

Mindfulness and Body Awareness in Depersonalization Disorder

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Abstract Anomalous bodily experiences and automaton-like feelings constitute some of the core symptoms of depersonalization disorder (DP), features which may be considered antithetical to mindfulness. We thus investigated traits in a random sample of 22 stable patients with DP using the 14-item Freiburg Mindfulness Inventory (FMI) and predicted an overall negative correlation to their symptomatology as measured by the Cambridge Depersonalization Scale (CDS). We also conducted a regression analysis in order to elucidate the contribution of depression and anxiety measures on the above-mentioned correlation. Overall, the FMI and CDS were strongly negatively correlated (Pearson's $r = -.64$, $p < .001$) as predicted, driven particularly by FMI items 1–4 and 7. The correlation withstood adjustment for depression and anxiety symptoms using regression analysis ($R^2_{\text{adj}} = 33\%$; $F(1, 19) = 10.83$, $p < .005$). In sum, our results suggest a possible impairment of mindfulness abilities in DP. Future research should explore the links between DP and psychopathology and seek to devise therapeutic interventions for DP based on mindfulness.

Keywords Depersonalisation disorder · Body awareness · Cambridge depersonalization scale · Freiburg mindfulness inventory · Depression · Anxiety

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Introduction

Clinically significant depersonalization occurs in around 1–2 % of the general adult population (Hunter et al. 2004). Besides emotional numbing, changes in the subjective experience of imagery, and alienation from surroundings, anomalous body experiences (or disembodiment) and automaton-like feelings (or feelings of a loss of agency) make up the core symptoms of this syndrome (Sierra et al. 2005; Simeon et al. 2008). It has been said that the antithesis of depersonalization is mindfulness, i.e. non-judgmental attention to present moment experiences (Michal et al. 2013). Indeed, psychometric measures of the two phenomena have been shown to correlate inversely (Michal et al. 2007). This seems to follow from the fact that mindfulness is said to promote tolerance of negative affect and at the same time, enhances bodily awareness (Farb et al. 2012). Furthermore, it has been claimed that mindfulness interventions may be helpful in reducing DP symptoms (Allen 2004; David et al. 2007; Michal 2014). Recently, Michal et al. (2013) demonstrated that mindful breathing increased low baseline autonomic responsiveness (a feature of depersonalization disorder (DP)) and reduced depersonalization symptom scores as measured by the Cambridge Depersonalisation Scale (CDS).

Given the above-mentioned difficulties that people with depersonalization disorder experience with mindfulness and body perception, we predicted negative correlations between the Freiburg Mindfulness Inventory (FMI) and the CDS as well as the Dissociative Experiences Scale (DES) (Dubester and Braun 1995). We also explored correlations between the FMI and two well-established measures of non-psychotic psychopathology, the Beck Anxiety and Depression inventories (Beck et al. 1988; Beck and Steer 1984). Since depression and anxiety are common comorbidities in patients with DP, we further sought to explore whether the inverse relationship between mindfulness and DP was in any way confounded by such psychopathology.

Method

Participants

All 22 patients were assessed by a qualified psychiatrist as part of the depersonalization unit at the Maudsley Hospital in South London and had a confirmed diagnosis of depersonalization disorder according to the ICD-10. However, three patients scored below the typical cut-off (70 points) on the Cambridge Depersonalisation Scale (Sierra and Berrios 2000) and were therefore excluded from further analyses, unless otherwise specified. Participants' demographics are listed in Table 1.

Procedure

This study sought to investigate in more detail the precise relationship between DP and mindfulness by administering the Freiburg Mindfulness Inventory (Walach et al. 2006) to a random sample of patients with depersonalization disorder.

Measures

Patients are routinely administered the Cambridge Depersonalisation Scale-Trait Version (CDS) (Sierra and Berrios 2000), Beck's Anxiety Inventory (BAI) (Beck et al. 1988), Beck's Depression Inventory (BDI) (Beck and Steer 1984), and Dissociative Experiences Scale (DES) (Dubester and Braun 1995) prior to their first appointment visit. The Freiburg Mindfulness Inventory (FMI) (Walach et al. 2006) was included in their assessment package irrespective of any previously known participant characteristics. Note that a

higher score on the clinical scales indicates a greater degree of clinical problems.

