

## Italian (cross cultural) adaptation and validation of the Cambridge Depersonalization Scale (CDS)

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Dear Editor

Depersonalization (DP), long a complex and obscure subject of clinical psychiatry, has become a recurrent topic of psychopathology in the last 10 years. Often accompanied by derealization, a threatening sense of unreality in the environment, which also appears unfamiliar, DP is defined as an experience of 'unreality' and 'detachment' from the self. But in clinical practice DP can have various and shaded forms and it is still unclear whether it should be considered a symptom or a syndrome.

DP occurs on a continuum from transient episodes to a symptom complex in a primary psychiatric diagnosis, or as a primary mental disorder that tends to run a chronic course (Simeon *et al.* 1998). It seems that it can co-occur with virtually any psychiatric condition.

Major nosographic systems in turn have emphasized the anxiety component or saw the condition closer to a dissociative one. In the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition-Text Revision (DSM-IV TR) (American Psychiatric Association, 2000), DP is an independent condition inside dissociative disorders, 'the DP Disorder'. In International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) (World Health Organization, 1992), it is a neurotic condition whose occurrence as an isolated syndrome is uncommon.

Current epidemiological data show a prevalence of clinically significant DP (DP disorder in DSM-IV TR) in general population of approximately 1–2%, similar to prevalence found for common mental disorders, such as bipolar and obsessive-compulsive disorder (Michal *et al.* 2009).

The first systematic review on epidemiology reports that prevalence rates of transient symptoms of DP in general population range between 26 and 74% (Hunter *et al.* 2004).

Despite this prevalence, available instruments assessing DP (Table 1) (Mula *et al.* 2007a) often lack psychometric properties, as a consequence of a theoretical gap or of different theoretical models.

Many of the instruments are not specific, having only a few items detecting DP experiences at an explicit level according to the classic repartition (self, bodily and allopsychic). They fail to address either the phenomenological complexity or the frequency and the intensity of the phenomenon.

As for the specific ones, all were developed to measure severity of DP symptoms within a defined time frame (6–12 months) and proved useful in monitoring treatment response, but they have shown dubious validity (e.g. Dixon's Depersonalization Scale (DDS) has only been used in few studies and includes clinical features not considered part of the syndrome by the classical descriptors; Jacobs and Bovasso Depersonalization Scale (JBS) leaves out some important cognitive complaints) (Sierra & Berrios, 2000). The Structured Clinical Interview for DP-Derealization Spectrum (SCI-DER), developed on a spectrum model of DP lifetime experiences, showed very good reliability and validity, but with 49 items may take quite a long time to perform.

Among all the instruments only the DES scale is translated into Italian.

Based on a comprehensive study of DP phenomenology, the Cambridge Depersonalization Scale (CDS) (Sierra & Berrios, 2000) was designed to measure parameters of intensity and frequency within the previous 6 months.

The questionnaire showed high internal consistency, good reliability (Cronbach's alpha and split-half reliability of 0.89 and 0.92, respectively), and convergent validity when compared with the DP subscale of the DES (0.80) (Sierra & Berrios, 2000; Sierra *et al.* 2005).

A factor analysis performed in 2005 by Sierra *et al.* extracted four factors accounting for 73.30% of the variance. A second one in 2008 (Simeon *et al.* 2008) used a larger sample and appeared to split up the factor labeled 'anomalous body experiences' in the first study, into two components: 'unreality of self' and 'perceptual alterations'.

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**Table 1.** Instruments that evaluate DP experiences

	Authors	Number of items
Specific questionnaire on DP		
Dixon Scale	Dixon (1983)	12
Jacobs and Bovasso DP Scale	Jacobs & Bovasso (1992)	25
Fewtrell Scale	Fewtrell (2000)	35
Cambridge DP Scale	Sierra & Berrios (2000)	29
Severity Scale DP	Simeon <i>et al.</i> (2001)	6
DP-DR Inventory	Cox & Swinson (2002)	28
Structured Clinical Interview for DP-DR Spectrum	Mula <i>et al.</i> (2008)	49
Questionnaire on dissociative experiences		
Dissociative Experiences Scale	Bernstein & Putnam (1986)	28
Perceptual Alteration Scale	Sanders (1986)	27
Dissociation Experiences Questionnaire	Ryley (1988)	26
Clinical Administered Dissociative Status	Bremner <i>et al.</i> (1998)	27
State Scale of Dissociation	Krüger & Mace (2002)	56

In our opinion CDS can be considered a valid instrument to capture the phenomenological complexity of DP, with its bodily, cognitive, neurotic and dissociative experiences.

