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Unpacking the depersonalization syndrome: an exploratory factor analysis on the Cambridge Depersonalization Scale

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ABSTRACT

Background. Depersonalization has long been considered a syndrome but there is poor agreement on its constituent symptoms.

Method. In order to establish whether different symptoms of depersonalization represent the expression of a single or several underlying dimensions, an exploratory factor analysis on the Cambridge Depersonalization Scale (CDS) was carried out on 138 consecutive patients diagnosed with depersonalization disorder.

Results. Four well determined factors accounting for 73·3% of the variance were extracted. These were labelled 'Anomalous Body Experience'; 'Emotional Numbing'; 'Anomalous Subjective Recall' and 'Alienation from Surroundings'.

Conclusions. Symptoms of depersonalization belong to distinct but related psychopathological domains.

INTRODUCTION

Current definitions of depersonalization reduce the condition to an abnormal experiencing of the self usually described as 'feelings of unreality' (DSM-IV, ICD-10). Unfortunately, this introduces a negative definition which has poor explanatory value as it alludes to something missing from normal experience, without clarifying its nature (Sierra & Berrios, 2001; Radovic & Radovic, 2002). An alternative view, that depersonalization is best conceptualized as a syndrome rather than a symptom, was well established in the first half of the 20th century (Shorvon, 1946; Sierra & Berrios, 1997). The following description by Schilder (1928) illustrates this:

To the depersonalized individual the world appears strange, peculiar, foreign, dream like. Objects appear at times strangely diminished in size, at times flat. Sounds appear to come from a distance. The tactile characteristics of objects likewise seem strangely altered, but the patients complain not only of the changes in their perceptivity but their imagery appears to be altered. Patients characterise their imagery as pale, colourless and some complain that they have altogether lost the power of imagination. The emotions likewise undergo marked alteration. Patients complain that that they are capable of experiencing neither pain or pleasure; love and hate have perished with them. They experience a fundamental change in their personality, and the climax is reached with their complaints that they have become strangers to themselves. It is as though they were dead, lifeless, mere automatons. The objective examination of such patients reveals not only an intact sensory apparatus, but also an intact emotional apparatus. All these patients exhibit natural affective reactions in their facial expressions, attitudes, etc.; so that it is impossible to assume that they are incapable of emotional response.

Indeed, in addition to objects seeming different or unreal, patients with depersonalization also

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complain of numbed emotional experiencing, heightened self-observation; altered body experience, feelings of not being in control of movement; changes in the experiencing of time and space; feelings of mind emptiness, inability to imagine things, etc. (Sierra & Berrios, 2001). Different classifications have been proposed to account for this phenomenological complexity of depersonalization. By far the most accepted one subdivides the phenomenon into 'depersonalization' and 'derealization' depending on whether it is the experience of the self or of one's surroundings, which is experienced as 'unreal' (APA, 1994). Other less frequently used terms have also been suggested to name other domains of abnormal experience in depersonalization. For example Davidson (1966) proposed the term 'desomatization' to refer to changes in body experience. He also coined the word 'de-affectualization' to refer to 'emotional numbing', a frequent complaint amongst patients suffering with the condition. Taylor (1982) in turn, proposed the term 'de-ideation' for complaints of anomalous experiences involving memory, imagery or thought.

In spite of its apparent symptom diversity, however, there is the possibility that depersonalization could result from an unitary, pervasive experience of detachment, which would equally affect all aspects of experience. However, the fact that not all symptoms are always present, or the fact that some seem more stable than others, or show differential intensity (Sierra & Berrios, 2001), suggest that at least some of these symptoms belong to different experiential domains, with potentially distinct underlying mechanisms (Sierra & Berrios, 1998; Sierra *et al.* 2002*b*).

In order to establish whether the different symptoms of depersonalization represent the expression of a single or several underlying dimensions, an exploratory factor analysis was carried out on patients diagnosed with depersonalization disorder (DPD).

