

# Depersonalization: An exploratory factor analysis of the Italian version of the Cambridge Depersonalization Scale

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## Abstract

**Background:** “Depersonalization” (DP) is a common symptom in the general population and psychiatric patients (Michal et al., 2011 [1]). DP is characterized by an alteration in the experience of the self, so that one feels detached from his or her own mental processes or body (or from the world), feeling as being an outside observer of his or her own self, and losing the experience of unity and identity (American Psychiatric Association, 2013 [2]).

**Aim:** We performed an exploratory factor analysis of the Cambridge Depersonalization Scale Italian version (CDS-IV).

**Methods:** We enrolled 149 inpatients and outpatients of psychiatric services located in two Italian regions, Lazio and Campania. Patients were aged between 15 and 65 and diagnosed with schizophrenic, depressive or anxiety disorders.

**Results:** Four factors accounted for 97.4% of the variance. Factor 1 (10, 24, 26, 1, 13, 23, 9, 2, 5, and 11), called “Detachment from the Self”, captures experiences of detachment from actions and thoughts. Factor 2 (19, 20, 27, 3, 12, 23, 22, and 11), called “Anomalous bodily experiences”, refers to unusual bodily experiences. Factor 3 (7, 28, 25, 6, 9, and 2), named “Numbing”, describes the dampening of affects. Factor 4 (14, 17, and 16), named “Temporal blunting”, refers to the subjective experience of time. We did not find any specific factor that refers to derealization; this suggests that the constructs of depersonalization/derealization (DP/DR) were strongly related to each other.

**Conclusions:** Our results show that the constructs of DP/DR subsume several psychopathological dimensions; moreover, the above mentioned factors were broadly consistent with prior literature.

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## 1. Introduction

In 1898 Dugas [3] applied the term “dépersonnalisation” to a syndrome described by Krishaber in 1872 [4] and defined by Shorvon as “depersonalization syndrome” one

hundred years later [5,6]. During the late 19th and across the 20th century the concept of DP changed [7]. This disorder is now considered as the result of pathological changes in the sensory system, memory, affect, body image and self-experience [8]. According to the *International Classification of Diseases (ICD-10)*, the DP/DR syndrome is characterized by an alteration in the perception or experience of one's own mental activity and body as well as of the external world, so that they appear strange and unreal [9]. Although this definition includes both DP and DR, the diagnostic criteria require “either or both” phenomena [10]. Clinically, DP is

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characterized by persistent or recurrent episodes of detachment or estrangement from one's self. Symptoms often include a dream-like state, loss of empathy, and an altered perception of physical self. A greatly reduced emotional response, or “de-affectualization,” is frequently described [10]. In the *DSM-5*, the definition of the DP/DR disorder is in line with the definition of *ICD-10*, whereas in the *DSM-IV-TR* DP and DR were separated into two distinct categories [11]. DP (criterion A1) is defined as an experience of unreality or detachment, in which one is an outside observer of his or her thoughts, feelings, sensations, body, or actions. The individual may feel perceptual alterations, distorted sense of time, unreal or absent self, and emotional and/or physical numbing. DR (criterion A2) is defined as an experience of unreality or detachment with respect to surroundings in which individuals or objects may be experienced as unreal, dreamlike, foggy, life-less, or visually distorted. According to the *DSM-5* “there is no evidence of any distinction between individuals with predominantly depersonalization versus derealization symptoms.” Of note, in the *DSM-5*, the presence of a single criterion is sufficient for the diagnosis of the DP/DR disorder [2].

DP/DR may represent a pathological symptom, a nonspecific signal of stress, or an adaptive response. It may be difficult to discriminate among the above three forms and to evaluate possible transitions of one condition into another [12].

As a pathological symptom, DP may be easily identifiable or may represent a sub-threshold, non specific and variable symptom of other psychiatric disorders [13].

Manifestations of DP occur as a continuum, spanning from transient episodes to a significant symptom-complex in the context of other psychiatric illnesses [14]. DP appears to have significant comorbidity with anxiety and depression [15–17]; Parnas and Handest consider DP as a disorder of self experience that may be present in the prodromal phases of schizophrenia and other psychotic disorders [18]. A recent study has shown that DP is common in the general population and psychiatric patients, contributes independently to the mental and somatic health status beyond anxiety and depression, and may be clearly differentiated from anxiety and depression [19]. DP also occurs in some neurological diseases such as epilepsy or migraine [13,20], and has been associated with autonomic blunting and dysregulation of the hypothalamic–pituitary–adrenal (HPA) axis [16,21].

