**ORIGINAL PAPER**

# Mindfulness and Depersonalization: a Nuanced Relationship

Kaitlin K. Levin[1] · Akiva Gornish[1] · Leanne Quigley[1]

## Abstract

**Objectives** Although depersonalization has been described as the antithesis of mindfulness, few studies have empirically examined this relationship, and none have considered how it may differ across various facets of mindfulness, either alone or in interaction. The present study examined the relationship between symptoms of depersonalization and facets of dispositional mindfulness in a general population sample.

**Methods** A total of 296 adult participants (139 male, 155 female, 2 other) were recruited online via Qualtrics and completed the Cambridge Depersonalisation Scale; Depression, Anxiety, and Stress Scale; and Five Facet Mindfulness Questionnaire.

**Results** Controlling for general distress, depersonalization symptoms were positively associated with Observe, Describe, and Nonreactivity facets and negatively associated with Acting with Awareness and Nonjudgment facets. After controlling for intercorrelations among the facets, depersonalization symptoms remained significantly associated with higher Nonreactivity and lower Acting with Awareness. The overall positive relationship between depersonalization symptoms and the Observe facet was moderated by both Nonjudgment and Nonreactivity. Specifically, higher Observing was related to increased depersonalization symptoms at low levels of Nonjudgment and to decreased symptoms at low levels of Nonreactivity.

**Conclusions** The current study provides novel insight into the relationship between depersonalization symptoms and various aspects of mindfulness. Experiences of depersonalization demonstrated divergent relationships with mindfulness facets, alone and in interaction. The results may inform theoretical models of depersonalization and mindfulness-based interventions for depersonalization.

**Keywords** Mindfulness · Depersonalization · Dissociation · Five Facet Mindfulness Questionnaire · Dissociative disorders

Depersonalization is a dissociative disorder characterized by the feeling of being detached from oneself, that one is not real, or of observing oneself from the outside (American Psychiatric Association, 2013). Depersonalization is often accompanied by derealization, which is the feeling that the external environment is strange or unreal. When such experiences are persistent or recurrent and are associated with significant distress or functional impairment, an individual may be diagnosed with depersonalization/derealization disorder (DPD). Individuals suffering from DPD symptoms often struggle to describe the feeling but compare it to living in a dream or viewing the world through a pane of glass (de Oliveira & de Oliveira, 2013; Hunter et al., 2017).

Clinically significant DPD occurs in about 1–2% of the population (Hunter et al., 2004). However, experiences of depersonalization exist along a continuum from mild to clinically significant and appear to be quite common in the general population as evidenced by a lifetime prevalence rate of 26–74% (Hunter et al., 2004). Although the exact cause of DPD is not well understood, experiences of depersonalization are associated with stress, fatigue, trauma, substance use, and medical diseases, and are often comorbid with anxiety disorders, depression, and/or PTSD (American Psychiatric Association, 2013; Sierra, 2009). The cognitive-behavioral conceptualization of DPD implicates catastrophic appraisals of transient experiences of depersonalization (e.g., "I am going mad," "I have caused permanent damage to my brain") in the escalation and maintenance of symptoms (Hunter et al., 2003).

Some researchers have suggested that the detached state characteristic of depersonalization represents the antithesis of mindfulness (Michal et al., 2007, 2013). Although several

✉ Leanne Quigley
  leanne.quigley@yu.edu

[1] Ferkauf Graduate School of Psychology, Yeshiva University, 1165 Morris Park Avenue, Bronx, NY 10461, USA

definitions of mindfulness exist (Chiesa, 2013), the most common may be that put forth by Jon Kabat-Zinn (1994), the founder of Mindfulness Based Stress Reduction (MBSR), who described mindfulness as "paying attention in a particular way: on purpose in the present moment, nonjudgmentally" (p. 4). This definition highlights the theoretical contrast between mindfulness and depersonalization. Whereas mindfulness is characterized by purposeful engagement with the present moment and nonjudgment, depersonalization is associated with feelings of being an "automaton" detached from one's self and the present moment (Simeon & Abugel, 2006) and with evaluation of one's internal experiences as dangerous or threatening (Hunter et al., 2003).

A few studies have observed a negative correlation between mindfulness and symptoms of depersonalization in nonclinical individuals (Michal et al., 2007), patients with clinically diagnosed DPD (Nestler et al., 2015), patients with auditory hallucinations (Escudero-Pérez et al., 2016), and individuals prone to hallucinations (Perona-Garcelán et al., 2014). These findings have been taken to suggest that individuals who suffer from depersonalization exhibit deficits in dispositional mindfulness. Although conceptually plausible, this conclusion is complicated by the fact that correlations between mindfulness and depersonalization reported in the literature tend to be secondary findings as opposed to tests of primary study hypotheses and thus often do not control for factors that may influence both mindfulness and experiences of depersonalization, such as general distress. Given that anxiety and depression frequently co-occur with depersonalization (American Psychiatric Association, 2013; Michal et al., 2011; Schlax et al., 2020), failing to control for the shared variance with these symptoms complicates conclusions about the relationship between depersonalization and mindfulness.