METHOD AND SUBJECTS

A total of 150 consecutive patients meeting DSM-IV criteria for depersonalization disorder were recruited from the Depersonalization Disorder Clinic of the Maudsley Hospital. The clinic was founded in 1998, and receives referrals from all over the UK (Phillips *et al.* 2001*a*; Baker *et al.* 2003). Typically, patients are referred on account of severe and chronic depersonalization.

All patients underwent a semi-structured psychiatric interview which incorporated Present State Examination (PSE; Wing *et al.* 1974) items for depersonalization and derealization: '*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 $\geqslant 2$ (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). Thus, in addition to specific depersonalization assessment, all patients underwent an extensive general psychiatric assessment 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. Exclusion criteria included lifetime incidence of psychotic disorder, current substance abuse disorder, current major depression, other dissociative disorder, and history of neurological disorder. Patients meeting criteria for anxiety disorders were excluded where depersonalization was found to be circumscribed to panic attacks or other episodes of intense anxiety. In total 12 patients were excluded on account of these exclusion criteria.

Administered scales

Patients filled in the following self-report questionnaires: the Cambridge Depersonalization Scale (CDS; Sierra & Berrios, 2000); the Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986; Carlson & Putnam, 1993); Beck's Depression Inventory (BDI; Beck *et al.* 1961); Beck's Anxiety Inventory (BAI; Beck *et al.* 1988); Spielberger's State-Trait Anxiety Inventory – Y form (STAI-Y; Spielberger *et al.* 1977).

The CDS, is a comprehensive instrument containing 29 items addressing the complaints classically associated with the depersonalization syndrome. Its items describe abnormal experiences affecting different sensory modalities; items describing an inability to experience a range of different emotions; heightened self-observation, lack of body ownership feelings, somatosensory distortions, out-of-body experiences, autoscopy, and lack of agency feelings. Other items describe cognitive complaints such as 'feelings of thought emptiness', subjective changes in the ability to recall personal events, inability to evoke images, and distortions in the experiencing of time and space. Each item is rated on two Likert scales for frequency and duration of the experience. Given that depersonalization symptoms can be intermittent, the scale was designed so that the arithmetic sum of frequency and duration yields an index of item intensity (range 0–10). In this way, the clinically valid observation is saved that a patient experiencing frequent but short-lived depersonalization experiences should be rated as suffering from an equivalent degree of intensity to someone having less frequent but long-lasting experiences. The global score of the scale is the arithmetic sum of all items (range 0–290). The CDS has been previously validated on patients with depersonalization disorder, and was shown to differentiate these patients from patients with temporal lobe epilepsy or patients with anxiety disorders. In this regard, a cut-off point of 70 was shown to yield a sensitivity of 75·5% and a specificity of 87·2%. Furthermore, the scale has a high internal consistency (Cronbach's α and split half reliability of 0·89 and 0·92 respectively) (Sierra & Berrios, 2000). Recently a German and a Spanish version of the CDS have been validated (Michal *et al.* 2004; Molina Castillo *et al.* 2005).

The DES is a 28-item self-report questionnaire with a cut-off point of 30 for dissociative disorders. The DES has three subscales: 'depersonalization/derealization' (DES-Dep/Der); 'amnesia' (DES-Amnesia); and 'absorption' (DES-Absorption) (Carlson *et al.* 1991). Briefly, dissociative amnesia involves a deficit in retrieval, which prevents the intentional recollection of stored information (Holmes *et al.* 2005). 'Absorbtion' in turn, refers to the experience of becoming immersed in internal events such as thoughts and imagery to the extent of becoming disconnected from one's surroundings (Waller *et al.* 1996). Lastly the taxon subscale (DES-Taxon), an 8-item subscale seems more specific than the global DES for the detection of pathological dissociation. This subscale has proved sensitive for the detection of depersonalization disorder with a cut-off of 13 (Simeon *et al.* 1998, 2003).

