 3.0, kurtosis < 10.0; Curran, West, & Finch, 1996). Intraclass correlations (ICCs) suggested that roughly half of the variability was within individuals (NA = .64, PA = .59, Urges = .51), except for distress tolerance as measured by the Distress Tolerance Scale (DTS = .83).

*Site Comparisons.* Participants from the two sites differed in age, $t(149) = -2.05$, $p = .04$, educational attainment, $\chi^2(4) = 29.65$, $p < .001$, and ethnic background, $\chi^2(6) = 40.67$, $p < .001$. There were more Black participants from Site 2, while participants at Site 1 were younger, more likely to be enrolled in post-secondary education at the time of the study, and more likely to identify as Asian. There were no site differences in participants' sex, $\chi^2(1) = 2.09$, $p = .15$, or average household income, $\chi^2(4) = 6.84$, $p = .14$, nor proportion of participants in each group $\chi^2(2) = 1.96$, $p = .38$, or condition, $\chi^2(1) = 2.15$, $p = .14$. Further, participants from each site did not differ in

the number of BPD criteria met, $t(148) = .53$, $p = .60$, or adherence to ER instructions, $\beta = -.004$, $SE = .15$, $t(142) = -.02$, $p = .98$. Participants at Site 2 had significantly greater compliance with the EMA protocol, i.e., total number of prompts responded to; $t(149) = -2.95$, $p = .004$, mean compliance = 69% vs. 59%.

*Group and Condition Differences.* Groups did not differ in sex, $\chi^2(2) = 1.87$, $p = .46$, ethnicity, $\chi^2(12) = 17.62$, $p = .13$, or age, $F(2, 150) = 1.74$, $p = .18$, nor did conditions differ in sex, $\chi^2(2) = .04$, $p = .83$, ethnicity, $\chi^2(6) = 6.50$, $p = .37$, or age, $t(149) = -.07$, $p = .95$. Groups and conditions did not differ in their compliance with the EMA protocol, Group $F(2, 151) = .78$, $p = .46$; Condition $F(1, 151) = .22$, $p = .64$; Group × Condition $F(2, 151) = 1.81$, $p = .17$.

*Adherence to Emotion Regulation Instructions.* To determine whether participants had complied with the emotion regulation instructions, we constructed a multilevel model with two dummy-coded contrasts indicating the instruct and post-instruct phase at Level 1, and six dummy-coded contrasts indicating group and condition membership in Level 2. Planned, between-group comparisons were used to examine whether participants in the accept versus avoid conditions differed with respect to the change in their use of emotional avoidance from baseline to instruction days. These contrasts revealed significant condition differences within each of the diagnostic groups—NPC accept versus avoid: $\chi^2(1) = 14.08$, $p < .001$; MDD accept versus avoid: $\chi^2(1) = 13.32$, $p < .001$; BPD accept versus avoid: $\chi^2(1) = 13.26$, $p < .001$—indicating that participants in each condition responded differently to emotion regulation instructions. Moreover, within-group contrasts revealed increased emotional avoidance from baseline to instruction phase among participants in the avoidance condition, NPC: $\beta = .53$, $SE = .16$, $t(138) = 3.37$, $p < .001$; MDD: $\beta = .29$, $SE = .14$, $t(138) = 2.06$, $p = .04$; BPD: $\beta = .38$, $SE = .13$, $t(138) = 2.82$, $p = .006$, and decreases in avoidance from baseline to instruction phase among participants in the acceptance condition, NPC: $\beta = -.20$, $SE = .11$, $t(138) = -1.74$, $p = .084$; MDD: $\beta = -.80$, $SE = .26$, $t(125) = -3.04$, $p = .003$; BPD: $\beta = -.38$, $SE = .13$, $t(138) = -2.82$, $p = .006$, although some of these within-group changes were non-significant. Post-hoc comparisons revealed significantly greater decreases in avoidance among MDD and BPD participants in the accept condition from baseline to instruction days, compared to NPC participants, $\chi^2(1) = 4.47$, $p = .03$; $\chi^2(1) = 3.85$ $p = .04$, respectively, but no differences between MDD accept and BPD accept participants, $\chi^2(1) = .005$, $p > .50$. Within-group responses to avoid instructions did not differ between groups, $\chi^2(1)$s = 0.22 to 1.34, $p$s > .24. Moreover, BPD participants in both conditions endorsed significantly greater avoidance at baseline compared to NPC participants, $\chi^2(1)$s = 8.61 to 10.71, $p$s < .005, but did not differ from MDD participants at baseline, $\chi^2(1)$ s = .07 to 1.60, $p$s > .20. As shown in Figure 1, participants in the avoidance condition increased their use of emotional avoidance, whereas those in the acceptance condition decreased their use of emotional avoidance.

