



Deficits in mindfulness account for the link between borderline personality features and maladaptive humor styles



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ABSTRACT

Negative humor styles are associated with rumination, aggression, and suicidal ideation. BPD features are positively associated with negative humor styles; however, few studies have identified factors that mediate this relationship. The present study examines mindfulness skills as a mediator of the link between BPD features and negative humor styles, in a sample of undergraduate students ($N = 197$), many reporting clinically significant levels of BPD features. Significant indirect effects suggest that individuals with higher BPD features engage in more aggressive humor style partially due to lower levels of *nonreactivity*. However, individuals with higher BPD features engage in more self-defeating humor style partially due to lower levels of *acting with awareness*. Higher BPD features were related to less positive humor styles partially due to low *describe* scores. These findings suggest that different facets of mindfulness skills may assist in decreasing negative and increasing positive humor styles.

1. Introduction

Effectively using humor is important to a variety of psychological processes and outcomes of wellbeing including strong interpersonal relationships (e.g., Romero & Cruthirds, 2006; Sherman, 1998), healthy identity formation (Kuiper, Kirsh, & Maiolino, 2016), and effective emotion regulation and coping strategies (e.g., Harm, Vieillard, & Didierjean, 2014; Lefcourt & Martin, 1986). As evidence for the scientific value of humor mounts, the measurement and operationalization of the construct has become a priority. The Humor Styles Questionnaire (HSQ; Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003) is a self-report measure that identifies four basic humor styles: affiliative (strengthening relationships by entertaining others with humor), self-enhancing (coping with stressful events using humor), aggressive (reinforcing the self by demeaning others with humor), and self-defeating (attempting to strengthen social relationships by demeaning the self).

Affiliative and self-enhancing humor styles are broadly considered to be healthy processes and are positively associated with psychological wellbeing (Kuiper et al., 2016; Martin et al., 2003) and negatively associated with anxiety, depression, suicidal ideation, and interpersonal predictors of suicide (e.g., Frewen, Brinker, Martin, & Dozois, 2008; Martin et al., 2003; Tucker et al., 2013; Tucker et al., 2013). In contrast, aggressive and self-defeating humor styles are positively associated

with rumination, suicidal ideation (Tucker, Wingate, et al., 2013), hostility, aggression, depression, and anxiety (e.g., Frewen et al., 2008; Martin et al., 2003), and negatively associated with self-esteem and overall psychological well-being (Martin et al., 2003; Stieger, Formann, & Burger, 2011). Aggressive humor style damages interpersonal relationships and interferes with effective conflict resolution (Campbell, Martin, & Ward, 2008; Hall, 2011). In addition, self-defeating humor style is conceptualized as a form of denial or as a defense mechanism protecting from negative feelings about the self (Martin et al., 2003). In summary, humor styles are distinct approaches to regulating emotional and interpersonal situations with links to many clinically relevant outcomes.

1.1. Connection between borderline personality features and humor styles

Borderline personality disorder (BPD) is a severe condition that is associated with interpersonal and emotional dysfunction, identity disturbance, heightened anger and aggression, and impulsive actions which include self-injury and suicide attempts (American Psychiatric Association, 2013). As noted above, variance in humor style has been linked to suicidal ideation, aggression, identity formation, healthy relationships, and emotional wellbeing—all of which are characteristics of BPD. Despite this strong theoretical link between BPD and humor

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style, only two studies have directly examined this relationship. One study, using a community sample of adults, found that BPD symptom severity was negatively correlated with self-enhancing and affiliative humor styles and positively correlated with self-defeating and aggressive humor styles (Schermer et al., 2015). These findings were partially replicated in a sample of undergraduates, with BPD traits similarly correlated with self-enhancing and self-defeating humor, although correlations were not found with affiliative and aggressive humor (Meyer et al., 2017). In addition, BPD symptoms and some humor styles interacted to predict suicidal ideation such that individuals with greater BPD symptom severity had lower levels of suicidal ideation when endorsing more affiliative and self-enhancing or less self-defeating humor styles (Meyer et al., 2017). These results suggest that it is critical to better understand modifiable factors that mediate the relationship between BPD features and humor styles, with the hope that interventions could target these mechanisms in an effort to reduce negative outcomes, such as suicidal behavior.