Statistical analysis

All statistical analyses were carried out with SPSS for Windows, version 11.0 (SPSS Inc., Chicago, IL, USA). A factor analysis was carried out by means of principal axis factoring based on the correlation matrix. As there were clinical and conceptual reasons to believe that depersonalization components are likely to be correlated, an oblique rotation was thought to produce a better estimate of the true factors and a better simple structure than an orthogonal rotation (Fabrigar *et al.* 1999). Factors were oblique rotated using both Oblimin and Promax in order to establish the best solution. Three criteria were used to judge the quality of rotations: (1) Solutions with the least number of complex variables (variables with salient loadings $\geqslant 0{\cdot}4$ on more than one factor) were preferred. (2) Solutions with a high number of hyperplanar coefficients (defined by a loading $\leqslant 0{\cdot}1$) were preferred, as they showed more contrast between salient and non-salient items. (3) Other things being equal, low correlations between factors were preferred for the rotated solutions. In order to establish the predictive effect of dissociation, depression, and anxiety measures on the CDS factors, a stepwise multiple regression analysis was carried out using factor scores as the dependent variables and global scale scores of the other administered

Table 1. *Rank-ordered CDS mean scores (range 0–10), standard deviation and communalities for each item of the scale*

	Descriptives		
	Mean (range 0–10)	S.D.	Communalities
1. Feeling unreal or cut-off from the world	7·9	2·6	0·659
13. Surroundings feel detached or unreal	7·4	3·0	0·652
5. Favourite activities no longer enjoyable	6·5	3·4	0·588
2. Things look flat, as if looking at a picture	5·6	4·1	0·606
9. No emotions felt when weeping or laughing	5·1	3·5	0·681
10. Feeling of not having any thoughts at all	5·1	3·7	0·602
6. Feeling of being a detached observer of oneself	5·1	3·7	0·550
24. Feeling mechanical and 'robotic' when moving	5·0	3·6	0·697
11. Own voice sounds remote and unreal	5·0	3·4	0·628
3. Body feels as if it didn't belong to self	4·8	3·8	0·515
16. Feeling detached from personal memories, as if one had not been involved in them	4·6	3·6	0·605
26. Thoughts seem to have a life or their own	4·5	3·6	0·548
18. Unable to feel affection towards family and friends	4·4	3·5	0·651
14. Recently done things feel as if they had taken place long time ago	4·4	3·6	0·610
20. Unable to feel properly things touched with hands	3·5	3·7	0·609
23. Feeling of being outside the body	3·5	3·6	0·581
4. Absence of fear in distressing situations	3·5	3·6	0·426
7. Flavour of meals no longer gives a feeling of pleasure or distaste	3·4	3·7	0·692
28. Unable to feel hunger or thirst	3·4	3·7	0·645
25. Smell of things no longer gives feeling of pleasure or dislike	3·3	3·9	0·729
8. Body feels very light, as if it were floating on air	3·3	3·6	0·475
29. Familiar places look strange and unfamiliar	3·2	3·5	0·578
27. Urge to touch oneself to be reassured of body existence	3·1	3·4	0·556
21. Unable to picture things in mind	3·1	3·4	0·507
17. When in a new situation, feeling as if it had happen before	2·8	2·5	0·512
19. Objects look smaller or further away	2·6	3·1	0·475
22. Feeling detached from pain	1·9	2·9	0·556
12. Feeling that hands and feet have become larger or smaller	1·5	2·4	0·363
15. Seeing self outside, as if looking in a mirror	1·3	2·5	0·505

scales and DES subscales (Carlson *et al.* 1991) as the independent ones.

RESULTS

A total of 138 patients were included in the study. The mean age was $35{\cdot}5 \pm 11{\cdot}9$ years; 78 (56·5%) were male and 60 (43·5%) were female. The mean age of onset of depersonalization was $20 \pm 10{\cdot}2$ years, and the mean duration of the condition was $13 \pm 12{\cdot}4$ years. The clinical presentation of the condition was as follows: Persistent depersonalization: 80 (57·9%); recurrent episodes of brief duration 9 (6·5%); recurrent lengthy episodes 10 (7·2%); episodic at the beginning becoming permanent later on 33 (23·9%); unsure 5 (3·6%). Onset of depersonalization was reported to be sudden in 57 (41·3%); and gradual in 19 (14·2%). Forty-nine (35·5%) were uncertain about the onset.