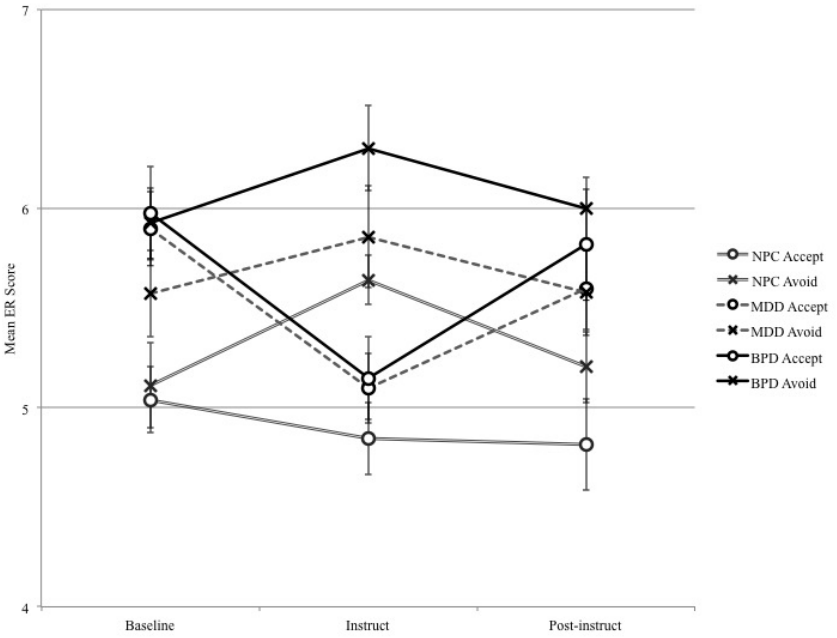


FIGURE 1. Self-reported use of emotion regulation (ER) strategies across study phases in each diagnostic group and emotion regulation condition. NPC = non-psychiatric control; MDD = major depressive disorder; BPD = borderline personality disorder. ER scores range from 3 to 8.75, with higher scores indicating greater use of emotional avoidance, and lower scores indicating greater use of emotional acceptance.

## PRIMARY ANALYSES

*Negative Emotions*. Consistent with Hypothesis 1, within-group contrasts revealed that BPD participants in the avoid condition reported a significant reduction in negative affect from the baseline to the instruction phase, $\beta = -.13$, $SE = .05$, $t(146) = -2.63$, $p = .01$ (see Table 2). Planned between-group comparisons revealed that this effect significantly differed from changes observed in MDD avoid group, $\chi^2(1) = 4.85$, $p = .03$. MDD participants in the accept condition reported a significant decrease in negative affect from the instruction to post-instruction phase, $\beta = -.10$, $SE = .05$, $t(129) = -2.06$, $p = .04$. No other between- or within-group comparisons were significant.

*Positive Emotions*. MDD participants in the avoid condition reported nonsignificant reductions in positive affect from the baseline to instruction days, avoid: $\beta = -.14$, $SE = .07$, $t(146) = 1.98$, $p = .05$ (see Table 2). No other comparisons were significant.

*Urges for Maladaptive Behavior.* Inconsistent with Hypothesis 2, BPD participants in the avoid condition reported significant *reductions* in urges for maladaptive behavior from the baseline to instruction phase, $\beta = -.11$, $SE = .03$, $t(146) = -3.54$, $p < .001$ (see Table 2). Moreover, BPD participants in