Current epidemiological data show a prevalence of DP/DR in the general population of approximately 0.8–2% [22–24]; this prevalence is similar to those found in common mental disorders, such as the bipolar disorder and obsessive–compulsive disorder [25]. The first systematic review reports that the prevalence of transient DP/DR in the general population ranges between 26 and 74% and between 31 and 66% when traumatic events occur [22]. The prevalence is higher in psychiatric patients, increasing with the severity of co-morbid conditions. Despite the high prevalence, DP is under-detected and under-diagnosed [1,10,14,16,25].

Self-rating scales are used to estimate DP, such as the Dixon Depersonalization Scale (DDS) [26], the Jacob's and Bovasso's Depersonalization Scale (JBS) [27], and the Dissociative Experience Scale (DES) [28,29]. However, these instruments have only a few items detecting DP (self, bodily and allopsychic DP). Sierra and Berrios developed a new scale based on a comprehensive study of the DP phenomenology: the Cambridge Depersonalization Scale (CDS) [30]. The CDS was designed to measure the intensity and frequency of DP within the previous 6 months. The CDS is a self-administrated questionnaire composed by 29 items measuring DP symptoms. Each item is rated on two Likert scales, one for the frequency and the other for the duration of experience. The CDS showed high internal consistency and good reliability. Fewtrell developed a questionnaire assessing all the aspects of DP: the Fewtrell Depersonalization Scale (FDS) [31]. The FDS has been used for measurements of primary and secondary DP derived from the Present State Examination for the evaluation of the relationship between DP and anxiety and depression [13]. An ultra-brief two-item scale was developed from the CDS: the two-item version of the Cambridge Depersonalization Scale (CDS-2) [24].

To assess whether the DP construct has several underlying dimensions, a first factor analysis, performed on 138 patients, highlighted four factors that account for 73.3% of the variance: anomalous body experience, emotional numbing, anomalous subjective recall, and alienation from surroundings [32]. Simeon et al. [33] carried out an exploratory factor analysis on 394 patients that extracted five factors accounting for 55.8% of the variance: numbing, unreality of self, perceptual alterations, unreality of surroundings and temporal disintegration.

The five-factor model was similar to the four-factor model, with the exception that “anomalous body experience” was separated into two factors: “unreality of self” and “perceptual alterations”. In 2012, we translated and validated a cross-cultural Italian adaptation of the CDS, the CDS Italian Version (CDS-IV) [34]. CDS-IV has good psychometric properties and a cut-off of 59. The aim of the present study was to examine the factorial structure of CDS-IV as compared to previous models.

## 2. Materials and methods

### 2.1. Methods and sample (design of the study)

The sample is comprised of 149 inpatients and outpatients referred to mental health services and psychiatric ward in Rome and Naples from June 2010 to January 2013. All subjects referred to psychiatric services from within a catchment area of 500,000, residents around Rome and Naples, from June 2010 to January 2013. Patients had to meet several inclusion criteria for recruitment: (i) age between 15 and 65; (ii) diagnosis of schizophrenic, depressive or anxiety disorder, as already performed in

previous studies of validation of CDS Italian and Spanish [34]. All patients provided free written informed consent. Exclusion criteria were: any acute psychiatric condition that may invalidate the capacity of providing informed consent; cognitive or serious sensorial deficits; and DP symptoms secondary to drug abuse and neurological conditions. All enrolled patients were diagnosed using the SCID I (Structured Clinical Interview for *DSM-IV* TR) [35]. Within the total sample 47 subjects fulfilled criteria for schizophrenic disorder, 67 for depressive disorder and 35 for anxiety disorder. Eighty patients presented DP symptoms clinically assessed. The mean age was  $32.39 \pm 14.55$ ; 62 (41.61%) were male and 87 (58.39%) female. The educational level of patients was as follows: primary school, 4.78%; middle school, 52.32%; upper secondary school diploma, 37.57%; degree, 5.33%. Mean scale scores were as follows: CDS,  $64.51 \pm 43.71$ ; BAI,  $22.51 \pm 12.33$ ; PANSS,  $69.77 \pm 22.62$ ; BDI,  $25.08 \pm 13.66$ . The socio-demographics characteristics and the mean scores obtained in the questionnaires on each diagnostic group are shown in Table 1.

The study was given ethical approval by the local research and ethics committee.

## 2.2. Instruments

The following psychometric instruments were administered to all patients involved in the present study:

The Cambridge Depersonalization Scale, Italian version (CDS-IV) [34]. The scale is a self-administered questionnaire composed of 29 items. Each item comprises two Likert scales for frequency (0 = never to 4 = all the time) and duration (1 = few seconds to 6 = more than a week)

of experience (range 0–10). The global score of the scale is obtained from the algebraic sum of the score of frequency and duration for each item (range 0–290), and represents the final measurement of intensity. The CDS-IV showed high internal consistency (Cronbach's alpha of 0.90) and a good internal coherence ( $>0.70$ ) with good specificity (SP = 0.92) and sensitivity (S = 0.90). This instrument has been found to effectively discriminate DP disorder from other organic, (e.g., temporal lobe epilepsy) or psychiatric (e.g., anxiety disorders) conditions [30]. This Italian version was validated using a sample of subjects whose age range was 15–65.