Furthermore, results may vary depending on which mindfulness measure is used and, relatedly, whether mindfulness is conceptualized as a single- or multi-facet construct. For instance, the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) measures mindfulness as a single factor, whereas the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006) measures five distinct facets of mindfulness: (1) Acting with Awareness; (2) Describe (i.e., the ability to describe one's experiences); (3) Observe (i.e., observation of internal sensations and external stimuli); (4) Nonreactivity (i.e., nonreactivity to internal sensations and external stimuli); and (5) Nonjudgment (i.e., adoption of a nonjudgmental stance towards one's experiences). To date, all research on depersonalization and mindfulness has used unidimensional measures and we are aware of no study examining the relationship between distinct facets of dispositional mindfulness and depersonalization. This is a significant gap in the literature considering research on other disorders suggests that psychopathology is not uniformly

characterized by lower scores on all mindfulness facets, but rather the "profile" of mindfulness varies by diagnosis (Didonna et al., 2019).

Although no research on depersonalization specifically exists, a few studies have revealed unique relationships between mindfulness facets and dissociation more broadly. These studies have typically used the 28-item Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986), which measures various dissociative symptoms, including five or six items that appear to reflect depersonalization symptoms (Simeon et al., 1998). The Acting with Awareness, Describe, and Nonjudgment facets of the FFMQ demonstrate consistent negative correlations with dissociation (Baer et al., 2006; Boughner et al., 2016; de Bruin et al., 2012; Didonna et al., 2019). Relatedly, research suggests that attentional control and emotional acceptance, which seem conceptually related to Acting with Awareness and Nonjudgment, respectively, account for the overall negative relationship between mindfulness and dissociation among healthy individuals (Vancappel et al., 2021). Nonreactivity also tends to be negatively correlated with dissociation (Baer et al., 2006; Didonna et al., 2019), though the strength of this relationship has varied across studies and samples (e.g., Boughner et al., 2016; de Bruin et al., 2012). In contrast, several studies have demonstrated a significant positive correlation between dissociation and the Observe facet (Baer et al., 2006; Didonna et al., 2019). Even when the correlation is not significant, it is often in the positive direction (e.g., Boughner et al., 2016). Although dissociation is a broader construct encompassing not only depersonalization but also other forms of detachment and disintegration of consciousness, memory, identity, and/or perception (American Psychiatric Association, 2013), these findings raise the question of whether depersonalization symptoms might also show differential relationships with distinct aspects of mindfulness.

In addition to prior empirical findings of a positive relationship between dissociation and the Observe facet, there are theoretical reasons to posit that depersonalization specifically may be associated with heightened levels of Observing. Clinical reports indicate that patients with DPD experience a stark splitting of consciousness into the "observing" self and the "experiencing/acting" self (Simeon & Abugel, 2006). The result is a heightened and aversive sense of self-observation that detracts from their ability to simply experience reality. Patients often demonstrate a hyperawareness of this split and may obsessively compare their current divided sense of being to their formerly integrated state (Simeon & Abugel, 2006). Ciaunica et al. (2021) draw on the related concept of hyper-reflexivity (Fuchs, 2005) and propose that for those with DPD, self-objectification and scrutiny of internal experiences elicit feelings of being "trapped" in the mind while detached from the body and external world. Likewise, the cognitive-behavioral model implicates hyperawareness and monitoring

of symptoms in the maintenance of DPD (Hunter et al., 2003). Taken together, these clinical accounts and theories of DPD suggest that a positive association may exist between symptoms of depersonalization and the Observe facet.

Furthermore, it has been suggested that the combination of heightened levels of observing with judgment of and reactivity to one's experiences may reflect a maladaptive self-focus and be particularly detrimental to mental health (Baer et al., 2008; Desrosiers et al., 2013, 2014). In other words, *how* one attends to present experiences may be key to understanding the relationship between the Observe facet and psychological outcomes. In line with this proposition, Eisenlohr-Moul et al. (2012) examined whether Nonjudgment and Nonreactivity moderated the relationship between the Observe facet and substance use among university students. Results indicated that greater Observing was associated with reduced frequency of substance use only at higher levels of Nonreactivity. Nonjudgment was not identified as a significant moderator. These findings support the notion that heightened observation alone is not necessarily adaptive, but that observation of one's experiences combined with nonreactivity to those experiences may be protective for mental health. More broadly, this research highlights the importance of examining the effects of mindfulness facets on psychological outcomes both alone and in combination.