**TABLE 2. Coefficients From Multilevel Models for Negative and Positive Affect, Urges, and Distress Tolerance Across Diagnostic Groups and Emotion Regulation Conditions**

| | | Negative Affect | | | | | | Positive Affect | | | | | | Urges for Maladaptive Behaviors | | | | | | Distress Tolerance | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pre-Instruct | | Instruct | | Post-Instruct | | Pre-Instruct | | Instruct | | Post-Instruct | | Pre-Instruct | | Instruct | | Post-Instruct | | Pre-Instruct | | Instruct | | Post-Instruct | |
| | | β | *SE* | β | *SE* | β | *SE* | β | *SE* | β | *SE* | β | *SE* | β | *SE* | β | *SE* | β | *SE* | β | *SE* | β | *SE* | β | *SE* |
| NPC | Accept | 1.19 | .10 | 1.19 | .10 | 1.17 | .11 | 2.11 | .13 | 2.19 | .13 | 2.15 | .13 | 1.06 | .04 | 1.04 | .04 | 1.04 | .04 | 4.24 | .24 | 4.31 | .24 | 4.34 | 24 |
| | Avoid | 1.34 | .10 | 1.31 | .10 | 1.31 | .11 | 2.24 | .13 | 2.24 | .13 | 2.12 | .13 | 1.08 | .04 | 1.05 | .04 | 1.05 | .04 | 3.91 | .24 | 3.97 | .24 | 4.01 | 24 |
| MDD | Accept | 1.56 | .09 | 1.58 | .10 | 1.47 | .10 | 2.26 | .13 | 2.12 | .13 | 2.20 | .13 | 1.24a | .04 | 1.21 | .04 | 1.20 | .03 | 3.11 | .23 | 3.30 | .23 | 3.31 | .23 |
| | Avoid | 1.44 | .09 | 1.47 | .10 | 1.48 | .10 | 1.89 | .13 | 1.77 | .13 | 1.85 | .13 | 1.11 | .04 | 1.15 | .04 | 1.14 | .04 | 3.23 | .23 | 3.17 | .23 | 3.03 | .23 |
| BPD | Accept | 1.66 | .10 | 1.62 | .11 | 1.75 | .12 | 1.88 | .14 | 1.74 | .15 | 1.66 | .14 | 1.36 | .05 | 1.36 | .04 | 1.33 | .04 | 3.04 | .26 | 3.21 | .26 | 3.05 | .26 |
| | Avoid | 1.53 | .09 | 1.40 | .10 | 1.46 | .10 | 2.06 | .13 | 1.96 | .13 | 1.86 | .13 | 1.34 | .04 | 1.23 | .04 | 1.23 | .04 | 3.23 | .23 | 3.38 | .23 | 3.30 | .23 |

*Note*. NPC = non-psychiatric control; MDD = major depressive disorder; BPD = borderline personality disorder. All scores range from 1 to 5.

the avoid versus accept conditions significantly differed from one another in their response to instructions: Those in the accept condition reported increased urges from baseline to instruct days, whereas those in the avoid condition reported decreased urges, $\chi^2(1) = 5.89$, $p = .01$. Planned comparisons also revealed significant differences in changes from baseline to instruction phases between MDD avoid versus BPD avoid participants, $\chi^2(1) = 11.47$, $p = .001$.

*Distress Tolerance*. Inconsistent with Hypothesis 2, BPD participants did not report any significant change in their willingness to tolerate distress from baseline to instruct days in either condition. MDD participants in the accept condition reported increased willingness to tolerate distress from the instruction to the post-instruction phase, $\beta = .19$, $SE = .10$, $t(146) = 2.01$, $p = .046$ (see Table 2). No other within-subject or between-group contrasts were significant.

### SECONDARY ANALYSES

One-way ANOVAs revealed significant between-group differences in habitual emotion regulation across experiential avoidance, $F(2, 141) = 64.06$, $p < .001$, $\eta_p^2 = 0.48$, thought suppression, $F(2, 141) = 59.24$, $p < .001$, $\eta_p^2 = 0.46$, and mindfulness, $F(2, 141) = 32.44$, $p < .001$, $\eta_p^2 = 0.32$. Specifically, participants in the BPD group reported greater experiential avoidance, thought suppression, and less mindfulness than participants in the MDD group (*p*s = .01–.002) or NPC group (*p*s < .001). In turn, the MDD group reported greater experiential avoidance, thought suppression, and less mindfulness than the NPC group (*p*s < .001). Thus, the acceptance-based instructions may constitute a greater departure from habitual emotion regulation patterns for individuals in the BPD group.