The Italian version of the Positive and Negative Symptoms (PANSS) [36] is used for measurements of symptom severity in patients with schizophrenia. It is designed as an operationalized, drug-sensitive instrument that provides balanced representation of positive and negative symptoms and gauges their relationship to one another and to global psychopathology. The scale is a brief interview composed by 30 items divided into three subscales: Positive Scale (PANSS-P; 7 items), Negative Scale (PANSS-N; 7 items) and General Psychopathology Scale (PANSS-G; 16 items). The patient is rated from 1 to 7 on 30 different symptoms based on the interview as well as reports of family members or primary care hospital workers. The PANSS total score minimum is 30, and maximum is 210. The Italian version of the Beck Depression Inventory (BDI-II) [37] is one of the most widely used instruments for the assessment of the severity of depression. The scale is a self-administered questionnaire composed by 21 items. Specifically, we used the BDI-II (a 1996 revision of the BDI). Like the BDI, the BDI-II contains 21 questions each

Table 1  
Mean scores and standard deviations obtained in the scales on each socio-demographic and diagnostic group.

	CDS	BAI	PANSS-P	PANSS-N	PANSS-G	PANSS	BDI
Total sample	64.51 ± 43.71	22.51 ± 12.33	13.40 ± 6.94	17.08 ± 9.01	39.09 ± 12.07	69.77 ± 22.62	25.08 ± 13.66
Gender							
Men (41.61%)	54.95 ± 33.51	19.66 ± 11.16	15.53 ± 8.53	20.45 ± 9.96	42 ± 12.11	78.04 ± 25.41	21.88 ± 11.36
Woman (58.39%)	71.33 ± 48.77	24.54 ± 12.78	11.88 ± 5.07	14.67 ± 7.43	37.02 ± 11.68	63.87 ± 18.40	27.36 ± 14.73
Age							
Under 21 (36.91%)	66.36 ± 46.02	21.05 ± 10.81	13.43 ± 4.70	16.74 ± 7.96	35.94 ± 10.93	66.03 ± 19.20	24.36 ± 12.37
Over 21 (63.08%)	63.43 ± 42.51	23.36 ± 13.12	13.38 ± 7.99	17.27 ± 9.60	40.93 ± 12.38	71.95 ± 24.24	25.51 ± 14.41
Diagnostic group							
Depressive disorder (44.96%)	65.17 ± 41.65	23.82 ± 12.44	11.22 ± 4.70	13.31 ± 5.98	37.11 ± 11.90	61.58 ± 17.82	29.11 ± 13.99
Anxiety disorder (23.48%)	53.05 ± 46.10	26.94 ± 10.72	9.71 ± 2.87	12.42 ± 5.08	36.82 ± 8.77	60.11 ± 13.65	21 ± 12.43
Schizophrenic disorder (31.54%)	72.10 ± 43.89	17.34 ± 11.74	19.25 ± 8.07	25.91 ± 8.59	43.59 ± 13.37	88.63 ± 22.83	22.38 ± 12.71
Educational level							
Primary (4.78%)	85.85 ± 24.12	24.71 ± 12.55	12.14 ± 4.84	15.14 ± 5.63	32.14 ± 7.12	59.42 ± 15.20	25 ± 12.80
Junior high school (52.32%)	66.20 ± 45.36	22.38 ± 12.81	13.70 ± 7.92	18.43 ± 10.07	38.96 ± 11.97	71.35 ± 24.27	25.78 ± 12.68
High school (37.57%)	62.53 ± 44.09	22.87 ± 12.14	13.01 ± 5.71	15.23 ± 7.63	39.53 ± 12.36	67.91 ± 21.16	25 ± 15.33
Upper-degree (5.33%)	43.25 ± 30.82	19.25 ± 10.11	14.25 ± 7.01	18.5 ± 7.85	43.37 ± 13.86	76.37 ± 20.41	19 ± 11.90

CDS: Cambridge Depersonalization Scale total score.

BAI: Beck Anxiety Inventory total score.

PANSS-P: Positive and Negative Symptom Scale, Positive symptoms subscale total score.

PANSS-N: Positive and Negative Symptom Scale, Negative symptoms subscale total score.

PANSS-G: Positive and Negative Symptom Scale, General psychopathology subscale total score.

PANSS: Positive and Negative Symptom Scale total score.