The purpose of the present study was to examine the relationships between symptoms of depersonalization and aspects of dispositional mindfulness, controlling for the potential confound of general distress. We hypothesized that consistent with prior research on dissociation and with conceptualizations of the clinical features of depersonalization, the Acting with Awareness, Describe, Nonreactivity, and Nonjudgment facets would be negatively correlated with experiences of depersonalization whereas the Observe facet would be positively correlated with those experiences. Based on the proposition that a hyperfocus on internal experiences coupled with catastrophic appraisals contributes to the maintenance of depersonalization symptoms (Hunter et al., 2003), we also hypothesized that the tendency to be nonreactive to, and nonjudgmental of, one's experiences would moderate the relationship between observation of present experiences and depersonalization symptoms. Specifically, we hypothesized that there would be a stronger positive relationship between the Observe facet and depersonalization symptoms at lower levels of Nonreactivity and Nonjudgment.

## Method

### Participants

Adult participants residing in the USA were recruited via Qualtrics online sampling and completed the surveys in November and December 2020. Qualtrics has internal procedures for ensuring data quality and validation, including removing respondents who finish in less than half the median survey completion time and manually removing respondents who flatline (select the same value across all items) or provide pattern responses. A total of 321 participants completed the surveys and provided complete and eligible data based on the Qualtrics data quality and validation criteria. As an additional validation check, we examined discrepancies between positively and negatively worded items on the Five Facet Mindfulness Questionnaire (FFMQ). Participants who had high discrepancy between positively and negatively worded items across the FFMQ (more than two standard deviations away from the mean) were removed from the dataset ($n = 34$), as high discrepancy reflects inattention to item content and/or inconsistent responding. The final dataset thus consisted of 296 participants.

Participants ranged in age from 18 to 79 years old ($M = 39.71$, $SD = 13.02$). There were 139 biologically male (47.0%) and 155 (52.4%) biologically female participants. Two participants (0.7%) reported that their biological sex was "other" than male or female. Regarding gender, 148 (50.0%) participants identified as male and 148 (50.0%) identified as female. Most participants were married or living with someone as if married (65.5%), followed by never married (21.3%), and divorced, annulled, or separated (13.2%). Most participants reported that their ethnicity was White (75.0%), with smaller proportions reporting Black/African American (14.5%), Hispanic (5.1%), and other ethnic origins (5.4%). Regarding education level, 26.6% of participants completed high school or less, 23.6% completed some college or had a trade or associate's degree, 21.6% completed a bachelor's degree, and 28.0% completed a graduate degree. The majority of participants reported a religious affiliation, including Catholic (31.8%), Protestant (22.6%), and other religions (29.8%). The remaining participants reported Atheist or Agnostic/non-religious (15.8%) affiliation. The sample was fairly representative of the US adult population on the examined demographic variables, although individuals who were married, more highly educated, or religiously affiliated were somewhat overrepresented in our sample and individuals who identified as Hispanic, never married, or non-religious were underrepresented (Pew Research Center, 2015; U.S. Census Bureau, 2018, 2021).

### Procedure

After providing informed consent, participants completed a set of questionnaires in randomized order via Qualtrics, including the questionnaires described below, as well as additional questionnaires assessing cognitive and emotional variables unrelated to the current hypotheses. Participants received compensation through Qualtrics.

## Measures

Depersonalization symptoms were measured using the Cambridge Depersonalisation Scale (CDS; Sierra & Berrios, 2000). The CDS is a 29-item self-report questionnaire assessing the frequency and duration of depersonalization symptoms over the last 6 months. The frequency of symptoms is rated on a 5-point Likert scale from 0 (*never*) to 4 (*all the time*) and, for symptoms endorsed with a frequency rating greater than 0, the duration is rated from 1 (*few seconds*) to 6 (*more than a week*). The frequency and duration scores are summed together, and thus, the score for each item can range from 0 to 10. Items are summed together to create a total CDS score, where higher scores indicate more severe depersonalization symptoms. The CDS is the most widely used measure of depersonalization, demonstrates good reliability and validity, and shows superior ability to discriminate depersonalization symptoms compared to broader measures of dissociation like the DES (Sierra & Berrios, 2000). There was high internal consistency of the CDS total score in the current sample (Cronbach's $\alpha = 0.99$, McDonald's $\omega = 0.99$).

General distress was measured using the 21-item Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 is a widely used set of three self-report scales comprised of seven items each that assess the emotional states of depression, anxiety, and stress, which can be summed together to form a measure of general distress. Items are rated on a 4-point Likert scale, where higher scores indicate greater distress. Factor analyses support a hierarchical factor structure, in which the three subscales contain specific variance but also index a substantial common factor of general psychological distress, indicating that the use of the total score is appropriate (Henry & Crawford, 2005). There was high internal consistency of the DASS-21 total score in the current sample (Cronbach's $\alpha = 0.97$, McDonald's $\omega = 0.97$).