Mean scale scores were as follows: CDS $119 \pm 58{\cdot}9$ (range 0–290; cut-off point for depersonalization disorder 70). Frequency and duration CDS scores were found to be highly correlated $r = 0{\cdot}80$, $p < 0{\cdot}0001$; DES $24{\cdot}1 \pm 14{\cdot}7$. Scores on the different DES subscales were as follows (range 0–100): DES-Taxon $24{\cdot}6 \pm 16{\cdot}4$; DES-Dep/Der $36{\cdot}7 \pm 21{\cdot}8$; DES-Absorption $27{\cdot}5 \pm 17{\cdot}3$; DES-Amnesia $9{\cdot}2 \pm 12{\cdot}8$; BAI $20{\cdot}8 \pm 11{\cdot}3$; BDI $22 \pm 11{\cdot}05$.

Although in all patients depersonalization was by far the most salient, and intense form of psychopathology, some patients met criteria (DSM-IV) for co-morbid conditions as follows: bipolar mood disorder 5 (3·6%), obsessive–compulsive disorder 21 (15%); panic disorder with or without agoraphobia 18 (13%); generalized anxiety disorder 45 (33%). In all these cases depersonalization was constant and, therefore, not circumscribed to episodes of

Table 2. *Pattern matrix of extracted factors. Salient item loadings (>0·4) for each factor are listed in decreasing magnitude order*

	'Anomalous Body Experience'	'Emotional Numbing'	'Anomalous Subjective Recall'	'Alienation from Surroundings'
24. Feeling mechanical and 'robotic' when moving	**0·59**	0·21	−0·08	0·29
15. Seeing oneself outside, as if looking in a mirror	**0·57**	0·00	0·25	−0·23
20. Unable to feel properly things touched with hands	**0·55**	0·28	0·06	0·12
27. Urge to touch oneself to be reassured of body existence	**0·51**	0·37	−0·11	0·05
23. Feeling of being outside the body	**0·50**	−0·14	0·26	0·21
3. Body feels as if it didn't belong to self	**0·49**	0·09	0·10	0·18
6. Feeling of being a detached observer of oneself	**0·48**	−0·09	0·18	0·28
11. Own voice sounds remote and unreal	**0·45**	0·19	0·10	0·30
8. Body feels very light, as if it were floating on air	**0·43**	0·18	0·00	0·11
25. Smell of things no longer gives feeling of pleasure or dislike	0·05	**0·82**	−0·05	0·10
28. Unable to feel hunger or thirst	0·21	**0·71**	0·02	−0·03
7. Flavour of meals no longer gives a feeling of pleasure or distaste	0·07	**0·61**	0·18	0·07
9. No emotions felt when weeping or laughing	−0·04	**0·56**	0·25	0·29
18. Unable to feel affection towards family and friends	−0·10	**0·42**	0·37	0·25
10. Feeling of not having any thoughts at all	0·26	**0·42**	0·10	0·16
16. Personal memories feel as if one had not been involved in them	0·06	0·15	**0·61**	0·16
14. Recently done things feel as if they had taken place long time ago	0·29	0·04	**0·53**	0·18
19. Objects look smaller or further away	0·06	−0·04	**0·50**	0·14
21. Unable to picture things in mind	0·13	0·32	**0·43**	−0·02
17. When in a new situation, feeling as if it had happened before	0·34	0·16	**0·40**	−0·15
1. Feeling unreal or cut-off from the world	0·06	0·06	−0·03	**0·75**
13. Surroundings feel detached or unreal	0·07	0·07	0·10	**0·63**
5. Favourite activities no longer enjoyable	−0·03	0·37	0·08	**0·50**
2. Things look flat, as if looking at a picture	0·10	0·17	0·35	**0·44**