BDI: Beck Depression Inventory total score.

answer being rated on a scale from 0 to 3. The cut-off used differs from the original: 0–13 minimal depression; 14–19 mild depression; 20–28 moderate depression; and 29–63 severe depression.

The Italian version of the Beck Anxiety Inventory (BAI) [37] is composed of 21 questions and it is used for measuring the severity of anxiety. The twenty-one items investigate symptoms over the past week, expressed as common symptoms of anxiety. Each item can be rated with a score from 0 to 3. Symptoms severity according to the scale is rated as follows: 0–7 minimal anxiety, 8–15 mild anxiety, 16–25 moderate anxiety, 26–63 severe anxiety.

### 2.3. Data analysis

Data analysis was performed using the Statistical Package NCSS [version 07.1.21 released: June, 2011. (c) Hintze J, NCSS, LLC. Kaysville, Utah. [www.ncss.com](http://www.ncss.com)] [38].

The study was conducted with a factorial analysis with varimax rotation. The analysis was carried out after application of Bartlett's test of sphericity in order to test the null hypothesis of a correlation matrix as an identity matrix (with all correlation coefficients equal to 0). In the step of factor extraction we used the condition of eigenvalue >1, thereby limiting the reading and evaluation of the factorial structure only to factors that fulfilled it. The aim was

to identify a factorial structure conditioned as little as possible by an *a priori* target of researchers. For the detection of variables included in each factor, we chose a value of cut-off loading >0.4 (after varimax rotation). The correlation between CDS factors scores and BDI, BAI and PANSS scores was obtained using the Pearson correlation. We used the one-way ANOVA to compare CDS factors scores with the three main diagnoses. The explanatory value of factors obtained through the varimax was verified analyzing the correlations among factors, using the Pearson's correlation coefficient. The results of the significance tests, unless otherwise expressly indicated, were assessed using an alpha value = 0.05 for rejecting the null hypothesis.

### 3. Results

Correlation matrix, preliminarily assessed by the Bartlett's test of sphericity, rejected the null hypothesis of an identity matrix ( $\chi = 1899.31$ ,  $df = 406$ ,  $p < 0.001$ ). Four factors were extracted based on the condition of eigenvalue >1, accounting for 97.4% of the variance. Eigenvalues and variance accounting for factors 1–4 were 3.87 (31.15%), 3.29 (26.50%), 2.53 (20.49%), and 2.39 (19.30%), respectively. Of note, all the extracted factors presented an eigenvalue >2. Correlations among factors were non-significant in all cases.

Table 2  
Rank-ordered CDS communalities.

Variables	Mean	Standard deviation	Communality
7) Flavor of meal no longer gives a feeling of pleasure or distaste	2.02	2.96	0.62
28) Unable to feel hunger and thirst	2.29	3.04	0.58
14) Recently done things feel as if they had taken place long time ago	2.61	2.83	0.57
24) Feeling mechanical and "robotic" when moving	2.65	2.97	0.54
23) Feeling of being outside the body	2.08	2.65	0.54
13) Surrounding feel detached or unreal	3.70	3.19	0.53
10) Feeling of not having any thoughts at all	2.72	3.11	0.51
27) Urge to touch oneself to be reassured of body existence	1.03	2.00	0.48
11) Own voice sounds remote and unreal	1.74	2.42	0.47
2) Things look flat as if looking at a picture	2.78	2.88	0.47
9) No emotions felt when weeping or laughing	2.32	3.06	0.46
1) Feeling unreal or cut-off from the world	3.81	2.78	0.46
20) Unable to feel properly things touched with hands	0.95	2.04	0.45
6) Feeling of being a detached observer of oneself	2.87	2.84	0.44
19) Objects look smaller or further away	0.74	1.81	0.40
26) Thoughts seem to have a life or their own	2.80	3.05	0.39
3) Body feels as it didn't belong to self	1.91	2.66	0.38
25) Smell of things no longer gives a feeling of pleasure or dislike	1.16	2.29	0.37
16) Feeling detached from personal memories, as if one had not been involved in them	2.73	3.12	0.35
5) Favorite activities no longer enjoyable	4.97	3.37	0.35
17) When in a new situation, feeling as if it had happen before	2.32	2.40	0.35
22) Feeling detached from pain	1.02	2.19	0.33
8) Body feels very light as if were floating on air	1.46	2.09	0.31
15) Seeing self outside, as if looking in a mirror	1.63	2.53	0.31
12) Feeling that hands and feet have become larger or smaller	0.81	1.78	0.29
18) Unable to feel affection towards family and friends	3.32	3.26	0.27
4) Absence of fear in distressing situations	2.36	2.85	0.26
29) Familiar places look strange and unfamiliar	1.44	2.38	0.24
21) Unable to picture things in mind	2.02	2.36	0.23

Mean scores and standard deviations for each item of the scale.