## DISCUSSION

A clearer understanding of what occurs when individuals with BPD are instructed to engage in specific emotion regulation strategies in their daily lives can help to guide the application of emotion regulation strategies in clinical practice. To our knowledge, this is the first study to directly test the effects of instructed emotion regulation on a range of BPD–relevant outcomes outside the laboratory using a community sample meeting full criteria for BPD. Extending past work (Chapman et al., 2009), the present findings underscore some potentially desirable effects of short-term instructed emotional avoidance in people with BPD. Consistent with previous findings, individuals with BPD (but not those with MDD or healthy controls) demonstrated decreases in the intensity of their negative emotions when instructed to avoid their emotions. These effects were not observed among BPD participants in the acceptance condition or among either of the comparison groups. Unexpectedly, but mirroring the findings for emotions, the avoidance instructions

were also associated with decreased urges for maladaptive behavior among participants with BPD. Again, this effect appeared to be largely unique to the BPD group. Given that urges for maladaptive behavior are strongly linked to negative affect in BPD (Chapman & Dixon-Gordon, 2007; Chapman, Leung, & Lynch, 2008), this finding rounds out support for the potential short-term benefits of emotional avoidance in BPD, which are not observed in people with MDD or non-psychiatric controls.

Although these findings of advantageous short-term consequences of emotional avoidance in BPD may appear surprising, there are several explanations for why avoidance may work uniquely in those with BPD. Of note, it is not the case that individuals with BPD simply did not use the assigned strategy; both the BPD and MDD groups reported comparable levels of use of the instructed strategy in the present study. Because individuals with BPD are more likely to avoid emotions even when they are not instructed to do so, in the present study and consistent with past research (Bijttebier & Vertommen, 1999), it is possible they are more familiar with and effective in using this strategy. In contrast, practicing acceptance or approach-oriented emotion regulation is a greater departure from the lower habitual mindfulness observed among participants with BPD. The unique learning histories of emotion regulation in those with BPD, including more punishing responses to emotional expression (Linehan, 1993a), may also play a role in promoting greater use and effectiveness of emotional avoidance in BPD. Although not examined directly in this study, instructions to avoid emotions may also increase emotional numbing or dissociation in people with BPD, thereby temporarily reducing unpleasant emotions and urges. For individuals with BPD, instructions not to feel or display negative emotions could be met with relief that, for the short-term, someone else is asking them to avoid their emotions. As a next step in this research, it would be informative to examine the duration and persistence of the advantageous consequences of emotional avoidance in those with BPD, particularly when this strategy is used over longer periods. Innovations in treatments for BPD could result from more nuanced characterization of the benefits and costs of emotional avoidance over different periods (e.g., days versus weeks) and in different contexts.

Findings from this study point to possible treatment implications associated with the temporary palliative effect of emotional avoidance in BPD. Although past research (Chapman et al., 2009) suggests that individuals with BPD may experience decreased positive affect when practicing emotional acceptance, and the present study failed to identify benefits of emotional acceptance in those with BPD, we do not believe that these results should be interpreted as evidence that acceptance-based interventions are contraindicated. Indeed, efficacious treatments for BPD, such as DBT, include extensive training in the use of emotional acceptance over long periods (i.e., one year). Nonetheless, instructions to observe and experience emotions may be unfamiliar among individuals with BPD, and clients learning to observe and accept emotions may need extensive training in order to use these strategies effectively. Further, based on theoretical (Hayes, Wilson, Gifford, & Follette,

1996; Linehan, 1993a) and empirical literature on emotion avoidance and suppression (e.g., Cheavens et al., 2005; Rosenthal et al., 2005), we would not suggest that treatments should seek to enhance emotional avoidance irrespective of context. Indeed, overlearned, rigid, or long-term use of emotional avoidance may increase adverse outcomes among people with BPD. Instructed and intentional short-term emotional avoidance, however, may be beneficial for individuals with BPD. Given the more immediately reinforcing effects of avoidance, it may be best to begin treatment by emphasizing adaptive avoidance strategies, such as distraction or the refocusing of attention on non-emotional content. Acceptance-oriented strategies that may be more challenging for patients could then be learned over time.