Thus, the aim of the present study is to perform the cross-cultural (Italian) adaptation of the CDS and the subsequent validation in a population of psychiatric patients.

## Methods

The sample (Table 2) was made up of 92 in- and out-patients referred to psychiatric services from within a catchment area of 500 000, residents around Rome, from June 2010 to July 2011.

Inclusion criteria were: first contact with mental health services aged between 15 and 65 years; diagnosis of schizophrenic, depressive or anxiety disorder; signed, informed consent form.

Exclusion criteria were: acute conditions, preventing the understanding of the nature of study; cognitive or serious sensorial deficits; DP symptoms induced by drug-related disorders.

Patients received a diagnosis after an evaluation using the Structured Clinical Interview for DSM Disorders (SCID I) (First *et al.* 1996): 42 patients met DSM IV-TR criteria for a Depressive Disorder, 31 for Schizophrenia and 19 for Anxiety Disorders, with or without DP experiences.

We assessed the presence of DP symptoms according to clinical evaluation based on criteria A and B of the DP Disorder diagnosis of the DSM IV-TR (Criterion A: persistent or recurrent experiences of feeling detached from, and as if one is an outside observer of, one's mental processes or body, e.g. feeling as if one

is in a dream. Criterion B: during the DP experience reality testing remains intact).

The clinics are the gold-standard used to establish the questionnaire validity. All sites adopted the same study design.

Patients filled out the following questionnaires:

- (1) The CDS in its Italian version (CDS IV) after cross cultural adaptation. It is a 29-item self-administered questionnaire. Each item includes two Likert-type scales (frequency and duration). The sum of scores in each one of them is considered the final measurement of intensity. The authors obtained a cut-off of 70, with 75.70% sensitivity and 87.20% specificity.
- (2) The Italian version of the DES (Fabbri Bombi *et al.* 1996). It is a 28-item visual analogue scale containing three dimensions or factors: absorption, DP/DR and amnesia. Other studies have indicated the existence in the scale of a single pathological dissociation type or taxon. Simeon *et al.* (1998) demonstrated that the DP/DR factor can be used as screening tool for the DP disorder.
- (3) The Italian version of the Beck Depression Inventory (BDI) (Sica & Ghisi, 2007).
- (4) The Italian version of the Beck Anxiety Inventory (BAI) (Sica & Ghisi, 2007).
- (5) The Italian version of the Positive and Negative Syndrome Scale (PANSS) (Pancheri & Brugnoli, 1995).

The questionnaire was translated using the standard translation/back-translation method.

An attempt was made to guarantee the correspondence of the content in the writing of the items (e.g. item 2 original: What I see looks 'flat' or 'lifeless', as if I were looking at a picture. Adaptation: Ciò che

