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Depersonalization disorder and anxiety: A special relationship?

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ABSTRACT

A significant association between anxiety and depersonalization has been found in healthy controls and psychiatric patients irrespective of underlying conditions. Although patients with depersonalization disorder (DPD) often have a history of severe anxiety symptoms, clinical observations suggest that the relation between anxiety and depersonalization is complex and poorly understood. Using relevant rating scales, levels of anxiety and depersonalization were assessed in 291 consecutive DPD cases. 'High' and 'low' depersonalization groups, were compared according to anxiety severity. Correlation and multivariate regression analyses were also used to assessed the contribution of anxiety to the phenomenology and natural course of depersonalization. A low but significant association between depersonalization and anxiety (as measured by Beck's Anxiety Inventory) was only apparent in those patients with low intensity depersonalization, but not in those with severe depersonalization. Levels of anxiety did not seem to make specific contributions to the clinical features of depersonalization itself, although DPD patients with high anxiety seem characterised by additional non-specific perceptual symptoms. The presence of a 'statistical dissociation' between depersonalization and anxiety adds further evidence in favour of depersonalization disorder being an independent condition and suggests that its association with anxiety has been overemphasized.

1. Introduction

It has been known for more than a century that depersonalization and anxiety states are often closely associated. Indeed, most patients complaining of 'feelings of unreality', originally described by Krishaber (1873), also suffered from episodes of paroxysmal anxiety, reminiscent of panic attacks. Echoing those early observations, Roth (1959) emphasised the presence of anxiety symptoms in patients with chronic depersonalization and coined the term 'phobic-anxiety depersonalization syndrome', to define a specific anxiety disorder, which had depersonalization and agoraphobia as its central manifestations.

Subsequent studies have also documented a significant association between anxiety and depersonalization across the severity spectrum of depersonalization. Thus, significant correlations have been found in non-clinical populations (Trueman, 1984); in psychiatric in-patients regardless of primary diagnosis (Noyes et al., 1977), and in patients with depersonalization disorder (Baker et al., 2003). In fact, of all emotional states, anxiety has been found to be the strongest predictor of depersonalization (Simeon et al., 2003). Of all anxiety manifestations accompanying depersonalization, studies have emphasised social anxiety and panic attacks (Noyes et al., 1992; Toni et al., 1996; Michal et al., 2005). Indeed, depersonalization (including derealization) has always been considered one of the constituent symptoms of a panic attack, occurring in up to 60% of patients (Swinson and Kuch, 1990). While in most such patients, the experience of depersonalization is limited to the duration of the attack, in others it outlasts its duration and can become persistent (Hollander et al., 1989). A recent study on 104 patients with panic disorder found that 20% met criteria for depersonalization disorder (Mendoza et al., 2011). In fact, a common clinical observation in patients with depersonalization disorder is the clustering of panic attacks around the time of onset of depersonalization, subsequently becoming less frequent or absent as depersonalization becomes chronic and predominant. A similar inverse association has also been found in psychophysiological studies. Thus, as compared with anxiety disorder patients, DPD patients reporting similarly high levels of subjective anxiety, show attenuation of autonomic sympathetic responses (Kelly and Walter, 1968; Sierra et al., 2002, 2006). The above observations suggest that the relation between anxiety and depersonalization is complex and poorly understood. The following is a systematic analysis of the relationship between the two conditions in a large series of patients with DPD. In particular we addressed two related questions: 1-Does the presence of comorbid anxiety impose a qualitative or quantitative change on the depersonalization experience? 2- Can anxiety account for the presence of adjunct symptoms, which often accompany depersonalization such as tinnitus, dizziness, or hallucinatory-like experiences?

2. Patients and Methods

This study was carried out on 291 consecutive cases with DPD assessed in the Depersonalization Disorder Clinic at the Maudsley Hospital, London (Baker et al., 2003). All patients underwent a semi-structured psychiatric interview which incorporated

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Present State Examination (PSE; Wing et al., 1974) probing questions for depersonalization and derealisation, as follows:

'Derealization: Have you ever had the feeling recently that things around you were unreal? '. 'Depersonalization : Have you yourself felt unreal, that you were not a person, not living in the real world? ' If the subject answered yes to either of these probes, the examiner went on to rate severity: 1 = moderately intense or transient ('definitely occurring during the past month and persisted for hours at a time'); 2 = very intense and persistent form. Our case definition required a total score of 2 (range 0–4). In accordance with DSM-IV criteria (APA, 1994), it was required that in addition to persistent or recurrent experiences of depersonalization, reality testing remained intact; and that the depersonalization caused clinically significant distress or impairment in social, occupational or other important areas of functioning. Lastly, it was required that the depersonalization was not secondary to a neurological condition, drug abuse and did not occur exclusively in the presence of another psychiatric condition (i.e. if there is a co-morbid condition, it is necessary to establish that depersonalization is clinically independent). As part of the assessment, all participants also filled in a 'purpose-built' extensive questionnaire intended to obtain information regarding current anxiety symptoms, history of or current co-morbid disorders including drug and alcohol abuse, or any history of medical and neurological illness etc. (for previous studies using this questionnaire see Baker et al., 2003; Medford et al., 2003). Probing questions typically include a Yes or No reply format, followed (in case of a 'yes' answer) by a likert scale to indicate their frequency. Some examples are: Have you ever seen flashes of light in front of your eyes? How often do you have these experiences (1-rarely, 2-frequently, 3- all the time). Have you ever had persistent and distressing thoughts which you cannot control or get rid of? Have you ever had 'visions' (hallucinations) whilst being awake?

The severity and phenomenology of depersonalization was determined by means of the Cambridge Depersonalization Scale (CDS), a 29-item self-rating scale designed to explore in detail the phenomenology of depersonalization within the last 6 months (Sierra and Berrios, 2000). The scale has been used in different cultures and consistently found to have a good psychometric profile (Michal et al., 2004; Molina Castillo et al., 2006; Sugiura et al., 2009).

We used the Beck Anxiety Inventory (BAI) as a primary measure of anxiety (Beck et al., 1988) given that it is a widely validated scale, which comprehensively explores somatic and cognitive anxiety symptoms. It was also thought that being a 'state' scale (it has a time-frame of one week), it was more useful indication of current anxiety levels, given clinical evidence that anxiety can change significantly against the backdrop of constant depersonalization. We also used the trait and state Spielberger scales (Spielberger et al., 1977) as secondary anxiety measures (they are less comprehensive than the BAI) to further disentangle potential differential contributions of trait vs. state anxiety. Given that patients with DPD frequently complain of low mood, Beck's depression inventory (BDI) was also administered as a measure of depression (Beck et al., 1961).

In order to contrast 'high' and 'low' depersonalization groups, we divided the sample using the CDS median score. The designation 'low' should be seen in the clinical context of DPD: all patients reported at least moderate depersonalization, so 'high' and 'low' here represent milder and more severe depersonalization groups within the category of those diagnosed with DPD. For each of these two groups, in turn, 'high' and 'low' anxiety groups were determined as the upper and lower thirds on the respective BAI score range. Although this procedure diminished the sample size, it was done with the intention of creating a high contrast between extreme high and low anxiety scorers, with the aim of uncovering potential differential interactions between anxiety and DP symptoms, which could be missed with techniques making use of the whole score continuum.

2.1. Statistical Analysis

Statistical analysis was carried out with SPSS version 12. Nonparametric statistical methods were used throughout (Mann-Whitney *U* test) given that most variables with the exception of CDS scores, had a right-skewed distribution. Differences were considered to be significant at a $p<0.05$, and all significance tests were two-tailed.

In order to explore the predictive effect of depersonalization, and anxiety on symptomatology and course of illness, a stepwise multiple regression analysis was carried out using variables extracted from the structured interview questionnaire as the dependent variables and global scale scores on the CDS, BAI, BDI and Spielberger (state and trait) as the independent ones. Since multiple regression assumes a normal distribution, right skewed variables (BAI, BDI, Spielberg) were 'normalised' by means of square-root transformation. Variable correlations were also examined by means of scatter-plots to ensure they met linearity assumptions.

3. Results

The whole sample ($n=291$) had the following mean scores on administered scales: CDS = 125 (SD 63.2); BAI = 20.2 (SD 12.1); Spielberger (s) = 52.8 (SD 13.7); Spielberger (t) = 55.18 (SD 12.6); BDI = 20.9 (SD 11.4).

Out of the whole sample 145 and 146 patients were allocated to the 'low' and 'High' depersonalization groups respectively (See Table 1.). Table 1. compares demographics and scale scores across these two groups.

As can be seen in Fig. 1. in both the 'high' and 'low' DP groups, those belonging to the 'high anxiety' subgroup had BAI mean scores in the range of 'severe anxiety' (26-63) while those in the 'low anxiety' subgroups had scores in the range of minimal (0-7) to mild anxiety (8-15). Those in the 'high DP' group had slight but significantly higher BAI scores than the 'low DP' group (see Table 1).