Several limitations of this research warrant mention. First, although the manipulation check revealed significant differences in responses to the instructions to accept versus avoid within each diagnostic group, the within-group changes in emotion regulation were sometimes not significant. Second, although several days provide a longer observation period than is possible in laboratory studies, this time period may not have been long enough to capture a range of life stressors, problem behaviors, or longer-term effects of avoidance or acceptance instructions. Insights on the sequelae of instructed emotion regulation may be gained in future research by using longer observation periods or event-contingent ratings following interpersonal stressors or maladaptive behaviors. Third, the present study focused on the impact of instructions to avoid or accept on subjective experiences of emotions and urges. Future research would benefit by examining a broader range of established behavioral and physiological assessments. Fourth, this study did not have a no-instruction condition to examine the impact of spontaneous emotion regulation strategies over this time period. Although the pre-instruction phase permitted a comparison to participants' typical emotion regulation responses, this period was necessarily brief. Fifth, we selected two clinically relevant strategies (i.e., avoidance and acceptance), but did not consider the broader scope of emotion regulation strategies participants may use to cope with their emotions (Aldao & Dixon-Gordon, 2014). Additional studies are warranted to examine the effect of other strategies, such as stimulus control, attentional deployment, cognitive reappraisal, or problem-solving, in the daily lives of people with BPD. Sixth, another potential limitation relates to the combination of expressive suppression and emotional avoidance in the avoidance manipulation. These two forms of avoidance may have differential effects. Examination of the combination of expressive suppression and emotional avoidance, however, likely has more ecological validity compared with examination of either strategy on its own. Arguably, people are more likely to combine avoidance strategies in their efforts to manage emotional distress than to precisely and uniquely choose a single strategy. Finally, an alternative explanation for our findings is that the brief laboratory training session and regularly presented instructions may not have been sufficient to teach BPD participants how to accept their emotions. Clinically, we have often observed that BPD patients in DBT require repeated presentation of

mindfulness and acceptance before these skills take root and lead to improvements in daily life functioning. It is also possible that BPD participants were ruminating about their emotions within the acceptance or the avoidance condition. Research and theory on BPD have suggested an important role of rumination in emotional distress as well as harmful behaviors (e.g., non-suicidal self-injury; Selby, Anestis, Bender, & Joiner, 2009). Future research, therefore, might involve more extensive training in acceptance strategies (e.g., through laboratory sessions, therapy, or standard DBT skills) and the measurement of factors that could compromise the effects of acceptance efforts (e.g., rumination). It also is possible that participants may have habituated to the acceptance or avoidance instructions (given the frequency of prompts), reducing the impact of these instructions on their behavior. We believe that the risk of participants glossing over the instructions might be mitigated by the fact that they were first exposed to these instructions during a preparatory laboratory session. During that time, they received and used the instructions to guide their emotion regulation in response to a laboratory stressor. Subsequently, they were instructed to use the same approach in daily life for this study. That said, future research might seek ways to make repeated instructions more salient. Finally, an additional limitation was the unsuitability of our design (based on categorical diagnoses and its being less amenable to analyses of continuously distributed symptoms) for continuous analyses of different facets of BPD– or MDD–related psychopathology that could influence differential responding to acceptance or avoidance instructions. Future research might explore this topic using a less categorical, diagnosis-oriented approach.

Notwithstanding these limitations, this study takes an important step in experimentally examining the impact of clinically relevant instructed emotion regulation strategies for people with BPD in their everyday lives. Of particular importance, these findings add to a growing literature suggesting that purportedly maladaptive emotion regulation strategies may not always lead to immediate deleterious consequences, whereas purportedly adaptive strategies do not always confer immediate benefits (e.g., Chapman et al., 2009; Troy, Shallcross, & Mauss, 2013). Indeed, for individuals with BPD, there may be barriers to employing acceptance-based strategies, at least in the short-term. Given the importance of acceptance in the treatment of BPD (Linehan, 1993a), understanding these barriers is a priority. In addition, the present findings suggest that even a brief emotion regulation manipulation resulted in changes in reported use of emotion regulation strategies, which holds promise for brief interventions for improving emotion regulation. Further research is needed to disentangle the contexts in which specific emotion regulation strategies or combinations thereof are advantageous for people with BPD. With hope, these findings will add to a nuanced and dynamic conceptualization of emotion regulation in BPD.

## REFERENCES


Aldao, A., & Christensen, K. (2015). Linking the expanded process model of emotion regulation to psychopathology by focusing on behavioral outcomes of regulation. *Psychological Inquiry, 26*, 27–36.

Aldao, A., & Dixon-Gordon, K. L. (2014). Broadening the scope of research on emotion regulation strategies and psychopathology. *Cognitive Behavior Therapy, 43*, 22–33.

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review, 30*(2), 217–237.

American Psychiatric Association. (2000). *Diagnostic and statistical manual of mental disorders* (4th ed., text rev.). Washington, DC: Author.