1.2. BPD features and mindfulness skills

One such factor may be mindfulness skills, which can be improved by teaching individuals to pay attention to present moment experiences in a nonjudgmental and nonreactive way (Kabat-Zinn, 1994). Dialectical behavior therapy (DBT), an empirically supported treatment for BPD, includes mindfulness training as a core component of treatment (Linehan, 1993). In individuals with BPD features, mindfulness skills reduce anger and aggression (see Frazier & Vela, 2014 for a review; Koons et al., 2001; Lynch et al., 2007), self-reported emotional reactivity (Feliu-Soler et al., 2014), and overall symptom severity (Elices et al., 2016; Perroud, Nicastrò, Jermann, & Huguelet, 2012). Additionally, mindfulness skills deficits in individuals with BPD features are linked to harmful dysregulated behavior (Wupperman, Fickling, Klemanski, Berking, & Whitman, 2013), rumination (Selby, Fehling, Panza, & Kranzler, 2016), and overall symptom severity (Wupperman, Neumann, Whitman, & Axelrod, 2009).

The Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006) is one of the most commonly used self-report measures of mindfulness. Informed by a factor analysis from several preexisting measures of mindfulness, the FFMQ assesses five distinct facets of mindfulness skills: *acting with awareness* (attending to present moment activities), *nonjudging of inner experiences* (attending to inner experiences in a nonjudgmental way), *nonreactivity to inner experience* (allowing thoughts and feelings to come and go without suppression), *observing* (noticing internal and external experiences), and *describing* (labeling experiences with words). These facet scores are higher in experienced meditators than non-meditators (Baer et al., 2008) and increase in response to mindfulness-based interventions (e.g., Völlestad, Sivertsen, & Nielsen, 2011). Increases in nonjudgment of inner experiences are specifically associated with reductions in BPD symptom severity (Perroud et al., 2012). Additionally, higher levels of *acting with awareness*, *nonjudgment*, and *nonreactivity* predict lower BPD features (Eisenlohr-Moul, Peters, Chamberlain, & Rodriguez, 2016; Peters, Eisenlohr-Moul, Upton, & Baer, 2013), suggesting that these specific components of mindfulness may be particularly relevant to BPD.

1.3. Mindfulness and humor styles

Evidence demonstrates a clear link between BPD and facets of mindfulness, as well as a connection between BPD and humor styles. Interestingly, mindfulness and humor have similar effects on emotional processing and understanding. Individuals using humor are better able to distance themselves from stressful life events and maintain positive affect (Kuiper, Martin, & Olinger, 1993; Lefcourt et al., 1995; Ong, Bergeman, & Bisconti, 2004). Similarly, mindfulness skills help individuals maintain distance from distressing events through observing

experiences with nonjudgment and acceptance (Teasdale et al., 2002; Williams, Teasdale, Segal, & Soulsby, 2000). It has even been argued that humor *relies* on mindfulness—an individual must be focused on the present moment to notice something humorous about a situation (Carson & Langer, 2006). Despite these theoretical links, only two studies to date have examined the direct relationship between mindfulness and humor styles. These studies use the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), a self-report measure that assesses present-moment awareness (closely corresponding to the *acting with awareness* subscale of the FFMQ), and found that it significantly correlated with each of the four humor styles in American and Turkish (but not Russian) undergraduates such that the MAAS is positively correlated with positive humor styles and negatively correlated with negative humor styles (Khramtsova & Chuykova, 2016; Özyesil, Deniz, & Kesici, 2013). Although the MAAS is a well-designed and widely used measure, its scope is limited to attentional mindfulness and does not assess attitudinal components of mindfulness (i.e., *nonjudging* and *nonreactivity*).