Mindfulness was measured using the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). The FFMQ is a 39-item self-report questionnaire assessing five facets of mindfulness: *Observing* internal and external experiences (8 items); *Describing* internal experiences with words (8 items); *Acting with Awareness* (8 items); *Nonjudgment* of inner experience (8 items); and *Nonreactivity* to inner experience (7 items). Items are rated on a 5-point Likert scale and summed together to create the subscale scores, where higher scores indicate greater levels of each mindfulness facet. Internal consistency estimates in the current sample were Cronbach's $\alpha = 0.83$ and McDonald's $\omega = 0.83$ for the Observing subscale, Cronbach's $\alpha = 0.61$ and McDonald's $\omega = 0.62$ for the Describing subscale, Cronbach's $\alpha = 0.88$ and McDonald's $\omega = 0.88$ for the Acting with Awareness subscale, Cronbach's $\alpha = 0.88$ and McDonald's $\omega = 0.88$ for the Nonjudgment subscale, and Cronbach's $\alpha = 0.82$ and McDonald's $\omega = 0.82$ for the Nonreactivity subscale.

A demographic questionnaire was used to collect information on age, sex, gender, marital status, ethnicity, level of education, and religion, for the purpose of sample description.

## Data Analyses

The study hypotheses were tested using multiple regression models in SPSS v28. To evaluate the unique relationship between each mindfulness facet and depersonalization symptoms, controlling for general distress, each mindfulness facet was regressed on general distress (DASS-21 total score) and depersonalization symptoms (CDS total score), in separate models. Next, to evaluate the relationship between each mindfulness facet and depersonalization symptoms, controlling for both general distress and the facet intercorrelations, depersonalization symptoms were regressed on general distress and each mindfulness facet simultaneously. To evaluate the hypotheses that Nonjudgment and Nonreactivity would moderate the relationship between Observing and depersonalization symptoms, moderation analyses were conducted using the PROCESS macro for SPSS (Hayes, 2017). In separate regression models, depersonalization symptoms were regressed on general distress, the Observe facet score, the Nonjudgment/Nonreactivity facet score, and the interaction between Observe and Nonjudgment/Nonreactivity facet scores. Significant interactions were probed using simple effects analyses to evaluate the relationship between the Observe facet and depersonalization symptoms at low (16th percentile) and high (84th percentile) levels of Nonjudgment/Nonreactivity (Hayes, 2017). All predictor variables were centered in the regression models. Bootstrapping with 5000 samples was used to compute 95% confidence intervals.

A post hoc power analysis was conducted in G*Power v3.1 (Faul et al., 2007) to compute the power of the planned statistical hypothesis tests. With a sample size of 296 and alpha level of 0.05, each analysis had > 99% power to detect a medium effect size ($f^2 = 0.15$) and > 96% power to detect a small effect size ($f^2 = 0.05$). Thus, the planned statistical analyses were well-powered.

## Results

### Associations between Mindfulness Facets and Depersonalization Symptoms

The sample means and standard deviations for all study variables as well as bivariate correlations between the variables are presented in Table 1. Controlling for general distress, greater depersonalization symptoms were significantly

**Table 1** Means, standard deviations, and bivariate correlations of study variables

|  | Mean (SD) | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| 1. CDS | 110.21 (80.69) | — | | | | | |
| 2. DASS-21 | 26.88 (17.65) | 0.75*** | — | | | | |
| 3. Observe | 26.53 (6.51) | 0.41*** | 0.41*** | — | | | |
| 4. Describe | 25.31 (5.12) | −0.06 | −0.19** | 0.37*** | — | | |
| 5. Acting with Awareness | 24.04 (7.62) | −0.65*** | −0.70*** | −0.46*** | 0.25*** | — | |
| 6. Nonjudge | 23.45 (7.68) | −0.63*** | −0.69*** | −0.53** | 0.16*** | 0.76*** | — |
| 7. Nonreactivity | 22.03 (5.92) | 0.48*** | 0.37*** | 0.66*** | 0.37*** | −0.46*** | −0.54* |

*Note. SD*, standard deviation; *DASS-21*, 21-item Depression, Anxiety, Stress Scale; *CDS*, Cambridge Depersonalisation Scale.

\*\*\**p* < 0.001, \*\**p* < 0.01, \**p* < 0.05.

**Table 2** Associations between mindfulness facets and depersonalization symptoms, controlling for general distress

|  | b | β | SE | Sig | 95% C.I. b |
|---|---|---|---|---|---|
| **Observe** | | | | | |
| DASS-21 | 0.089 | 0.240 | 0.029 | 0.003 | 0.031, 0.146 |
| CDS | 0.018 | 0.229 | 0.006 | 0.004 | 0.006, 0.031 |
| **Describe** | | | | | |
| DASS-21 | −0.097 | −0.334 | 0.025 | <0.001 | −0.146, −0.048 |
| CDS | 0.012 | 0.194 | 0.005 | 0.024 | 0.002, 0.023 |
| **Acting with Awareness** | | | | | |
| DASS-21 | −0.208 | −0.482 | 0.026 | <0.001 | −0.260, −0.156 |
| CDS | −0.027 | −0.288 | 0.006 | <0.001 | −0.038, −0.016 |
| **Nonjudgment** | | | | | |
| DASS-21 | −0.214 | −0.493 | 0.027 | <0.001 | −0.268, −0.161 |
| CDS | −0.025 | −0.260 | 0.006 | <0.001 | −0.036, −0.013 |
| **Nonreactivity** | | | | | |
| DASS-21 | 0.014 | 0.042 | 0.026 | 0.589 | −0.037, 0.065 |
| CDS | 0.033 | 0.444 | 0.006 | <0.001 | 0.021, 0.044 |

*Note. DASS-21*, 21-item Depression, Anxiety, Stress Scale; *CDS*, Cambridge Depersonalisation Scale

associated with higher levels of Observing, Describing, and Nonreactivity, and lower levels of Acting with Awareness and Nonjudgment (Table 2).