The FMI, in its short form, is a 14-item scale which has been shown to be useful in measuring the construct of mindfulness (Walach et al. 2006). In its original publication, it was successfully applied in lay, meditating and clinical participants achieving good internal consistency (Cronbach's $\alpha = .86$). It includes items such as 'I am open to the experience of the present moment'; 'I accept unpleasant experiences' and 'I sense my body, whether eating, cooking, cleaning or talking'.

Analyses

Scores were analysed in terms of correlations between above-mentioned survey totals as well as between FMI individual items and the CDS total. Having established a correlation between the FMI and CDS total scores, we also carried out a linear regression, examining the variance accounted for by the BAI and BDI in the correlation between CDS and FMI in order to qualify this relationship further. The study was approved by the local research ethics committee.

Results

Among our participants, women were less predominant. Participants appeared for the most part able to function in terms of education and employment status, but a subgroup (11 participants or ca. 58 %) also exhibited some symptoms of comorbid mood and other disorders (see Table 1). Mean age was 35.9 years (SD 9.4) and mean duration of illness was 12.0 years (SD 11.0).

Questionnaire total scores are listed in Table 2. The average CDS-Trait total score was 167.5 (SD 61.6). The mean scores on the Beck inventories indicated mild anxiety or depression, respectively.

As expected, there was a significant inverse correlation between the FMI and the CDS (trait version) measures (see Table 2). As a rule of thumb, correlations of Pearson's r up to .10 tend to be considered small, up to .30 medium and $>.50$ large. Hence, we could categorise the correlation between the FMI and our measure of depersonalization as strongly negative. Somewhat surprisingly, the correlation between the FMI and the DES, a widely used general measure of dissociation, was not significant, and the same is true for its depersonalization/derealisation subscale.

Examining the relationship between the individual items of the FMI and the CDS-T, only item 4 ('I am able to appreciate myself') of the FMI was significantly correlated with the CDS total score (Pearson's $r = -.52, p < 0.03$). Given that a number of correlations were on the border to being significant at $p < 0.05$, the analysis was re-run with all 22 participants included (irrespective of sub-threshold CDS total scores). We

Table 1 Demographics for 19 participants with DP

Demographic variables of participants		
Category	Labels	Count (percentage)
Gender	Females	5 (26.3 %)
Marital status	Single	12 (63.2 %)
	Cohabiting/married	7 (36.8 %)
Work status	Unemployed	5 (26.3 %)
	Various professions	13 (68.4 %)
	Missing	1 (5.3 %)
Education	Secondary school	3 (15.8 %)
	University	15 (78.9 %)
	Missing	1 (5.3 %)
Comorbid symptoms	Anxiety and/or depression	9 (47.3 %)
	Dissociation	1 (5.3 %)
	Schizophrenia	1 (5.3 %)
	None	8 (42.1 %)

Table 2 Correlations between clinical measures and the Freiburg Mindfulness Inventory ($N=19$)

Scores on the BDI, DES, and DES subscale were missing for one participant

*Significant at .05 level;
**Significant at .005 level

Participants' mean totals on assessment questionnaires					
Questionnaire	Mean	SD	Pearson's r —correlation with FMI	p	
Freiburg Mindfulness Inventory (FMI)	29.4	6.7	N/A	N/A	
Cambridge Depersonalization Scale (CDS)	167.5	61.6	-.618**	.005	
Beck's Anxiety Inventory (BAI)	19.1	16.4	-.460*	.048	
Beck's Depression Inventory (BDI)	21.4	11.3	-.626**	.005	
Dissociative Experiences Scale (DES)	31.7	18.0	-.312	.208	
DES – Depersonalisation and derealisation subscale	44.1	18.0	-.105	.678	

discovered that the overall correlation (Pearson's $r=-.64$, $p<.001$) was primarily driven by items 1–4 and 7 (see Supplementary Figure 1). Arguably, these items relate the strongest to the responder's body perception rather than their reflectiveness or humility out of all 14 FMI questions.

Additionally, we showed a strong negative correlation between the FMI and our measure of depression (BDI) as well as a significant negative correlation of medium strength between the FMI and our measure of anxiety (BAI; see Table 2).