1.4. Present study

The present study is a preliminary examination of mindfulness as a mediator (and thus possible intervention target) of the link between BPD and negative humor styles. We had two primary goals: 1) to determine if specific facets of mindfulness are associated with humor styles; and 2) to determine if specific facets of mindfulness account for the relationship between BPD symptoms and humor style. Based on limited prior research (Khramtsova & Chuykova, 2016; Özyesil et al., 2013), we hypothesized that all facets of the FFMQ, except *observing* (see measures section), would be positively associated with positive humor styles and negatively associated with negative humor styles. Without prior evidence to draw from, analyses of our second goal were exploratory. Assuming, based on prior research (Eisenlohr-Moul et al., 2016; Peters et al., 2013), that we would find some facets of mindfulness and BPD symptom severity to be linked, we tentatively speculated that lower levels of *acting with awareness*, *nonjudging*, and *nonreactivity* would account for significant variance in the relations between BPD features and negative humor styles.

2. Method

2.1. Participants

Participants were 197 undergraduate psychology students at a large public university selected from a larger pool of 297 potential participants after removing individuals who did not answer all the questions or failed to correctly respond to a question embedded in the questionnaires to identify random responding. The questionnaires were completed online and all participants received course credit. The sample was mostly female (78%), ranged in age from 18 to 40 ($M = 19.6$, $SD = 2.55$), and 85% listed their background as Caucasian, 3% as Black/African American, 3% as Asian, and 9% as another ethnicity.

Previous research established that clinically significant BPD features occur in undergraduate samples. Specifically, students with scores over 37 ($T > 70$) on the Personality Assessment Inventory—Borderline Features Scale (PAI-BOR; Morey, 1991) exhibit distress and maladjustment comparable to clinical samples (Trull, 1995, 2001). Studies have relied on student samples in order to capture a wide range of BPD features, rather than extremes found in clinical populations (e.g., Chapman, Leung, & Lynch, 2008; Chapman, Rosenthal, & Leung, 2009; Dixon-Gordon, Chapman, Lovasz, & Walters, 2011; Peters et al., 2013). For the present study, recruitment procedures were designed to capture adequate representation of the upper end of the distribution of BPD features. While the online study was open to all students enrolled in introductory psychology courses, individuals scoring over 37 on a

previous administration of the PAI-BOR (as part of a mass screening at the beginning of the academic year) were contacted via email and specifically invited to participate in the study. In the final sample of 197, 21% of participants reported clinically significant BPD feature severity (PAI-BOR scores > 37).

2.2. Measures

The Personality Assessment Inventory—Borderline Features Scale (PAI-BOR; Morey, 1991) consists of 24 items rated on a 4-point scale (1 = false; 4 = very true) measuring core features of BPD symptomatology. The PAI-BOR has been shown to differentiate BPD from other conditions, including mood, anxiety, and psychotic disorders, as well as substance use and antisocial personality disorder (Morey, 1991). In the current study, the PAI-BOR demonstrated good internal consistency (Cronbach's $\alpha = 0.89$).

The Humor Styles Questionnaire (HSQ; Martin et al., 2003) consists of 32 items rated on a 7-point scale (1 = totally disagree; 7 = totally agree) measuring individual differences in humor styles. The HSQ measures four humor styles: affiliative (e.g., "I enjoy making people laugh"); self-enhancing (e.g., "If I am feeling depressed, I can usually cheer myself up with humor"); aggressive (e.g., "If someone makes a mistake, I will often tease them about it"); and self-defeating (e.g., "I will often get carried away in putting myself down if it makes my family or friends laugh"). Internal consistencies measured with Cronbach's α ranged from 0.73 to 0.82.

The Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) consists of 39 items rated on a 5-point scale (1 = never or very rarely true; 5 = very often or always true) assessing five facets of mindfulness, including: acting with awareness, nonjudging of inner experience, nonreactivity to inner experience, describing, and observing. FFMQ scores have been shown to be higher in meditators than in nonmeditators and to mediate the relationship between meditation and psychological well-being (Baer et al., 2008). In the present study, the facets demonstrated good to excellent internal consistencies (Cronbach's α ranged from 0.76 to 0.89).

3. Results

3.1. Zero-order correlations

Table 1 presents means, standard deviations, internal consistencies, and intercorrelations for all variables of interest. BPD features were significantly positively correlated with aggressive and self-defeating humor styles and significantly negatively correlated with affiliative and self-enhancing humor styles. BPD features were significantly negatively correlated with all FFMQ subscales, except observing.

Self-enhancing humor style was only significantly correlated with

describing, while affiliative humor style was significantly correlated with describing and nonjudging. Aggressive humor style was significantly negatively correlated with acting with awareness, nonjudging, and nonreactivity. Finally, self-defeating humor style was significantly negatively correlated with all mindfulness subscales (except for observing). The relationships between self-defeating humor style and both acting with awareness and nonjudging were particularly strong.

3.2. Indirect effect of BPD symptoms on humor styles through mindfulness

Bootstrapping via the PROCESS macro (Hayes, 2013) was used to test the indirect effects of the relationship between BPD features with each of the four humor styles via mindfulness facets. Mindfulness facets that demonstrated significant zero-order correlations with the respective humor outcomes were included in each model as candidate statistical mediators (i.e., describing and nonjudging were included for affiliative, describing for self-enhancing, acting with awareness, nonjudging, and nonreactivity for aggressive, and all facets but observing for self-defeating humor style), and the facets were entered in parallel, in order to test multiple mediators simultaneously. These models were generated using bias-corrected bootstrapping (1000 samples), a robust approach to statistical mediation (Preacher & Hayes, 2008).

Fig. 1 presents a visual representation of significant indirect paths for each model. BPD features demonstrated a significant indirect effect to affiliative humor style through describing ($B = -0.03$, $SE(B) = 0.01$, 95% CI = -0.05 , -0.01). BPD predicted lower levels of affiliative humor style via reduced levels of describing.

When examining the relationship between BPD features and aggressive humor style, nonreactivity produced a significant indirect effect ($B = 0.02$, $SE(B) = 0.02$, 95% CI = 0.004 , 0.07). Finally, when examining BPD features and self-defeating humor, acting with awareness produced a significant indirect effect ($B = 0.07$, $SE(B) = 0.04$, 95% CI = -0.004 , 0.15). In both models, BPD predicted elevated levels of negative humor styles via reduced levels of these mindfulness skills.

4. Discussion

Negative humor styles have been previously linked to BPD (Meyer et al., 2017; Schermer et al., 2015); however, the present study was the first to examine mindfulness deficits as a potential mechanism linking BPD features and these humor styles. BPD features were significantly positively correlated with negative humor styles and significantly negatively correlated with positive humor styles. We also found that facets of mindfulness were differentially related to positive and negative humor styles. As expected, negative humor styles were significantly negatively correlated with all mindfulness facets except observing. In contrast, only describing and nonjudging were significantly correlated with positive humor styles.

Table 1

Intercorrelations, means, standard deviations, and internal consistencies for study variables ($N = 197$).