Table 3. *Correlations between extracted factors*

Factor	'Anomalous Body Experience'	'Emotional Numbing'	'Anomalous Subjective Recall'	'Alienation from Surroundings'
Anomalous Body Experience'	1·000	0·322	0·247	0·239
'Emotional Numbing'	0·322	1·000	0·259	0·339
'Anomalous Subjective Recall'	0·247	0·259	1·000	0·228
'Alienation from Surroundings'	0·239	0·339	0·228	1·000

intense anxiety. Most of these patients had taken a wide range of medications in the past, mostly antidepressants and anxiolytics. At the time of referral 83 (60%) of patients were on SSRI antidepressants, 14 (10%) on tricyclics and 14 (10%) on anxiolytics, and 7 (5%) on new-generation antipsychotics. In all cases these regimes had proved of no or little benefit.

Factor analysis

Kaiser–Meyer–Olkin Measure of Sampling Adequacy (KMO) was 0·89 (range 0·80–0·89 indicates a high degree of common variance amongst variables) hence suggesting a high factoriability for the sample. Likewise, the Bartlett's Test of Sphericity rejected the null hypothesis of an identity matrix ($\chi^2 = 2151{\cdot}6$, df = 406, $p = 0{\cdot}001$).

On the basis of Cattell's scree test, it was decided to extract four factors, as the decrease of plotted eigenvalues appeared to level off after factor 4. Extracted factors accounted for 73·3% of variance. Initial eigenvalues were as follows: factor 1 = 11·2, factor 2 = 4·8, factor 3 = 3·2, and factor 4 = 1·6.

As can be seen in Table 1, extracted communalities were fairly high with a range of 0·36–0·72. This, together with the fact that extracted factors were well determined suggests that the sample size was adequate. Indeed, it has been found that in the presence of well-determined factors and high communalities, sample size may have less impact on the quality of results (MacCallum *et al.* 1999).

A Promax oblique rotation with a kappa of 2 (low correlation among factors), was found to

Table 4. *Stepwise multiple regression analysis showing independent contributions of DES and its subscales, BDI, BAI, and STAI (trait and state) to the variance of extracted depersonalization factors*

Dependent variables	Independent variables	Beta	*p* value
Anomalous Body Experience'	DES-Dep/Der	0·635	<0·0001
'Emotional Numbing'	DES-Dep/Der	0·391	<0·0001
	BDI	0·266	<0·01
Anomalous Subjective Recall'	DES-Absorption	0·533	<0·0001
'Alienation from Surroundings'	DES-Dep/Der	0·417	<0·0001

DES, Dissociative Experiences Scale; BDI, Beck's Depression Inventory; BAI, Beck's Anxiety Inventory; STAI, State-Trait Anxiety Inventory.

yield a solution best matching criteria of 'simple structure' as defined above (analysis based on correlation matrix) (see Table 2). Thus, no complex variables were found, and the correlation between factors was relatively low (see Table 3). In view of these low correlations, an exploratory orthogonal rotation was tried, and although it yielded a similar factorial structure, factors were less well determined and contained several complex variables. In the same vein, excluding the five items that did not load on the above factors, did not improve the quality of the solutions.

Analysis of residuals (observed minus predicted correlations in the correlation matrix), showed that most values were below 0·05, suggesting that a four-factor model gave an adequate description of the data.

Most items with salient loadings on factor 1 contained a variety of non-overlapping complaints related to changes in body experience. This factor was labelled 'Anomalous Body Experience'. Factor 2, in turn, contained a variety of items describing different aspects of attenuated emotional experiencing. This factor was labelled 'Emotional Numbing'. Factor 3 contained items describing a variety of subjective complaints involving recall of autobiographical events, and of being unable to evoke visual images. On account of the predominant recall component of most items (the only exception being item 19, which described the experience of 'objects looking smaller or further away') this factor was labelled 'Anomalous Subjective Recall'. Lastly, factor 4 contained items describing derealization, and the experience of being cut-off from the world together with an item describing changes in visual experience and inability to experience pleasure when engaged in favourite activities. This factor was labelled 'Alienation from Surroundings'.