In order to form a clearer impression of the relationship between the FMI and CDS irrespective of participants' potential depression and anxiety symptoms, we performed a linear stepwise regression with the FMI total score as the dependent variable. In the initial step, BAI, BDI and CDS total scores were entered as independent factors with only the CDS remaining in the second step. The first step achieved a good regression fit ($R^2_{adj}=46.6\%$), but this dropped after having removed the BAI and BDI components ($R^2_{adj}=29.5\%$). Nonetheless, the relationship in the second remained significant, $F(1, 16)=8.11$, $p<.05$. The regression coefficients are listed in Table 3.

Discussion

We were able to replicate the negative correlation between psychometric measures of depersonalization and mindfulness

(Michal et al. 2007). This suggests that in individuals with depersonalization disorder, the symptoms as measured by the CDS and mindfulness as assessed via the FMI are indeed moderately to strongly opposed. We also found a moderate to strong negative correlation between our measure of mindfulness (FMI) and of depression (BDI). However, the regression analysis indicated that this is not a pure relationship in that a negative correlation between depersonalization (CDS) and mindfulness (FMI) remained after the statistical removal of variance contributed by the BDI and BAI. At the same time, we were able to replicate negative correlations between a measure of mindfulness (Kentucky Inventory of Mindfulness Skills or FMI) and dissociation (DES) (Baer et al. 2004; Walach et al. 2006), even though our correlation between the FMI and DES did not reach significance ($p>.2$). This could be due to our study sample being underpowered. However, it does leave open the question whether the antagonism with mindfulness might be particular to the depersonalization population as opposed to individuals with other psychiatric/dissociative disorders.

Of course, these data do not offer the opportunity to explain the mechanisms that support the negative correlation between depersonalization and mindfulness. Even though the original authors of the FMI argue, based on a principal component analysis, that it does not have a clear factor structure and that secondary loadings exist for several

Table 3 FMI total score as dependent variable

Stepwise linear regression with Freiburg mindfulness inventory						
Model		Unstandardized coefficients		Standardized coefficients		
		B	SE	Beta	t	p
1	(Constant)	43.82	3.65		12.01	.000
	BAI total	-.22	.12	-.38	1.79	.095
	BDI total	-.10	.09	-.22	1.15	.270
	CDS total	-.05	.02	-.42	2.14	.051
2	(Constant)	40.23	3.86		10.43	.000
	CDS total	-.06	.02	-.58	2.85*	.012

*Significant at .05 level

items, the items that correlate particularly with depersonalization ('I am open to the experience of the present moment.'; 'I sense my body, whether eating, cooking, cleaning or talking.'; 'When I notice an absence of mind, I gently return to the experience of the here and now.'; 'I am able to appreciate myself.' and 'I feel connected to my experience in the here and now.') appear to have a more physical or autonomic basis to them rather than being concerned with 'non-judgemental acceptance', 'openness to experiences' and 'insight' (Walach et al. 2006). This is in line with the depersonalization symptomatology of which 'anomalous body experiences' are a significant component (Sierra et al. 2005).

Despite the fact that mindfulness training has been applied in the treatment of depression and anxiety (e.g. Sharplin et al. 2010), another question that is outstanding is whether, because of the close relation between the BDI and the FMI, the latter may merely represent a proxy measure for depression. In a factor analysis by Kohls et al. (2009), shortened versions of the FMI and BDI did correlate, but only for the acceptance subfactor. This implies that the FMI does measure a separate construct from the BDI. A further limitation of our research is that the sample of DP patients was predominantly male and overall well-functioning (with a majority being well-educated and in employment), thereby limiting generalisability.

Finally, our data suggest that techniques to increase mindfulness would be expected to improve symptoms of DP/DR significantly although patients may find such techniques particularly alien and difficult to apply. Nevertheless, training in such techniques as the harnessing of attention and 'staying present', should be considered as potential therapeutic approaches (Zerubavel and Messman-Moore 2013).

In conclusion, in our sample of patients diagnosed with depersonalisation disorder, we found significant and negative correlations between a measure of mindfulness (FMI) and questionnaires assessing symptoms of depersonalization (CDS), depression (BDI) and anxiety (BAI). Mindfulness may serve as a valuable component in the treatment of such disorders, provided there is a focus on somatic symptoms and attention in depersonalization and a greater emphasis on acceptance in depression.

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Conflict of interest None.

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