	1	2	3	4	5	6	7	8	9	10	M	SD
1. PAI-BOR total	(0.89)										27.46	11.22
2. HSQ affiliative	-0.16*	(0.82)									46.77	6.68
3. HSQ self-enhance	-0.21**	0.41**	(0.82)								37.88	8.28
4. HSQ aggressive	0.27**	0.08	0.03	(0.73)							29.63	7.92
5. HSQ self-defeat	0.39**	-0.10	0.10	0.25**	(0.80)						27.35	8.42
6. FFMQ observe	0.14*	-0.03	0.09	-0.02	0.02	(0.77)					26.23	4.99
7. FFMQ describe	-0.19**	0.25*	0.18*	0.04	-0.21*	0.19*	(0.89)				27.28	5.64
8. FFMQ AWA	-0.52**	0.04	-0.01	-0.18*	-0.35**	-0.07	0.27**	(0.88)			24.56	5.63
9. FFMQ nonjudge	-0.55**	0.16*	0.12	-0.15*	-0.33**	-0.20*	0.16*	0.33**	(0.85)		25.58	5.50
10. FFMQ nonreact	-0.22**	-0.06	0.12	-0.21*	-0.16*	0.31**	0.14	0.02	0.05	(0.76)	21.44	4.08

Note. Internal consistencies presented on the diagonal. PAI-BOR = Personality Assessment Inventory Borderline Features; HSQ = Humor Styles Questionnaire; FFMQ = Five Facet Mindfulness Questionnaire; AWA = Acting with Awareness subscale.

* $p < 0.05$.

** $p < 0.01$.

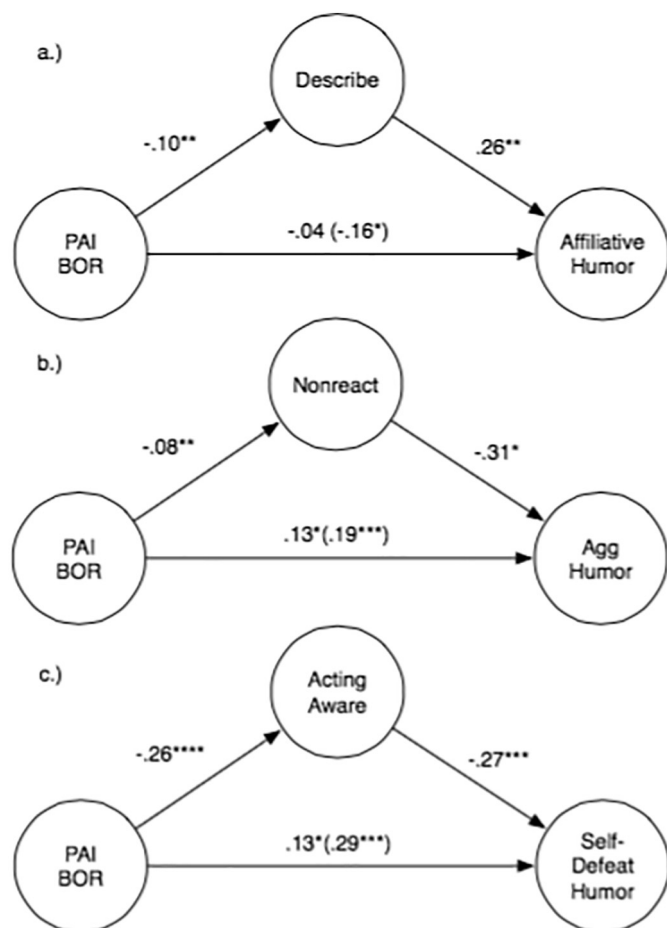


Fig. 1. Significant indirect paths of mindfulness facet scores on the relationship between BPD features and humor styles ($N = 197$).

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; PAI BOR = Personality Assessment Inventory Borderline Features Subscale; Describe = FFMQ Describe subscale; Nonreact = FFMQ Nonreactivity subscale; Acting Aware = FFMQ Acting with Awareness subscale; Agg humor = Aggressive humor styles.