As can be seen in Table 4, the DES-Dep/Der best predicted variation on all factors with the exception of the factor 'Anomalous Subjective Recall'. In addition to this, the BDI contributed to the 'Emotional Numbing' factor. All the anxiety measures (i.e. BAI and STAI) were excluded as non-significant from the final model of the stepwise regression.

DISCUSSION

The results of this study suggest that rather than being a unidimensional construct, 'depersonalization' represents the expression of several distinct underlying dimensions. This finding is in keeping with long-held and currently neglected views that depersonalization constitutes a syndrome, rather than a symptom. Furthermore, the fact that an oblique rotational model yielded a better solution than an orthogonal rotation, supports the view that the different components of depersonalization represent an integrated response, rather than the mere co-existence of unrelated phenomena.

An understanding of depersonalization in terms of different interacting dimensions is likely to have implications for both clinical practice and research. For example, a syndrome-based approach may help developing more specific 'caseness criteria'. In this regard, Sierra & Berrios (2000) found evidence of a symptom dosage-effect, whereby patients meeting DSM-IV criteria for depersonalization disorder (i.e. chronic depersonalization not accounted by co-morbid conditions) endorsed more depersonalization symptoms on the CDS than patients with anxiety disorders and temporal lobe epilepsy, many of whom also had transient depersonalization experiences. From a research perspective studies focusing on selective components of the condition such as emotional numbing, and imagery impairments have proved promising lines of research (Lambert *et al.* 2001; Phillips *et al.* 2001*b*; Sierra *et al.* 2002*a*).

The four-factor solution described above is in keeping with the findings of a previous study, in which a group of 200 historical cases of chronic depersonalization was systematically compared with 45 current patients with depersonalization disorder along 18 phenomenological variables extracted from the CDS (Sierra & Berrios, 2001). It was found that five symptoms showed little prevalence variation across the historical and prospective samples. This cluster, which was interpreted to constitute a stable phenomenological core had the following items: changes in body experience, loss of feelings of agency; emotional numbing; changes in the subjective experience of autobiographical memories; and changes in visual experience. These symptoms seem to overlap with the extracted factors in the current study – the first two corresponding to factor 1, while the remaining three would seem to correspond with factors 2, 3, and 4 respectively. This apparent convergence of two different methodological approaches confers further validity to the extracted factors. Using a different depersonalization questionnaire on a sample of college students Jacobs & Bovasso (1992) found five factors which they labelled as follows: inauthenticity factor, self-negating factor, self-objectification factor, derealization, and body detachment. Although the latter two factors would seem to correspond with two of our factors, the items of the first three factors seem overlapping, highly abstract and difficult to interpret. Other attempts to classify depersonalization symptoms by means of factor analysis, have used non-validated instruments whose items lack face validity, and hence have produced results which are difficult to interpret (Noyes *et al*. 1977). To our knowledge this is the first time that a factor analysis has been carried out on a sample of patients with chronic depersonalization, using a validated instrument whose items map comprehensively the variety of complains proffered by patients with chronic and persistent depersonalization disorder. This notwithstanding, a note of caution is pertinent regarding the interpretation of the extracted factors given the exploratory nature of the analysis. Moreover, given the fact that the variables had different degrees of endorsement and skewness, the possibility that factor solutions may have been contaminated by artefacts cannot be excluded.