A comparison of 'High' and 'Low Anxiety' scorers within the High DP subgroup (CDS 184.7 (43.5); BAI; 36.5 (6.6) vs. CDS: 178.6 (41) BAI: 9.3 (4.3)), group did not reveal any significant differences in regards to CDS scores ($Z=-0.70$, $p=.48$); age ($Z=-0.27$, $p=.78$), gender ($Z=0.01$, $p=0.97$); age of onset ($Z=-0.98$, $p=0.32$); duration of depersonalization ($Z=-0.12$ $p=0.90$); specific event at onset ($Z=-0.006$ $p=0.99$); speed of onset ($Z=-0.05$, $p=0.95$); concomitant psychiatric symptoms ($Z=-1.7$ $p=0.088$).

As shown in Fig. 2. within the 'Low DP' group those in the 'high anxiety' subgroup scored significantly higher on the CDS than those in the 'low anxiety' subgroup ($Z=-8.5$ $p<0.0001$). There were no significant differences within the 'High DP' group between the 'low' and 'high' anxiety subgroups ($Z=-0.70$ $p=0.482$).

Whole sample Pearson correlations between normalized anxiety measures and CDS scores were as follows: BAI ($r=0.23$, $p<0.001$); Spielberger (s) = ($r=0.24$, $p<0.001$); Spielberger (t) = ($r=0.19$, $p<0.001$). Similarly, within the 'low DP' group there were significant moderate correlations between the CDS and anxiety scores on both the BAI ($r=0.31$, $p<0.001$); Spielberger trait ($r=0.27$, $p<0.001$) and state ($r=0.29$, $p<0.001$). There were however, no significant correlations within the 'high DP' group: BAI ($r=0.06$, $p=0.46$); Spielberger state ($r=0.04$, $p=0.57$); and trait ($r=0.02$, $p=0.72$) (see Fig. 3).

Table 2. shows the results of a stepwise multiple regression analysis carried out on the whole sample using global scores of administered scales as independent variables and a number of anxiety-related variables as dependent ones (See Table 2). Only those scales finally retained by the procedure are shown with their respective Beta coefficients. Scores on the different component subscales (as per Sierra et al., 2005) were also used as dependent variables. In order to avoid inflating correlations through item overlap between the subscales and the Global CDS score, those items constituting the subscale in question were subtracted from the Global CDS.

4. Discussion

In keeping with previous observations, it was found that patients with depersonalization disorder as a whole are characterized by

Table 1
Comparison of administered scale scores, demographics, and course of illness variables across 'Low' and 'High' depersonalization subgroups.

	Low DP group $n=145$	High DP group $n=146$	Z =	Significance
CDS score	71 (SD 28.7)	177 (SD 39.8)	Z = -14.8	**$p=0.001$**
BAI Score	18.8 (SD 11.4)	22.2 (SD 12.2)	Z = -2.8	**$p=0.04$**
Spielberger (t)	53.6 (SD 11.9)	56.9 (SD 13.6)	Z = -2.7	**$p=0.005$**
Spielberger (s)	50.58 (SD 13.5)	55.8 (SD 12.8)	Z = -3.6	**$p=0.001$**
BDI Score	18.07 (SD 9.8)	25.11 (SD 10.7)	Z = -5.5	**$p=0.001$**
Age	35.7 (SD 12.2)	33.5 (SD 11.2)	Z = -1.6	$p=0.090$
Gender (female %)	70 (47.3%)	69 (43.6%)	Z = -1.7	$p=0.86$
Duration of DP	13.2 (SD 13.4)	12.8 (SD 11.6)	Z = -2.49	$p=0.803$
Age at Onset	22.3 (SD 10.7)	20.71 (SD 8.7)	Z = -1.13	$p=0.256$
Previous Diagnoses (%)				
Panic Disorder	20 (20.3)	37 (24.8)	Z = -0.845	$p=0.398$
Agoraphobia	13 (8.8)	16 (10.7)	Z = -0.113	$p=0.633$
OCD	13 (8.8)	21 (14.1)	Z = -1.300	$p=0.256$
GAD	53 (35.8)	48 (32.2)	Z = -0.701	$p=0.483$
Depression	66 (44.6)	78 (52.3)	Z = -0.878	$p=0.380$
Manic-Depressive	5 (3.4)	10 (6.7)	Z = -1.249	$p=0.212$
Schizophrenia	5 (3.4)	8 (5.4)	Z = -0.808	$p=0.419$