Bateman, A., & Fonagy, P. (2008). 8-year follow-up of patients treated for borderline personality disorder: Mentalization-based treatment versus treatment as usual. *American Journal of Psychiatry*, *165*(5), 631–638.

Bijttebier, P., & Vertommen, H. (1999). Coping strategies in relation to personality disorders. *Personality and Individual Differences*, *26*(5), 847–856.

Black, A. C., Harel, O., & Matthews, G. (2012). Techniques for analyzing intensive longitudinal data with missing values. In M. R. Mehl & T. S. Conner (Eds.), *Handbook of research methods for studying daily life* (pp. 339–356). New York, NY: Guilford.

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*, 822–848.

Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods*. Thousand Oaks, CA: Sage.

Campbell-Sills, L., Barlow, D. H., Brown, T. A., & Hofmann, S. G. (2006). Effects of suppression and acceptance on emotional responses of individuals with anxiety and mood disorders. *Behavior Research and Therapy*, *44*(9), 1251–1263.

Chapman, A. L., & Dixon-Gordon, K. L. (2007). Emotional antecedents and consequences of deliberate self-harm and suicide attempts. *Suicide & Life-Threatening Behavior*, *37*(5), 543–552.

Chapman, A. L., Leung, D. W., & Lynch, T. R. (2008). Impulsivity and emotion dysregulation in borderline personality disorder. *Journal of Personality Disorders*, *22*(2), 148–164.

Chapman, A. L., Rosenthal, M. Z., & Leung, D. W. (2009). Emotion suppression in borderline personality disorder: An experience sampling study. *Journal of Personality Disorders*, *23*(1), 29–47.

Chapman, A. L., Specht, M. W., & Cellucci, T. (2005). Borderline personality disorder and deliberate self-harm : Does experiential avoidance play a role? *Suicide and Life-Threatening Behavior*, *35*, 388–399.

Cheavens, J. S., Rosenthal, M., Daughters, S. B., Nowak, J., Kosson, D., Lynch, T. R., & Lejuez, C. W. (2005). An analogue investigation of the relationships among perceived parental criticism, negative affect, and borderline personality disorder features: The role of thought suppression. *Behavior Research and Therapy*, *43*(2), 257–268.

Cranford, J. A., Shrout, P. E., Iida, M., Rafaeli, E., Yip, T., & Bolger, N. (2006). A procedure for evaluating sensitivity to within-person change: Can mood measures in diary studies detect change reliably? *Personality and Social Psychology Bulletin, 32*, 917–929. doi:10.1177/0146167206287721

Curran, P. J., West, S. G., & Finch, J. F. (1996). The robustness of test statistics to nonnormality and specification error in confirmatory factor analysis. *Psychological Methods*, *1*(l), 16–29.

Dalgleish, T., Yiend, J., Schweizer, S., & Dunn, B. D. (2009). Ironic effects of emotion suppression when recounting distressing memories. *Emotion*, *9*(5), 744–749.

Dixon-Gordon, K. L., Rosenthal, M. Z., & Turner, B. J., & Chapman, A.L. (2016). Emotion regulation in borderline personality disorder: An experimental investigation of the effects of acceptance and suppression. *Behavior Therapy*. Manuscript under review.

Dunn, B. D., Billotti, D., Murphy, V., & Dalgleish, T. (2009). The consequences of effortful emotion regulation when processing distressing material: A comparison of suppression and acceptance. *Behavior Research and Therapy, 47*(9), 761–773.

Evans, D., Howard, M., Dudas, R., Denman, C., & Dunn, B. (2013). Emotion regulation in borderline personality disorder: Examining the consequences of spontaneous and instructed use of emotion suppression and emotion acceptance when viewing negative films. *Journal of Experimental Psychopathology, 4*, 546–565.

Farmer, R. F., & Chapman, A. L. (2007). *Behavioral interventions in cognitive behavior therapy: Practical guidelines for putting theory into action*. Washington, DC: American Psychological Association.

Farmer, R. F., & Chapman, A. L. (2016). *Behavioral interventions in cognitive behavior therapy: Practical guidance for putting the-*

*ory into action* (2nd ed.). Washington, DC: American Psychological Association.

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (2002). *Structured Clinical Interview for DSM-IV-TR Axis I Disorders, Research Version, Patient Edition (SCID-I/P)*. New York, NY: Biometrics Research, New York State Psychiatric Institute.

First, M. B., Spitzer, R. L., Gibbon, M., Williams, J. B. W., & Benjamin, L. S. (1997). *Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II)*. Washington, DC: American Psychiatric Press.