Table 3

Loadings matrix of extracted factors after varimax rotation.

Variables	Factor 1	Factor 2	Factor 3	Factor 4
10) Feeling of not having any thoughts at all	<b>-0.67</b>	0.12	-0.10	0.18
24) Feeling mechanical and “robotic” when moving	<b>-0.58</b>	0.38	-0.03	0.23
26) Thoughts seem to have a life or their own	<b>-0.57</b>	0.08	-0.11	0.20
1) Feeling unreal or cut-off from the world	<b>-0.55</b>	0.28	-0.22	0.16
13) Surrounding feel detached or unreal	<b>-0.54</b>	0.19	-0.36	0.26
23) Feeling of being outside the body	<b>-0.49</b>	<b>0.46</b>	0.01	0.30
9) No emotions felt when weeping or laughing	<b>-0.45</b>	0.11	<b>-0.41</b>	0.26
2) Things look flat as if looking at a picture	<b>-0.45</b>	0.20	<b>-0.41</b>	0.23
5) Favorite activities no longer enjoyable	<b>-0.43</b>	-0.01	-0.39	-0.08
19) Objects look smaller or further away	-0.08	<b>0.60</b>	-0.17	0.04
20) Unable to feel properly things touched with hands	-0.26	<b>0.58</b>	-0.12	0.17
27) Urge to touch oneself to be reassured of body existence	-0.30	<b>0.56</b>	0.00	0.25
3) Body feels as if didn't belong to self	-0.23	<b>0.52</b>	-0.22	0.10
12) Feeling that hands and feet have become larger or smaller	0.11	<b>0.51</b>	-0.13	0.05
22) Feeling detached from pain	-0.18	<b>0.46</b>	-0.12	0.27
11) Own voice sounds remote and unreal	<b>-0.42</b>	<b>0.44</b>	-0.11	0.30
7) Flavor of meal no longer gives a feeling of pleasure or distaste	-0.08	0.22	<b>-0.74</b>	0.06
28) Unable to feel hunger and thirst	-0.25	0.30	<b>-0.63</b>	0.15
25) Smell of things no longer gives a feeling of pleasure or dislike	-0.23	0.35	<b>-0.43</b>	0.05
6) Feeling of being a detached observer of oneself	-0.27	0.26	<b>-0.42</b>	0.33
14) Recently done things feel as if they had taken place long time ago	-0.35	0.11	-0.22	<b>0.61</b>
17) When in a new situation, feeling as if it had happen before	-0.13	0.18	-0.01	<b>0.54</b>
16) Feeling detached from personal memories, as if one had not been involved in them	-0.33	0.04	-0.15	<b>0.46</b>

Salient item loadings (>0.4) for each factor are listed in decreasing magnitude order (loadings in bold indicate the factor onto which each scale item loaded).

Factor loadings of the rotated factorial structure, with a cut-off = 0.4, identified the following items for each factor: Factor 1 (10 items): 10, 24, 26, 1, 13, 23, 9, 2, 5, 11; factor 2 (8 items): 19, 20, 27, 3, 12, 23, 22, 11; factor 3 (6 items): 7, 28, 25, 6, 9, 2; and factor 4 (3 items): 14, 17, 16.

The factorial structure (Tables 2 and 3) showed that items 4, 8, 15, 18, 21 and 29 were not present in any of the four factors extracted, thus limiting the items involved in the factorial structure to 23. Each original variable (item) was present only in one factor, except items 2 and 9 (found in factors 1 and 3) and items 11 and 23 (both present in factors 1 and 2).

We used the method of varimax rotation that has warranted not to preclude the opportunity to express the items in one factor, more than one factor, or none of them.

Factors loading after varimax rotation (Table 3) showed that factors 1 and 3 were negative, whereas items included in factors 2 and 4 were characterized by a positive factor loading. Given the significance of “pathological” responses of the original variables (the value of the score increases with the extent of the seriousness of the problem/symptom), the score of factors 2 and 4 was positively correlated with the disease, whereas factors 1 and 3 accounted for a reading of “health” (score negatively associated with the disease). The reading of the communality of original variables (Table 2), with an oscillation range of 0.24–0.62, showed that besides the 6 items (item 4, 8, 15, 18, 21 and 29 with communality <0.35) that did not significantly load onto any factor, only item 12 (value of communality: 0.29) had a communality lower than the six former items. Then, we also analyzed the correlation among the scores of the four extracted factors and the scores of the other scales (BAI, BDI, PANSS).