In order to explore further the content significance, and internal consistency of each of the four factors found, a more detailed discussion of these phenomenological dimensions is required:

(1) '*Anomalous Body Experience*'. Patients with depersonalization complain of a variety changes in body experience. These can be conceptualized as (1) Lack of body ownership feelings. (2) Feelings of loss of agency, which refer to the feeling that actions happens automatically without the intervention of a willing self. (3) Feelings of disembodiment, which can range from a non-specific feeling of not being in the body, and heightened self-observation, to out-of-body experiences, and autoscopic hallucinations. The latter two, however, are rare in depersonalization (Gabbard *et al*. 1982). (4) Somatosensory distortions, usually affecting the size of body parts, or feeling very light. These seem far less frequent than the above (Vella, 1965). In fact, item 12 which describes the experience of body parts changing in size did not load on any of the four factors; and had one of the lowest communalities. Such gross somatosensory distortions are clearly not characteristic of depersonalization and may be useful in the differential diagnosis with conditions such as schizophrenia, epilepsy or migraine, where somatosensory distortions are said to be frequent (Priebe & Rohricht, 2001; Rohricht & Priebe, 2002; Watanabe *et al*. 2003). In short, the content of this factor suggests that an experience of 'disembodiment' is the most characteristic body image abnormality in depersonalization. Interestingly, these profound distortions in body image do not seem accompanied by objective changes in body schema (defined as unconscious mechanisms in charge of adjusting and regulating motor activity and posture) (Cappon & Banks, 1965).

(2) '*Emotional Numbing*'. Most patients with depersonalization report different degrees of attenuated emotional experience such as loss of affection, pleasure, fear or disgust to situations previously avoided. Unlike the flat affect commonly seen in patients with schizophrenia or depression, the behavioural expression of emotions seems normal in depersonalization (see description by Schilder in the Introduction; also Shorvon, 1946; Saperstein, 1949).

With the exception of lack of experienced pleasure or fear, all items referring to abnormal emotional experiencing had salient loadings on this factor. Interestingly, the presence of item 28 on this factor would seem odd, as it describes the inability to experience some bodily sensations such as hunger and thirst (in the face of normal eating or drinking behaviour). One interpretation of this is that hunger and thirst are unpleasant states of bodily need. The high loading of this item and those referring to lack of pleasure or displeasure associated to smell or taste would seem to lend further support to the clinical observation that what seems more affected in depersonalization is the ability to imbue perceived objects or concrete situations with emotional feeling, rather than a general inability to experience emotional states (Sierra & Berrios, 1998).

(3) '*Anomalous Subjective Recall*'. Patients with depersonalization often complain of a number of subjective experiences affecting recall. These include the feeling as if recalled autobiographical memories did not really happen to the person (item 16); the feeling that recent personal events happened long ago (item 14), or had already happened (i.e. *déjà-vu*), inability to evoke visual memories of people or places (item 21) (Lambert *et al.* 2001). To our knowledge, no studies on autobiographical memory have been carried out on depersonalized subjects.

(4) '*Alienation from Surroundings*'. Most patients with depersonalization describe feelings of being cut off from the world around, and of things around seeming 'unreal'. Such an experience is frequently described in terms of visual metaphors (e.g. looking through a camera, mist, veil etc.). Indeed, many patients claim that it is in the visual modality where the experience of 'unreality' is most noticeable (Mayer-Gross, 1935). Thus, the presence of a visual unreality item ('what I see looks "flat" or lifeless, as if I were looking at a picture') together with the other two items describing 'feelings of unreality' in a more general way strongly suggest that this factor overlaps with the concept of 'derealization' (i.e. it emphasizes an anomalous experience of objects around as opposed to one's own body). The fact that an item describing a form of anhedonia loaded on this factor seems somewhat counterintuitive, as at first sight it would seem to fit the 'Emotional Numbing' factor better. Interestingly, however, clinical observations suggest that an inability to experience the hedonic attributes of things perceived is a core feature of derealization (Sierra & Berrios, 1998; Sierra *et al.* 2002*b*). Indeed, articulate patients frequently ascribe the experience of 'unreality' to an inability to colour experience with pleasurable feelings or feelings of familiarity: 'I saw Big Ben alight last night, normally a moving sight to me, but it might have been an alarm clock for all I felt' (Bockner, 1949).