Fonagy, P., & Bateman, A. W. (2007). Mentalizing and borderline personality disorder. *Journal of Mental Health*, *16*(1), 83–101.

Garnefski, N., & Kraaij, V. (2006). Relationships between cognitive emotion regulation strategies and depressive symptoms: A comparative study of five specific samples. *Personality and Individual Differences, 40*(8), 1659–1669.

Gross, J. J., & Levenson, R. W. (1997). Hiding feelings: The acute effects of inhibiting negative and positive emotion, *Journal of Abnormal Psychology, 106*(1), 95–103.

Hayes, S. C., Bissett, R., Roget, N., Padilla, M., Kohlenberg, B. S., Fisher, G., … Niccolls, R. (2004). The impact of acceptance and commitment training and multicultural training on the stigmatizing attitudes and professional burnout of substance abuse counselors. *Behavior Therapy*, *35*, 821–836.

Hayes, S. C., Wilson, K. G., Gifford, E. V., & Follette, V. M. (1996). Experiential avoidance and behavioral disorders: A functional dimensional approach to diagnosis and treatment. *Journal of Consulting and Clinical Psychology*, *64*(6), 1152–1168.

Henry, J. D., Rendell, P. G., Scicluna, A., Jackson, M., & Phillips, L. H. (2009). Emotion experience, expression, and regulation in Alzheimer's disease. *Psychology and Aging, 24*(1), 252–257.

Kliem, S., Kröger, C., & Kosfelder, J. (2010). Dialectical behavior therapy for borderline personality disorder: A meta-analysis using mixed-effects modeling. *Journal of Consulting and Clinical Psychology*, *78*(6), 936–951.

Krueger, C., & Tian, L. (2004). A comparison of the general linear mixed model and repeated measures ANOVA using a dataset with multiple missing data points. *Biological Research for Nursing, 6,* 151–157.

Levine, D., Marziali, E., & Hood, J. (1997). Emotion processing in borderline personality disorders. *Journal of Nervous and Mental Disease*, *185*(4), 240–246.

Levitt, J. T., Brown, T. A., Orsillo, S. M., & Barlow, D. H. (2004). The effects of acceptance versus suppression of emotion on subjective and psychophysiological response to carbon dioxide challenge in patients with panic disorder. *Behavior Therapy*, *35*(4), 747–766.

Linehan, M. M. (1993a). *Cognitive-behavioral treatment of borderline personality disorder.* New York, NY: Guilford.

Linehan, M. M. (1993b). *Skills training manual for treating borderline personality disorder*. New York, NY: Guilford.

Linehan, M. M. (2015). *DBT skills training manual* (2nd ed.). New York, NY: Guilford.

Links, P. S., Eynan, R., Heisel, M. J., Barr, A., Korzekwa, M., McMain, S., & Ball, J. S. (2007). Affective instability and suicidal ideation and behavior in patients with borderline personality disorder. *Journal of Personality Disorders, 21,* 72–86.

Little, R. J. A. (1988). A test for missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association, 88,* 1198–1202.

Livesley, W. J., Jang, K. L., & Vernon, P. A. (1998). Phenotypic and genetic structure of traits delineating personality disorder. *Archives of General Psychiatry*, *55*(10), 941–948.

McGlashan, T. H., Grilo, C. M., Skodol, A. E., Gunderson, J. G., Shea, M. T., Morey, L. C., … Stout, R. L. (2000). The Collaborative Longitudinal Personality Disorders Study: Baseline Axis I/II and II/II diagnostic co-occurrence. *Acta Psychiatrica Scandinavica, 102*(4), 256–264.

Muraven, M., Tice, D. M., & Baumeister, R. F. (1998). Self-control as limited resource: Regulatory depletion patterns. *Journal of Personality and Social Psychology, 74,* 774–789.

Perroud, N., Nicastro, R., Jermann, F., & Huguelet, P. (2012). Mindfulness skills in borderline personality disorder patients during dialectical behavior therapy: Preliminary results. *International Journal of Psychiatry in Clinical Practice, 16*(3), 189–196.

Putnam, K. M., & Silk, K. R. (2005). Emotion regulation and the development of borderline personality disorder. *Development and Psychopathology, 17,* 899–925.