Some correlations were statistically significant ( $p < 0.05$ ) (Table 4). In particular, the BDI total scores showed a positive correlation with all factors, which was stronger with factor 1 (F1  $r = 0.60$ ; F2  $r = 0.46$ ; F3  $r = 0.54$ ; F4  $r = 0.34$ ;  $p < 0.01$ ). BAI total scores were positively correlated with all factors, with correlation being weaker with factor 4 (F1  $r = 0.43$ ; F2  $r = 0.44$ ; F3  $r = 0.47$ ; F4  $r = 0.27$ ;  $p < 0.01$ ). PANSS-N subscale scores were positively correlated—albeit weakly—only with factor 1 ( $r = 0.16$ ;  $p = 0.04$ ) and factor 4 ( $r = 0.16$ ;  $p = 0.04$ ), whereas there was no significant correlation with PANSS-P subscale scores.

Table 4

Pearson correlation section (pair-wise deletion,  $n = 149$ ).

	F1	F2	F3	F4	CDS
BAI	0.43**	0.44**	0.47**	0.27**	0.48**
BDI	0.60**	0.46**	0.54**	0.33**	0.59**
PANSS-P	0.01	0.07	0.06	0.08	0.07
PANSS-N	0.16*	0.15	0.07	0.16*	0.15
PANSS-G	0.30**	0.26**	0.22**	0.21**	0.28**
PANSS	0.23**	0.22**	0.16*	0.20*	0.23**

CDS: Cambridge Depersonalization Scale total score.

BAI: Beck Anxiety Inventory total score.

PANSS-P: Positive and Negative Symptom Scale, Positive symptoms subscale total score.

PANSS-N: Positive and Negative Symptom Scale, Negative symptoms subscale total score.

PANSS-G: Positive and Negative Symptom Scale, General psychopathology subscale total score.

PANSS: Positive and Negative Symptom Scale total score.

BDI: Beck Depression Inventory total score.

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .

PANSS-G subscale scores were positively but weakly correlated with all factors (F1  $r = 0.30$ ; F2  $r = 0.26$ ; F3  $r = 0.22$ ; F4  $r = 0.21$ ;  $p < 0.01$ ). PANSS-T scores were also weakly and positively correlated with all factors (F1  $r = 0.23$ ; F2  $r = 0.22$ ;  $p < 0.01$ ; F3  $r = 0.16$ ;  $p = 0.04$ ; F4  $r = 0.20$ ;  $p = 0.01$ ).

We performed a one-way ANOVA analysis to compare the three diagnoses and the mean scores of the four extracted factors. The analysis showed no significant differences.

Finally, we found no correlation among the scores of the four factors ( $p > 0.05$ ). The lack of interdependency supports the descriptive ability and adequacy of the four factors we have identified.

#### 4. Discussion

In line with previous reports [32,33] our data suggest that the construct of DP/DR comprises several distinct underlying dimensions. The extracted factors accounted for 97.4% of the variance. This result is relevant and of great interest if compared to previous studies in which the factors accounted for 73.3% [32] and 55.8% [33] of variance. We called the first factor as “Detachment from the Self”. Five items (10, 11, 23, 24, and 26) corresponded to the second factor of Simeon’s analysis, defined as “Unreality of Self”. These items capture experiences of detachment from actions and thoughts of an individual. This recalls the classical definition of DP and is reminiscent of the *DSM* description of the experience. Factor 2, describing “Anomalous bodily experiences”, captures the experience of detachment from the body, mind, thoughts and actions [33], but mostly refers to bodily experiences (27, 23, 20, 3, 22, and 12). Most of the items overlap with the first factor identified by Sierra et al. [32] and called “Anomalous body experiences”, but two items (22 and 12) deal with body perception. Such somatosensory distortions may facilitate a differential diagnosis with conditions, such as schizophrenia, which are characterized by a profound alteration of body image which is not described as an “as if” experience like in DP. Item 11 (“own voice sounds remote and unreal”) was included in factors 1 [32] and 2. Sierra et al. proposed that this symptom may be explained by the loss of feeling of agency whereas our results could be explained by the fact that the self-feeling of own voice deals with subjectivity and the essence of human identity, not only with bodily experiences. As opposed to the study by Sierra et al., items describing “out of body experiences” (15, 6, 23) were distributed over three factors. These phenomena occur spontaneously, and are rare in normal subjects and in neurologic and psychiatric patients. They have been linked to psychosis, depression, anxiety, DP and body dysmorphic disorders, suggesting that they are common to a wide range of situations. Factor 3 was named “Numbing” and describes the dampening of affects, varying from loss of affection or pleasure to experience some bodily sensations, such as hunger and thirst. It includes item 2 (“Things look flat as if