Controlling for general distress and intercorrelations among the mindfulness facets, greater depersonalization symptoms remained significantly associated with higher levels of Nonreactivity and lower levels of Acting with Awareness (Table 3). The unique associations between depersonalization symptoms and the Observing, Describing, and Nonjudgment facets were non-significant when controlling for the intercorrelations among the mindfulness facets in addition to general distress.

## Moderation of the Relationship between the Observe Facet and Depersonalization Symptoms by the Nonjudgment and Nonreactivity Facets

There was a significant interaction between Observe and Nonjudgment scores in predicting depersonalizing symptoms, controlling for general distress (Table 4). As depicted in Fig. 1, higher Observing was significantly related to greater depersonalization symptoms at low levels of Nonjudgment (*b* = 2.09, *SE* = 0.74, *t* = 2.82, *p* = 0.005, 95% CI

**Table 3** Unique associations between mindfulness facets and depersonalization symptoms, controlling for general distress

| Predictor variable | b | β | SE | Sig | 95% C.I. b |
|---|---|---|---|---|---|
| DASS-21 | 2.253 | 0.556 | 0.246 | <0.001 | 2.059, 3.026 |
| Observe | −0.994 | −0.080 | 0.678 | 0.144 | −2.327, 0.340 |
| Describe | 1.141 | 0.072 | 0.786 | 0.148 | −0.407, 2.689 |
| Acting with Awareness | −1.931 | −0.182 | 0.671 | 0.004 | −3.251, −0.612 |
| Nonjudgment | −0.728 | −0.069 | 0.680 | 0.285 | −2.067, 0.611 |
| Nonreactivity | 2.338 | 0.171 | 0.750 | 0.002 | 0.861, 3.815 |

*Note.* Dependent variable: depersonalization symptoms measured by the Cambridge Depersonalisation Scale. *DASS-21*, 21-item Depression, Anxiety, Stress Scale

Model $R^2$ = 0.62, $F(6,289)$ = 79.63, *p* < 0.001

**Table 4** Regression of depersonalization on general distress, Observing, Nonjudgment, and interaction of Observing and Nonjudgment

|  | $b$ | $SE$ | $t$ | Sig | 95% C.I. $b$ |
|---|---|---|---|---|---|
| DASS-21 | 2.648 | 0.236 | 11.207 | <0.001 | 2.183, 3.113 |
| Observe | 0.859 | 0.545 | 1.577 | 0.116 | −0.213, 1.931 |
| Nonjudgment | −1.755 | 0.585 | −2.999 | 0.003 | −2.907, −0.603 |
| Observe × Nonjudgment | −0.146 | 0.058 | −2.526 | 0.012 | −0.260, −0.032 |

*Note.* Dependent variable: depersonalization symptoms measured by the Cambridge Depersonalisation Scale. *DASS-21*, 21-item Depression, Anxiety, Stress Scale
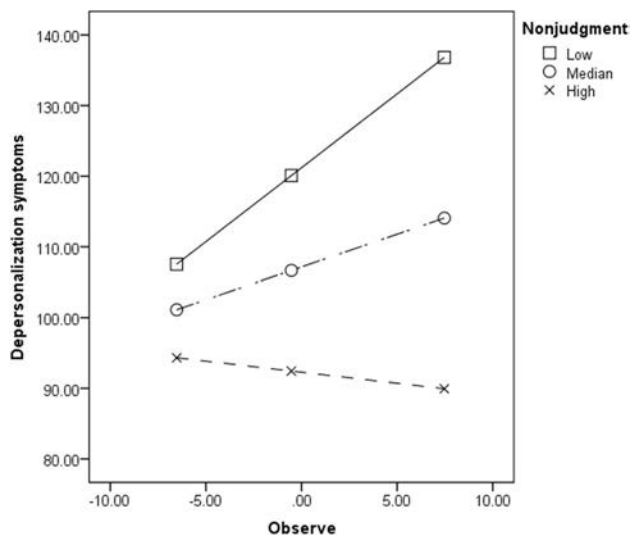


**Fig. 1** Interaction of Observe and Nonjudgment facets in the prediction of depersonalization symptoms, controlling for general distress

[0.63, 3.55]). At high levels of Nonjudgment, there was no significant relationship between Observe scores and depersonalization symptoms ($b = −0.31$, $SE = 0.70$, $t = −0.44$, $p = 0.657$, 95% CI [−1.70, 1.07]).