**Table 2.** Socio-demographic characteristics and scores obtained in the questionnaires on each diagnostic group

	Total sample, n = 92	Schizophrenia, n = 31 (33.7%)	Depressive disorder, n = 42 (45.6%)	Anxiety disorder, n = 19 (20.6%)
Gender				
Men	36 (39.1%)	18 (58.1%)	12 (28.6%)	6 (31.6%)
Women	56 (60.9%)	13 (41.9%)	30 (71.4%)	13 (68.4%)
Age	36.48 ± 14.59	35.83 ± 13.71	37.92 ± 15.89	34.36 ± 13.33
Educational level				
Primary	6 (6.5%)	3 (9.7%)	2 (4.8%)	1 (5.3%)
Junior high school	38 (41.3%)	16 (51.6%)	17 (40.5%)	5 (26.3%)
High school	42 (45.7%)	10 (32.3%)	21 (50.0%)	11 (57.9%)
Upper-degree	6 (6.5%)	2 (6.5%)	2 (4.8%)	2 (10.5%)
Unit				
Outpatients	66 (71.7%)	23 (74.2%)	27 (64.3%)	16 (84.2%)
Inpatients	26 (28.3%)	8 (25.8%)	15 (35.7%)	3 (15.8%)
DP according to clinical opinion				
Present	50 (54.3%)	21 (67.7%)	22 (52.4%)	7 (36.8%)
Absent	42 (47.7%)	10 (32.3%)	20 (47.6%)	12 (63.2%)
Mean total scores				
BDI	25.44 ± 14.02	24.29 ± 13.14	29.16 ± 15.04	19.10 ± 10.65
BAI	24.33 ± 13.10	19.54 ± 13.23	25.85 ± 12.75	28.78 ± 11.83
DES	19.47 ± 14.51	23.11 ± 16.30	18.50 ± 14.64	15.70 ± 9.67
DES DP/DR	20.79 ± 19.99	27.19 ± 18.95	19.13 ± 21.20	14.03 ± 16.51
CDS IV	66.40 ± 41.95	80.45 ± 42.35	64.66 ± 42.95	47.31 ± 31.18
PANSS TOT	70.42 ± 22.23	88.96 ± 19.87	60.09 ± 17.61	63.00 ± 15.34
PANSS-P	12.53 ± 6.34	18.22 ± 6.51	10.23 ± 4.36	8.31 ± 1.52
DES AMNESIA	12.60 ± 13.72	14.75 ± 16.40	12.42 ± 12.99	9.47 ± 10.01
DES ABSORPTION	24.04 ± 17.31	28.16 ± 20.53	22.48 ± 16.06	20.80 ± 13.36
DES TAXON	17.06 ± 15.96	21.88 ± 17.54	16.58 ± 16.28	10.26 ± 9.00

The scores of the questionnaire are given as means ± s.d.; BDI, Beck Depression Inventory; BAI, Beck Anxiety Inventory; DES, Dissociative Experiences Scale; DES-DP/DR, subscale of the DES; CDS-IV, Italian version of the Cambridge Depersonalization Scale; PANSS TOT, Positive and Negative Syndromes Scale; PANSS-P, Positive subscale; DES AMNESIA, subscale of the DES; DES ABSORPTION, subscale of the DES; DES TAXON, subscale of the DES.

vedo sembra 'piatto' o 'senza vita' come se stessi guardando un quadro).

The only difficulties patients met regarded negatively expressed items.

To evaluate the test-retest reliability, 31 subjects (7 schizophrenics, 7 with an Anxiety Disorder and 17 with a Depressive Disorder) were given an appointment 15 days after the first evaluation to re-administer the CDS IV, after verifying that no psychopathological change had occurred.

The data were analysed with the Statistical Package for the Social Sciences (SPSS) version 17.0.1 (2008).

We applied the chi-square test for qualitative variables and the one way ANOVA analysis and the non-parametric Kruskal-Wallis for the numeric variables. Significance evaluation was made according to a  $p < 0.05$  for two-tailed tests.

Internal consistency was studied with the Cronbach's alpha coefficient. The Item Total

Correlation (ITC) was used to test each item contribution to the total score.

Then test-retest reliability was performed. In both administrations, test positivity was defined for score  $>70$ , thus the answer is to be considered categorical and as such can be studied with the Cohen kappa test.

Next, construct and criterion validity were studied.

The correlation between CDS IV total score and other scales scores (external validity) was obtained using Spearman non-parametrical correlations coefficient.

Convergent validity was performed between CDS IV and the DP/DR factor of the DES. Divergent validity was carried out on the CDS IV and the PANSS scale for schizophrenic patients.

Finally, we evaluated sensitivity (S), specificity (SP) and maximum likelihood ratios for positive and negative results (PLR and NLR, respectively) through the ROC curve analysis.