The fact that item 1, which defines depersonalization solely in terms of unreality ('*I feel strange, as if I were not real or as if I were cut off from the world*') also loaded on this factor, suggests that when narrowly defined, 'depersonalization' and 'derealization' (as defined by item 13: '*My surroundings seem detached or unreal, as if there was a veil between me and the outside world*') cannot easily be discriminated, as they may simply reflect two different ways of describing the same experience. Dugas, who wrote long before the concept of derealization was proposed, was clearly aware of this descriptive confound: '[in depersonalization] the individual feels a stranger amongst things, or if one prefers, things appear strange to him' (translated by Sierra & Berrios, 1996). It is clear that a more comprehensive concept of depersonalization which encompasses factors 1, 2 and 3 is not liable to this objection, and far more likely to be a valid and more specific one.

Interestingly, complaints affecting sensory modalities other than vision loaded on different factors. Tactile and auditory complaints both loaded on factor 1. Although it makes sense for the former to be part of the factor 'Anomalous Body Experience', the reason why auditory phenomena should also load on this factor is less obvious. Patients often complain that their own voice sounds peculiar, as if hearing a recording of their own voice, or as if it did not come from themselves. These descriptions suggest that the experience may be a by-product of abnormal body experiencing when speech production is not accompanied by concomitant feelings of agency. Lastly, since the senses of smell or taste are usually described in terms

of their ability to evoke feelings of pleasure or distaste, it is not surprising that these items loaded on the 'Emotional Numbing' factor.

The results from the stepwise multiple regression analysis show that with the exception of the factor 'Anomalous Subjective Recall', the DES-Dep/Der made predictive contributions to all factors.

Not surprisingly the BDI made a contribution to the 'Emotional Numbing' score. Being a cognitively biased depression scale, some overlap between emotional items on the BDI and the CDS is to be expected. In particular, items describing the experience of anhedonia and emotional numbing on the CDS would seem to overlap to some extent with similar phenomenological counterparts in depression. However, unlike the case in depression, such complaints are mainly subjective in depersonalization with the behavioural expression of emotions seeming normal (see above).

The selective contribution of the DES-Absorption subscale to the 'Anomalous Subjective Recall' factor may be related to the distorting effect that absorptive states can have on experience and cognition. Patients with depersonalization are often self-absorbed and experience a form of compulsive self-scrutiny, which could affect subjective recall, imagery, and time experiencing (Schilder, 1928; Torch, 1978). Indeed, phenomenological parallels between hypnotic and absorptive states as seen in dissociative disorders, suggest that high hypnotizability (which correlates strongly with absorptive capacity) constitute a diathesis for pathological dissociative states (Butler *et al.* 1996). Indeed, recent empirical evidence suggests that hypnotic propensity may be a mediating factor for the experience of depersonalization during panic attacks (Van Dyck & Spinhoven, 1997). In spite of this, a recent study failed to find differences between DPD patients and controls on a measure of psychological absorption (Levin *et al.* 2004). One possible explanation for this, is that the instrument used is biased to normative, usually pleasant involvement in sensory and imaginative experiences. In contrast, heightened absorption in depersonalization is likely to have a negative, self-centred aspect to it, which may have the effect of 'freezing' the mind, rendering attentional and cognitive resources unavailable for creative and open involvement with the world.

In summary, this exploratory factor analysis gives validity to previous clinical observations, which suggested that symptoms of depersonalization can be conceptualized as belonging to distinct, but related psychopathological domains. In this regard these factors would seem to correspond to phenomenological concepts previously proposed in the the depersonalization literature; namely, desomatization, de-affectualization, de-ideation and derealization.

An understanding of depersonalization in terms of different interacting symptom domains could have important clinical and research implications such as an improved 'caseness' definition and a more precise differential diagnosis with phenomenologically overlapping conditions.

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DECLARATION OF INTEREST

None.

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