There was also a significant interaction between Observe and Nonreactivity scores in predicting depersonalization symptoms, controlling for general distress (Table 5). As depicted in Fig. 2, higher Observing was significantly related to lower depersonalization symptoms at low levels of Nonreactivity ($b = −1.59$, $SE = 0.71$, $t = −2.23$, $p = 0.027$, 95% CI [−2.99, −0.18]). At high levels of Nonreactivity, Observe scores were marginally positively related to

depersonalization symptoms ($b = 1.27$, $SE = 0.77$, $t = 1.66$, $p = 0.099$, 95% CI [−0.24, 2.78]).

## Discussion

The present study examined the relationships between symptoms of depersonalization and facets of dispositional mindfulness in a general population sample. The results indicated that higher levels of the Observe, Describe, and Nonreactivity facets were associated with greater depersonalization symptoms when controlling for general distress. In contrast, lower levels of Acting with Awareness and Nonjudgment were associated with greater depersonalization symptoms. When also controlling for the shared variance between mindfulness facets, higher Nonreactivity and lower Acting with Awareness remained significantly associated with depersonalization symptoms. The Observe facet interacted with both Nonjudgment and Nonreactivity in the prediction of depersonalization symptoms. Specifically, there was a positive relationship between Observing and depersonalization symptoms at low levels of Nonjudgment and (marginally) at high levels of Nonreactivity, and a negative relationship between Observing and depersonalization symptoms at low levels of Nonreactivity.

The current findings suggest that the relationship between dispositional mindfulness and experiences of depersonalization is more nuanced than previously thought. A small body of prior research has consistently reported a negative overall correlation between mindfulness and depersonalization symptoms (Michal et al., 2007; Nestler et al., 2015). Based on these findings, researchers have suggested that those who suffer from depersonalization symptoms exhibit

**Table 5** Regression of depersonalization on general distress, Observing, Nonreactivity, and interaction of Observing and Nonreactivity

|  | $b$ | $SE$ | $t$ | Sig | 95% C.I. $b$ |
|---|---|---|---|---|---|
| DASS-21 | 2.951 | 0.186 | 15.898 | <0.001 | 2.586, 3.316 |
| Observe | −0.148 | 0.615 | −0.241 | 0.810 | −1.358, 1.062 |
| Nonreactivity | 2.912 | 0.069 | 3.461 | <0.001 | 1.588, 4.236 |
| Observe × Nonreactivity | 0.238 | 0.069 | 3.461 | 0.001 | 0.103, 0.374 |

*Note.* Dependent variable: depersonalization symptoms measured by the Cambridge Depersonalisation Scale. *DASS-21*, 21-item Depression, Anxiety, Stress Scale
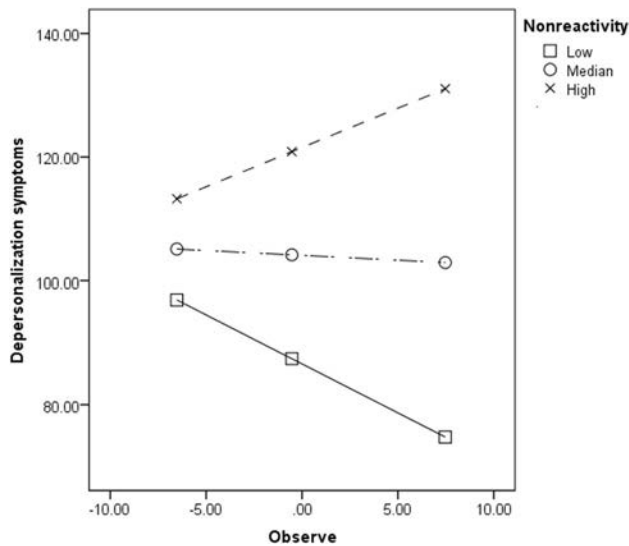
**Fig. 2** Interaction of Observe and Nonreactivity facets in the prediction of depersonalization symptoms, controlling for general distress

deficits in mindfulness and have described depersonalization as the antithesis of a mindful state of being (Michal et al., 2007, 2013). However, previous research has relied on a unidimensional conceptualization and measurement of mindfulness, and has not controlled for general distress, which may confound relationships between mindfulness and depersonalization symptoms. The present study thus advances the literature by examining the unique relationships between experiences of depersonalization and distinct facets of dispositional mindfulness.

The negative correlations observed in the current study between both Acting with Awareness and Nonjudgment and symptoms of depersonalization support our hypotheses and replicate existing findings in the literature on dissociation more broadly (Baer et al., 2006; Boughner et al., 2016; de Bruin et al., 2012; Didonna et al., 2019). The results suggest that experiences of depersonalization are associated with a diminished sense of present-moment awareness and a critical evaluation of one's internal experiences. Although observed in a general population sample, these findings are consistent with clinical descriptions of DPD as feeling like one is an "automaton" or moving through life on "auto-pilot" (Sierra, 2009; Simeon & Abugel, 2006) and with catastrophic appraisal of symptoms as a key mechanism of the cognitive-behavioral model of DPD (Hunter et al., 2003).