## Results

A total of 92 subjects were evaluated: 31 (33.70%) met the DMV-IV-TR criteria for Schizophrenia, 42 (45.60%) for a Depressive Disorder and 19 (20.60%) for an Anxiety Disorder. Mean age of the sample was  $36.48 \pm 14.59$  years, 60.9% being women. Only 26 patients (28.30%) came from hospitalization unit: 15 were adolescents and 11 were adults.

Table 2 illustrates socio-demographic data and mean-scores obtained by diagnostic groups in the different scales.

Score distribution of the CDS IV did not reach normal distribution (D'Agostino Omnibus value = 13.19;  $p = 0.001$ ).

A total of 50 patients (54.30%) had DP experiences according to clinical opinion (22 with a Depressive Disorder, 7 with an Anxiety Disorder, 21 with Schizophrenia).

Patients diagnosed with schizophrenia had the highest scores on the CDS IV.

None of the cases met DSM-IV-TR criteria C or D for DP Disorder.

As for internal consistency of the CDS IV, Cronbach's alpha was 0.90 showing a good internal coherence ( $>0.70$ ) in all the diagnosis.

The ITC was carried out to verify each item contribution to the total score: correlation between intensity and global score ranged from 0.13 to 0.70, with 25 items over 29 having an ITC value above 0.40. We observed that all the items showed a significant correlation with the total score with some exceptions: item 4 in the total sample; items 4 and 17 in the group with a Depressive Disorder; items 2, 4, 5, 12, 15, 17, 21, 22, 27 and 28 in the group with an Anxiety Disorder; items 4, 12, 21, 22 and 26 in the Schizophrenia group.

Test-retest reliability was performed in 31 subjects. Out of 13 patients with DP symptoms according to clinical evaluation, 11 were detected by CDS IV with scores above 70 in both administrations.

The total score showed a high correlation ( $r = 0.94$ ,  $p < 0.001$ ) between the two different administrations, without significant differences (Student *t* test for paired data  $t = 1.43$ ;  $p = 0.16$ ). Test-retest reliability, when obtained with kappa Cohen test, showed a total reliability with a kappa value of 1. When using the original cut-off of 70 the two administrations showed a total reliability (100% of the observed cases).

Table 3 shows Spearman correlation coefficients between CDS IV global score (as the sum of intensity scores for all items) and other scales. Convergent validity reached 0.72 ( $p < 0.001$ ) when comparing the CDS IV with the DP/DR factor of the DES.

Divergent validity, when correlating the CDS IV score with the PANSS positive scale, reached 0.21 ( $p < 0.05$ ).

**Table 3.** Spearman correlation coefficients between CDS-IV and other scales

Other scales	CDS-IV (rho)
BAI*	0.37
PANSS-P	0.21
PANSS-N	0.28
PANSS-PG*	0.34
PANSS TOT*	0.34
DES TOT*	0.69
DES AMNESIA*	0.46
DES ABSORPTION*	0.57
DES DP/DR*	0.72
DES TAXON*	0.69
BDI*	0.51

All correlations reach statistical significance with  $p < 0.05$ .

\*Significant statistical differences:  $p < 0.001$ .

CDS-IV, Italian version of the Cambridge Depersonalization Scale; BAI, Beck Anxiety Inventory; PANSS-P, Positive subscale; PANSS-N, Negative subscale; PANSS-PG, General Psychopathology; PANSS TOT, Positive and Negative Syndromes Scale; DES, Dissociative Experiences Scale; DES AMNESIA, subscale of the DES; DES ABSORPTION, subscale of the DES; DES-DP/DR, subscale of the DES; DES TAXON, subscale of the DES; BDI, Beck Depression Inventory.

The ROC curve showed an area under the curve of 0.92 (95% CI: 0.82–0.96). The best compromise between true positive and false positive rates is at a cut-off of 59 ( $S = 0.90$ ;  $SP = 0.92$ ;  $PLR = 12.60$ ;  $NLR = 0.10$ ).