Rosenthal, M. Z., Cheavens, J. S., Lejuez, C. W., & Lynch, T. R. (2005). Thought suppression mediates the relationship between negative affect and borderline personality disorder symptoms. *Behavior Research and Therapy*, *43*(9), 1173–1185.

Rosenthal, M. Z., Fang, C. M., & Chapman, A. L. (2015). Ambulatory measurement of emotion dysfunction in borderline personality disorder. *Current Opinion in Psychiatry*, *3*, 75–79.

Rosenthal, M. Z., Gratz, K. L., Kosson, D. S., Cheavens, J. S., Lejuez, C. W., & Lynch, T. R. (2008). Borderline personality disorder

and emotional responding: A review of the research literature. *Clinical Psychology Review*, *28*(1), 75–91.

Ruocco, A. C., Medaglia, J. D., Ayaz, H., & Chute, D. L. (2010). Abnormal prefrontal cortical response during affective processing in borderline personality disorder. *Psychiatry Research*, *182*(2), 117–122.

Sachse, S., Keville, S., & Feigenbaum, J. (2011). A feasibility study of mindfulness-based cognitive therapy for individuals with borderline personality disorder. *Psychology and Psychotherapy, 84*, 184–200.

Sauer, S. E., & Baer, R. A. (2012). Ruminative and mindful self-focused attention in borderline personality disorder. *Personality Disorders: Theory, Research, and Treatment, 3,* 433–441.

Selby, E. A., Anestis, M. D, Bender, T. W., & Joiner, T. E. (2009). An exploration of the emotional cascade model in borderline personality disorder. *Journal of Abnormal Psychology, 118,* 375–387.

Sheppes, G., & Gross, J. J. (2012). Emotion regulation effectiveness: What works when. In H. A. Tennen & J. M. Suls (Eds.), *Handbook of psychology* (2nd ed., pp. 391–406). Indianapolis, IN: Wiley-Blackwell.

Sheppes, G., & Levin, Z. (2013). Emotion regulation choice: Selecting between cognitive regulation strategies to control emotion. *Frontiers in Human Neuroscience, 7,* 179. doi:10.3389/fnhum.2013.00179

Sheppes, G., Scheibe, S., Suri, G., & Gross, J. J. (2011). Emotion-regulation choice. *Psychological Science, 22*(11), 1391–1396.

Shrout, P. E., & Lane, S. P. (2012). Psychometrics. In M. R. Mehl & T. S. Conner (Eds.), *Handbook of research methods for studying daily life* (pp. 302–320). New York, NY: Guilford.

Simons, J. S., & Gaher, R. M. (2005). The Distress Tolerance Scale: Development and validation of a self-report measure. *Motivation and Emotion*, *29*(2), 83–102.

Troy, A. S., Shallcross, A. J., & Mauss, I. B. (2013). A person-by-situation approach to emotion regulation: Cognitive reappraisal can either help or hurt, depending on the context. *Psychological Science, 24,* 2505–2514.

Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, *54*(6), 1063–1070.

Wegner, D. M. (1994). Ironic processes of mental control. *Psychological Review*, *101*(1), 34–52.

Wegner, D. M., & Zanakos, S. (1994). Chronic thought suppression. *Journal of Personality*, *62*, 615–640.

Wupperman, P., Fickling, M., Klemanski, D. H., Berking, M., & Whitman, J. B. (2013). Borderline personality features and harmful dysregulated behavior: The mediational effect of mindfulness. *Journal of Clinical Psychology, 69*(9), 903–911.

Xie, L., Tao, R., & Jiang, G. (2010). Affect suppression and cognitive reappraisal regulation's effect on negative emotion of patients with borderline personality disorder. *Chinese Journal of Clinical Psychology*, *18*(4), 422–425.

Zanarini, M. C., Frankenburg, F. R., Hennen, J., Reich, D. B., & Silk, K. R. (2004). Axis I comorbidity in patients with borderline personality disorder: 6-year follow-up and prediction of time to remission. *American Journal of Psychiatry, 161,* 2108–2114.

Zanarini, M. C., Skodol, A. E., Bender, D., Dolan, R., Sanislow, C., Schaefer, E., … Gunderson, J. G. (2000). The Collaborative Longitudinal Personality Disorders Study: Reliability of Axis I and II Diagnoses. *Journal of Personality Disorders*, *14*(4), 291–299.

Zimmerman, M. (1994). Diagnosing personality disorders. A review of issues and research methods. *Archives of General Psychiatry*, *51*(3), 225–245.