The significant positive relationship between the Describe facet and depersonalization symptoms in the current study was unexpected and differs from prior studies that have linked dissociation to lower levels of Describing (Baer et al., 2006; Boughner et al., 2016; de Bruin et al., 2012; Didonna et al., 2019). This discrepancy may reflect differences in the experiences of dissociation and depersonalization. As

noted, the construct of dissociation encompasses disruption to the integration of a broad range of cognitive functions, including perception and memory. Thus, an individual suffering from dissociation may be impaired in their ability to perceive and remember experiences in an integrated manner, thereby diminishing their ability to describe those experiences (Huntjens et al., 2013). In contrast, although depersonalization is characterized by a sense of detachment from oneself, there is a paradoxical hyperawareness of the self and hypervigilance for internal experiences (Horn et al., 2020; Hunter et al., 2003). This hyperawareness of the self among individuals with symptoms of depersonalization may actually increase their ability to describe internal experiences.

The significant positive correlation between Nonreactivity and symptoms of depersonalization was also discrepant with the study hypotheses and previous findings with dissociation (Baer et al., 2006; Boughner et al., 2016; de Bruin et al., 2012). The literature on mindfulness typically characterizes nonreactivity as a positive attribute that promotes psychological health. Nonreactivity is viewed as a calm state of intentional detachment which along with nonjudgment defines the desired quality of mindful attention or the "how" of mindfulness (Kabat-Zinn, 1990). However, there is evidence that emotional nonreactivity may be symptomatic and distressing in the context of depersonalization. Many patients with DPD complain of emotional numbing and are quite bothered by their perceived lack of emotional response to the world around them (Medford, 2012). In fact, some researchers have hypothesized that experiences of depersonalization result from a heighted state of awareness coupled with reduced emotional reactivity, and both neurological and psychophysiological studies lend support to this suggestion (Horn et al., 2020; Lawrence et al., 2007; Sierra & David, 2011; Sierra et al., 2002). A recent meta-analysis of studies on electrodermal activity concluded that patients with DPD exhibit high levels of sympathetic arousal (reflecting hypervigilance) but reduced skin conductance (reflecting attenuated emotional response) in response to unpleasant stimuli (Horn et al., 2020). Likewise, emotional numbing and suppression of neural activity in regions associated with emotional responding to threat are implicated in etiological models of dissociative disorders more broadly (Frewen & Lanius, 2014; Lanius et al., 2018). The Nonreactivity facet of the FFMQ may thus partially capture this involuntary emotional numbing among individuals who suffer from depersonalization symptoms.

The overall positive correlation between the Observe facet and experiences of depersonalization was consistent with our hypotheses based on previous findings in dissociation (Baer et al.,; 2006; Didonna et al., 2019), and theoretical models and clinical reports of heightened self-observation and awareness of internal experiences in DPD (Ciaunica et al., 2021; Hunter et al., 2003; Simeon & Abugel, 2006).

However, this relationship was moderated by levels of Nonjudgment and Nonreactivity. As hypothesized, higher Observing was related to greater depersonalization symptoms at low levels of Nonjudgment but the relationship was non-significant at high levels of Nonjudgment. This finding is consistent with the notion that greater observing in the absence of nonjudgment may reflect a maladaptive self-focus (Baer et al., 2008), and supports the role of scrutiny of internal experiences (i.e., heightened awareness combined with negative evaluation) in maintaining depersonalization symptoms (Ciaunica et al., 2021; Hunter et al., 2003).

The nature of the interaction between Observing and Nonreactivity was opposite to that expected; higher Observing was marginally related to greater depersonalization symptoms at *high* levels of Nonreactivity. At low levels of Nonreactivity, higher Observing was significantly related to fewer depersonalization symptoms. As previously noted, scores on the Nonreactivity facet may reflect emotional numbing in the context of depersonalization (Medford, 2012; Sierra et al., 2005). Thus, although high levels of observing and nonreactivity may be protective for some mental health outcomes (e.g., Eisenlohr-Moul et al., 2012), the combination of heightened self-observation and emotional nonreactivity may be characteristic of depersonalization experiences (Horn et al., 2020; Lawrence et al., 2007; Sierra & David, 2011; Sierra et al., 2002). Given that this is the first study to examine relationships between depersonalization symptoms and specific facets of mindfulness, either alone or in interaction, replication is needed to support this interpretation.