In the schizophrenic patients group, the area under the curve obtained was 0.84 (95% CI: 0.49–0.95). In the case of depressed patients the area under the curve obtained was 0.95 (95% CI: 0.79–0.98). The Anxiety Disorder group had an area under the curve of 0.89 (95% CI: 0.36–0.98).

The best cut-off in schizophrenic group was 59, a higher cut-off of 61 was observed in the depressive group, while the identification of the cut-off for anxious patients was not possible due to the small size of this group.

## Discussion

Validated CDS versions translated into German, Spanish and Japanese (Michal *et al.* 2004; Molina Castillo *et al.* 2006; Sugiura *et al.* 2009) showed high internal consistency (Cronbach's alpha: 0.95, 0.94 and 0.94, respectively) and high correlations with DES DP/DR subscale (Spearman coefficient: 0.75, 0.60 and 0.65, respectively).

As far as adaptation is concerned, no significant changes had been made to the original content. Only item 4 proved difficult, since many patients found it

difficult to answer negatively expressed items. Also, the difficulties in understanding and describing such strange subjective experiences are well known. Many difficulties, as already mentioned in literature (Icaran *et al.* 1996), were expressed in DES extension items and interpretation, so that explanations were needed.

DP, as detected from clinical impression, was found in almost half of the sample, foremost in the schizophrenic, followed by depressive group.

Patients diagnosed with schizophrenia had the highest scores on the CDS IV.

This is consistent with recent studies that, even if showing different rates, indicate that DP is frequently associated with schizophrenia (Maggini *et al.* 2002; Hunter *et al.* 2004).

Some authors attribute these high rates to schizophrenic patients' difficulties in identifying and distinguishing the 'as if' experiences. This would lead to false positives and thus to an overestimation of the phenomenon. This is why most studies investigate DP in stable remitted conditions, to minimize the potential effect of concurrent acute psychosis on the measurement of experiential pathology.

The internal consistency (Cronbach's alpha coefficient: 0.90) displayed its high homogeneity and it is in line with or higher than what was reported by the DDS (0.53–0.84), JBS (0.78–0.84), the CDS original version (0.89) and the Depersonalization Severity Scale (DSS) (0.59). Each item correlated highly with the total score in all diagnostic groups, except for item 4 (negatively expressed item).

The CDS IV showed a high correlation in the test-retest reliability ( $r=0.94$ ,  $p<0.001$ ), with a Cohen kappa value of 1. These results are comparable with those reached in the German version (0.89) and in the SCI-DER (0.88). Test-retest reliability is unknown for the CDS original version, DDS and JBS.

As expected, the CDS IV strongly correlated with the DES total score (Spearman coefficient: 0.69) and with the DP/DR of the DES (0.72), which is in line with or higher than what was reported by DDS (0.49), JBS (0.44), CDS original version (0.80) and DSS (0.63).

The lowest correlation was with the PANSS positive symptoms subscale (Table 3): according to its definition criteria, DP is not a delusional experience.

The area under the ROC curve was of 0.92, showing a good general capacity of the scale to differentiate subjects with and without DP experiences, as found in previous studies.

The cut-off reaching the best compromise between true positive and false positive rates was of 59 ( $S=0.90$ ;  $SP=0.92$ ).

This value is lower compared to other works: it could be due to the fact that we had no case of DP

disorder in our sample. It is worth noting that our instrument was not meant to be used as a diagnostic tool, but rather a rapid screening one to classify patients susceptible of being evaluated with more reliable criteria. Literature confirms that manifestations of DP have clinical significance and may play an important role in modifying the presentation of a psychiatric disorder and interfere with treatment (Mula *et al.* 2007b). On this basis, we considered that our cut-off could detect relevant phenomena susceptible of further and more reliable evaluation.

We believe further researches are needed to compare phenomenological characteristics of primary and secondary DP experiences. Meanwhile the CDS could be conceived as a valid aid to perform a descriptive analysis of DP experiences.

### Declaration of Interest

The authors report no conflicts of interest. The instrument in Italian will be sent by the authors to those who require it.

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