looking at a picture”), which in previous studies belongs to the DR factor. However, in our opinion item 2 better deals with a blunted vision of the external world, recalling the concept of “melancholic depersonalization” [39] described by Kraus as the core of melancholia. Because this factor contains symptoms referring to physiological needs (e.g., the sense of thirst and hunger), we decided to label it as “Numbing” and not “Emotional numbing”. Factor 4, defined as “Temporal blunting” includes items 14, 17, and 16 and shows a complete overlap with previous studies, except for item 21 [32,33]. The described phenomena can be intended either as an anomalous subjective experience of time [33] or as a distortion of recall that may involve both neutral situations or more autobiographical memories. This is evident in item 16 (“Feeling detached from personal memories as if one had not been involved in them”) [32]. Our analysis suggests the absence of any specific factor describing DR by itself, which means that the constructs of DP/DR were strongly related to each other. In agreement with the current literature [32], the dimension of DR is closely linked to DP. This is in line with the *DSM-5* that states: “There is no evidence of any distinction between individuals with predominantly depersonalization versus derealization symptoms. Therefore, individuals with this disorder can have depersonalization, derealization, or both” [2]; thus, DP and DR are merged into a single disorder, and only one of the two criteria is now necessary for the diagnosis of the syndrome. We believe that future studies are needed to further investigate this interesting issue.

There was no significant difference among the three diagnostic groups (depression, schizophrenia and anxiety) in terms of factor mean scores. The possibility of finding an association between DP specific dimensions and particular psychiatric disorders might have interesting and important implications for example in terms of prevention and early intervention. Current studies are now investigating psychopathological markers which might help to identify subjects at risk for psychosis or affective disorders. Some authors consider DP as a disorder of self-experience, in prodromal phases of schizophrenia or others psychotic disorders [18]. Further studies with larger samples are needed to examine this topic more accurately.

#### References

- [1] Michal M, Glaesmer H, Zwerenz R, Knebel A, Wiltink J, Brähler E, et al. Base rates for depersonalization according to the 2-item version of the Cambridge Depersonalization Scale (CDS-2) and its associations with depression/anxiety in the general population. *J Affect Disord* 2011;128:106-11.
- [2] American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. Washington, DC: American Psychiatric Association; 2013.
- [3] Dugas L. Un cas de Depersonnalisation. *Revue Philosophique de Paris et l'Étranger XLV*; 1898. p. 500-7.
- [4] Krishaber M. *De la névropathie cérébro-cardiaque*. Paris: Masson; 1872.
- [5] Shorvon HJ. The depersonalization syndrome. *Proc R Soc Med* 1946;39:779-92.