The study findings may have implications for mindfulness-based interventions for depersonalization symptoms. Mindfulness-based treatments are increasingly popular and have been suggested for the treatment of a broad range of psychological disorders, including DPD (Neziroglu & Donnelly, 2010) and dissociative disorders more broadly (Vancappel et al., 2021; Zerubavel & Messman-Moore, 2015). However, little is known about for whom mindfulness-based interventions might be most helpful and under what circumstances (Dobkin et al., 2012). Given the nuanced relationship we found between depersonalization symptoms and mindfulness facets, a similarly nuanced approach to treatment may be warranted. It may be beneficial to promote acting with awareness and nonjudgment of experience, but promoting observation and nonreactivity, particularly if patients appraise experiences of heightened self-awareness and emotional nonreactivity as threatening, could feel invalidating and may even inadvertently exacerbate symptoms. Rather, it may be important to emphasize nonjudgmental observation of experience and inform patients that heightened self-awareness in the absence of nonjudgment can be maladaptive. Likewise, rather than broadly promoting nonreactivity, it may be more helpful to patients with emotional numbing to reframe maladaptive appraisals and reduce distress regarding their existing emotional nonreactivity. These suggestions are speculative at this point but may inform future studies on the effects of mindfulness-based interventions for depersonalization symptoms. Future research is also needed to evaluate the causal relationships between mindfulness processes and depersonalization symptoms, as the assumption that modifying mindfulness facets will lead to corresponding changes in depersonalization and related distress remains to be empirically tested.

## Limitations and Future Directions

The study is limited by the use of a general population sample as opposed to a clinical sample diagnosed with DPD. However, symptoms of DPD exist along a continuum and transient symptoms are quite common in the general population (Hunter et al., 2004). The cognitive-behavioral model posits that DPD may be caused and maintained by catastrophic appraisals of normative or transient depersonalization symptoms (Hunter et al., 2003), suggesting that it is important to understand the nature and experience of depersonalization symptoms along the continuum. Nonetheless, future research with clinical samples diagnosed with DPD is an important next step to determine the generalizability of the current findings.

In addition, we did not obtain information about the prevalence of DPD and other psychiatric disorders in the sample given the study's online survey format. However, the CDS and DASS-21 scores in the current sample were higher than in other general population samples (e.g., Crawford et al., 2011; Henry & Crawford, 2005; Thomson & Jaque, 2018). These scores may reflect heightened psychological distress related to the COVID-19 pandemic, as the data were collected in November and December 2020 (Xiong et al., 2020). It is unknown how increased psychological distress and other factors related to COVID-19 might affect the relationships observed in the current study, further underscoring the need for additional research as these contextual factors shift.

We used Qualtrics, an online recruitment platform, to collect the current data. While a discussion of the advantages and disadvantages of such platforms is beyond the scope of our paper (see Aguinis et al., 2021 for a review), we note that measures were taken by both Qualtrics and our research team to counteract threats to data quality. Moreover, studies support the representativeness and quality of data collected through Qualtrics over other online platforms (Boas et al., 2020; Heen et al., 2014; Ibarra et al., 2018). Although there is good reason to be confident in the data quality, it would be valuable to corroborate the current findings with data collected using other methods.

Furthermore, all data were collected using self-report measures and as such, may be subject to common method

bias. Research has demonstrated that when different constructs are assessed in the same way (e.g., self-report), spurious correlations may arise due to participants' response style and/or priming effects (Podsakoff et al., 2012). Correlations observed may therefore partially reflect similarities among the instruments rather than the underlying constructs. Consequently, future research on the relationship between symptoms of depersonalization and dispositional mindfulness may benefit from a multimethod approach.

The internal consistency of the Describe subscale was low relative to the other FFMQ subscales and previous research (e.g., Baer et al., 2006). Thus, not all the subscale items were equally good indicators of the Describe construct in the current sample. Although there was a significant association between the Describe facet and depersonalization symptoms, the observed association may underestimate the true relationship due to the lower reliability of this subscale.

Finally, we did not assess respondents' experience with meditation. Prior studies suggest that aspects of mindfulness are experienced differently by long-term meditators compared to nonmeditators (Baer et al., 2008; de Bruin et al., 2012), which could produce differential relationships with depersonalization symptoms. Indeed, some researchers have noted the similarity between heightened observation and detachment from the self as experienced in DPD and meditative states (Ciaunica et al., 2021), suggesting that psychological phenomena that resemble DPD symptoms can be experienced differently when intentionally elicited via meditation. Exploration of how different forms of meditation (e.g., transcendental, focused, mindful) affect aspects of mindfulness, depersonalization, and their association would be an interesting avenue for future research and help to inform mindfulness-based interventions for DPD that involve meditation.

Future research may also investigate whether various facets of mindfulness mediate the relationship between transient experiences of depersonalization and the development of chronic DPD. Studies on mindfulness facets as mechanisms in the etiology of DPD may also contribute to the development and/or refinement of psychological treatments for DPD that promote certain mindful qualities (e.g., nonjudgment) while modulating or reframing negative appraisals of others (e.g., nonreactivity and observing).

**Supplementary Information** The online version contains supplementary material available at https://doi.org/10.1007/s12671-022-01890-y.

## Declarations

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