Our second aim was to determine if the relationships between BPD features and each humor style could be at least partially explained by mindfulness facets. We found that the relationship between BPD features and aggressive humor style was mediated by *nonreactivity*, with individuals with higher BPD features engaging in more aggressive humor style partially due to having lower levels of *nonreactivity*. Given the impulsive and reactionary nature of aggression, particularly among those with higher BPD features (e.g., Herr, Jones, Cohn, & Weber, 2015), it is understandable that higher levels of *nonreactivity* may be helpful in reducing aggressive humor style. In line with these findings, *nonreactivity* has been linked to effective anger management (Shorey, Seavey, Quinn, & Cornelius, 2014) and predicts less anger rumination, hostility, and aggression (Eisenlohr-Moul et al., 2016; Peters et al., 2013; Peters et al., 2015).

In contrast, *acting with awareness* explained a significant amount of the relationship between BPD features and self-defeating humor style. Individuals with higher BPD features engage in more self-defeating humor style partially due to having lower levels of *acting with awareness*. Individuals with BPD have difficulty tolerating stressful or uncomfortable situations, thus tending to respond with maladaptive avoidant coping strategies (Neacsiu, Rizvi, Vitaliano, Lynch, & Linehan, 2010). Self-defeating humor may be one such maladaptive coping strategy, as it can function as an automatic response meant to hide negative feelings or avoid problems (Kubie, 1971; Martin et al., 2003). Increasing *acting with awareness* may promote engagement with the

present moment, even when it is uncomfortable or unpleasant, rather than using self-defeating humor to avoid the experience.

When we examined positive humor styles, higher BPD features were related to less affiliative and self-enhancing humor, partially due to low *describe* scores. In order to communicate with others (or in the case of humor, tell a joke), one must be able to effectively describe one's thoughts to others. Therapeutic skills training for interpersonal difficulties teach individuals to effectively describe scenarios with words (Linehan, 1993).

Is humor facilitated by mindfulness skills, as suggested by previous work (Carson & Langer, 2006)? While the present study is cross-sectional and cannot be used to test causal models, findings suggest that links between humor and mindfulness may depend on the style of humor and the specific component of mindfulness in question. In line with prior theory, lower levels of *describe* scores helped explain the relationship between BPD features and lower levels of affiliative and self-enhancing humor, suggesting deficits in the ability to label experiences may contribute to lower levels of adaptive humor use. However, lower levels of mindfulness skills partially accounted for the link between BPD features and *higher* levels of aggressive and self-defeating humor styles, suggesting deficits in mindfulness skills may be linked to increased use of maladaptive humor style.

These findings have potential relevance for clinical settings. Given previous work linking negative humor styles in individuals with elevated BPD features to negative outcomes such as suicidal ideation (Meyer et al., 2017), using alternative humor styles may lead to changes in distress and wellbeing. The present study's findings suggest that different facets of mindfulness skills may be useful for increasing positive and decreasing negative humor styles. Practicing *describe* skills may enhance positive humor styles, while increasing *acting with awareness* and *nonreactivity* may decrease negative humor styles.

Several limitations of the present study should be noted. Although higher BPD features were well represented, the study relied on a student sample. To better understand the relationships among BPD features, mindfulness skills, and humor styles, future studies should utilize a community or clinical sample. In addition, the present study relied heavily on self-report measures. In the present study, the observing subscale failed to demonstrate expected associations with other variables of interest. This is consistent with previous research using the FFMQ, suggesting it may not be a valid facet in undergraduate students (e.g., Baer et al., 2008; Barnhofer, Duggan, & Griffith, 2011; Peters et al., 2015). Avenues for future research could include performance-based laboratory tasks to assess mindfulness skills and perhaps other-report or task-based measures of humor. Another limitation is the cross-sectional design. As a result, causal relationships between the constructs studied could not be firmly established in the present study, and future work should examine how these relationships evolve over time and in response to interventions. Despite these limitations, the present findings suggest that the mindfulness skills deficits characteristic of BPD may contribute to the maladaptive humor styles associated with BPD features. By identifying the specific mindfulness facets that may contribute the respective humor styles, we may better tailor mindfulness-based interventions to modify humor styles and change patterns of behavior.

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