- [6] Ackner B. Depersonalization; I. Aetiology and phenomenology. *J Ment Sci* 1954;100:838-53.
- [7] Sierra M, Berrios GE. Depersonalization: neurobiological perspectives. *Biol Psychiatry* 1998;44:898-908.
- [8] Sierra M, Berrios GE. Depersonalization: a conceptual history. *Hist Psychiatry* 1997;8:213-29.
- [9] World Health Organization. *The ICD-10 Classification of mental and behavioral disorders*. Geneva: World Health Organization; 1992.
- [10] Medford N, Sierra M, Baker D, David AS. Understanding and treating depersonalization disorder. *Adv Psychiatr Treat* 2005;11:92-100.
- [11] American Psychiatric Association. *Diagnostic and statistical manual of mental disorders text revision (DSM-IV-TR)* 4th ed. . Washington, DC: American Psychiatric Association; 2000.
- [12] Gonzalez-Torres MA, Inchausti L, Aristegui M, Ibañez B, Diez L, Fernandez-Rivas A, et al. Depersonalization in patients with schizophrenia spectrum disorders. First-degree relatives and normal controls. *Psychopathology* 2010;43:141-9.
- [13] Lambert MV, Senior C, Fewtrell WD, Phillips ML, David AS. Primary and secondary depersonalization disorder: a psychometric study. *J Affect Disord* 2001;63:249-56.
- [14] Sierra M. *Depersonalization: a new look at a neglected syndrome*. Cambridge: Cambridge University Press; 2009.
- [15] Baker D, Hunter E, Lawrence E, Medford N, Patel M, Senior C, et al. Depersonalization disorder: clinical features of 204 cases. *Br J Psychiatry* 2003;182:428-33.
- [16] Simeon D. Depersonalisation disorder: a contemporary overview. *CNS Drugs* 2004;18:343-54.
- [17] Mula M, Pini S, Cassano GB. The neurobiology and clinical significance of depersonalization in mood and anxiety disorders: a critical re-appraisal. *J Affect Disord* 2007;99:91-9.
- [18] Parnas J, Handest P. Phenomenology of anomalous self experience in early schizophrenia. *Compr Psychiatry* 2003;44(2):121-34.
- [19] Michal M, Wiltink J, Till Y, Wild PS, Blettner M, Beutel ME. Distinctiveness and overlap of depersonalization with anxiety and depression in a community sample: results from Gutemberg Heart Study. *Psychiatry Res* 2011;188(2):264-8.
- [20] Sierra M, Senior C, Dalton J, McDonough M, Bond A, Phillips ML, et al. Autonomic response in depersonalization disorder. *Arch Gen Psychiatry* 2002;59:833-8.
- [21] Simeon D, Guralnik O, Knutelska M, Hollander E, Schmeidler J. Hypothalamic–pituitary–adrenal axis dysregulation in depersonalization disorder. *Neuropsychopharmacology* 2001;25(5):793-5.
- [22] Hunter EC, Sierra M, David AS. The epidemiology of depersonalization and derealization: a systematic review. *Soc Psychiatry Psychiatr Epidemiol* 2004;39(1):9-18.
- [23] Sugiura M, Hirotsawa M, Tanaka S, Nishi Y, Yamada Y, Mizuno M. Reliability and validity of a Japanese version of the Cambridge Depersonalization Scale as a screening instrument for depersonalization disorder. *Psychiatry Clin Neurosci* 2009;63:314-21.
- [24] Michal M, Beutel ME, Grobe TC. How often is depersonalization–derealization disorder (*ICD-10*: F48.1) diagnosed in the outpatient health-care service? *Z Psychosom Med Psychother* 2010;56(1):74-83.
- [25] Michal M, Wiltink J, Subic-Wrana C, Zwerenz R, Tuin I, Lichy M, et al. Prevalence, correlates and predictors of depersonalization in the German general population. *J Nerv Ment Dis* 2009;197(7):499-506.
- [26] Dixon JC. Depersonalization phenomenon in a sample population of college students. *Br J Psychiatry* 1963;109:371-5.
- [27] Jacobs JR, Bovasso GD. Towards the classification of the construct of depersonalisation and its association with affective and cognitive dysfunctions. *J Pers Assess* 1992;59:352-65.
- [28] Bernstein EM, Putnam FW. Development, reliability, and validity of a dissociation scale. *J Nerv Ment Dis* 1986;174(12):727-35.
- [29] Carlson EB, Putnam FW. An update on the Dissociative Experiences Scale. *Dissociation* 1993;6:16-27.
- [30] Sierra M, Berrios GE. The Cambridge Depersonalization Scale: a new instrument for the measurement of depersonalization. *Psychiatry Res* 2000;93(2):153-64.
- [31] Fewtrell WD. *Fewtrell Depersonalisation Scale (FDS)*. Leicester: APT Press; 2000.
- [32] Sierra M, Baker D, Medford N, David AS. Unpacking the depersonalization syndrome: an exploratory factor analysis on the Cambridge Depersonalization Scale. *Psychol Med* 2005;35(10):1523-32.
- [33] Simeon D, Kozin DS, Segal K, Lerch B, Dujour R, Giesbrecht T. Deconstructing depersonalization: further evidence for symptom clusters. *Psychiatry Res* 2008;157(1):303-6.
- [34] Migliorini V, Dell'Erba A, Fagioli F, Sierra M, Mosticoni S, Telesforo L, et al. Italian (cross cultural) adaptation and validation of the Cambridge Depersonalization Scale (CDS). *Epidemiol Psychiatr Sci* 2012;21(2):221-6.
- [35] First MB, Spitzer RL, Gibbon M, Williams JBW. *Structured Clinical Interview for DSM-IV Axis I Disorders, Clinician Version (SCID-CV)*. Washington DC: American Psychiatric Press Inc.; 1996.
- [36] Pancheri P, Brugnoti R, et al. Valutazione dimensionale della sintomatologia schizofrenica. Validazione della versione italiana della Scala per la valutazione dei Sintomi Positivi e Negativi (PANSS). *G Ital Psicopatol* 1995;60:1-3.
- [37] Sica C, Ghisi M. The Italian versions of the Beck Anxiety Inventory and the Beck Depression Inventory-II: psychometric properties and discriminant power. In: & Lange MA, editor. *Leading-Edge Psychological Tests and Testing Research*. New-York: NOVA Science Publishers; 2007. p. 27-50.
- [38] Hintze J. *Statistical Package NCSS (version 07.1.21 released: June, 2011)*. (c) NCSS. Kaysville, Utah: NCSS, LLC; 2007 [ [www.ncss.com](http://www.ncss.com)].
- [39] Kraus A. The significance of empathy for the diagnosis of schizophrenia and melancholia. *Comprendre* 2004;14:79-85.

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