

# Demographic and Mental Health Factors Associated with Pathological Dissociation in a Portuguese Sample

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**ABSTRACT.** Pathological dissociation has been extensively studied in many countries; however, little is known about it in Portugal. This research examined the role of demographic variables and mental health on dissociation in Portugal. We assessed 505 participants from 6 samples consisting of dissociative patients ( $n = 37$ ), conversive patients ( $n = 26$ ), somaticizing patients ( $n = 59$ ), posttraumatic stress disorder patients ( $n = 50$ ), other psychiatric patients ( $n = 174$ ), and nonclinical subjects ( $n = 159$ ). Dissociation was measured by Portuguese versions of the Dissociative Experiences Scale and Somatoform Dissociation Questionnaire; the LEAD procedure and subscales of the Brief Symptom Inventory indicated mental health. Pathological *psychological* dissociation was significantly more frequent in women, in the youngest of the participants, and in those with less education. Multiple logistic regression revealed that psychoticism, paranoid ideation, and depression symptoms made both men and women more vulnerable to psychological dissociation. Furthermore, psychological dissociation was more probable in men having symptoms of obsession and paranoid ideation and in women having symptoms of psychoticism and

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paranoid ideation. Pathological *somatoform* dissociation was significantly more probable in women with less education. Moreover, somatoform dissociation was more likely in women with somatization symptoms and more likely in men with symptoms of somatization and psychoticism. Even though significant associations were found, causal relations could not be established because the study was cross-sectional.

**KEYWORDS.** Pathological dissociation, Dissociative Experiences Scale, Somatoform Dissociation Questionnaire, assessment, demographic factors, mental health factors

## INTRODUCTION

In the 19th century, Pierre Janet was the first to formulate a dissociation theory that postulated psychological and somatoform dissociation as hysterical reactions that consist of amnesia, intrusive traumatic memories, and sensory and motor alterations (Janet, 1889/1998; Nijenhuis, 2000). At the present time, dissociation is conceptualized as the disintegration of consciousness, memory, identity, and perception of the environment (American Psychiatric Association, 1994). Dissociation can be conveyed in *psychological* and in *somatoform* ways (Näring & Nijenhuis, 2005; Nijenhuis, 2000; Nijenhuis, Spinhoven, Van Dyck, Van der Hart, & Vanderlinden, 1996; Van der Hart, Van Dijke, Van Son, & Steele, 2000; G. Waller et al., 2000). Both are mental phenomena, and the denominations merely state the ways in which dissociation can be expressed. Psychological dissociation is expressed in mental aspects, and somatoform dissociation is manifested in the body (Nijenhuis, 2000). The Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986) and Somatoform Dissociation Questionnaire (SDQ-20; Nijenhuis et al., 1996) were developed, respectively; these instruments are the most extensively employed self-report measures of dissociation and make possible comparisons between samples across the world.

The clinical significance of dissociation is widely recognized. Psychological dissociation is a key aspect of dissociative disorders (e.g., American Psychiatric Association, 1994; Carlson & Putnam, 1993; Carlson et al., 1993), posttraumatic stress disorder (PTSD; e.g., Bremner et al., 1992; Loewenstein, 1991), and borderline personality disorder (e.g., Boon & Draijer, 1991; Saxe et al., 1993; Shearer, 1994). In addition, high levels of psychological dissociation have been reported in somatoform disorders

(e.g., Pribor, Yutzy, Dean, & Wetzel, 1993; Saxe et al., 1994), mood disorders (e.g., Saxe et al., 1993) obsessive–compulsive disorder (e.g., Grabe et al., 1999), and eating disorders (e.g., Vanderlinden, Vandereycken, Van Dyck, & Vertommen, 1993). Moreover, psychological dissociation is substantially associated with general psychopathology: general distress (Grabe et al., 1999; Walker, Katon, Neraas, Jemelka, & Massoth, 1992), sexual abuse (G. Waller et al., 2000), symptoms of anxiety and depression (D. Baker et al., 2003), hostility, phobia, anxiety and somatization (Norton, Ross, & Novoltny, 1990), psychoticism (Allen, Coyne, & Console, 1996; Kennedy et al., 2004; H. Merckelbach, Rassin, & Muris, 2000; Moskowitz, Barker-Collo, & Ellson, 2005; C. Spitzer et al., 2006), paranoid ideation (Moskowitz et al., 2005), and symptoms of obsession (Grabe et al., 1999; Prueter, Schultz-Venrath, & Rimpau, 2002; Rufer, Fricke, Held, Cremer, & Hand, 2006).

Somatoform dissociation is also associated with dissociative disorders (e.g., Nijenhuis et al., 1996, 1999), PTSD, conversion disorders (Espirito Santo & Pio Abreu, 2007), somatoform disorders, and eating disorders (Nijenhuis et al., 1999). Moreover, depression is associated with both high psychological and somatoform dissociation (Maaranen, Tanskanen, Kaisa, et al., 2005). Somatoform dissociation is related to general psychopathology; sexual abuse (Nijenhuis et al., 1999) and somatization (Nijenhuis et al., 1999) are positively related with dissociation.

Correlations between demographic factors and both types of dissociation are various and contradictory. Whereas some researchers have found that psychological dissociation does not differ between genders in the general population (Akyüz, Doğan, Sar, Yargic, & Tutkun, 1999; Irwin, 1999; Ross, Joshi, & Currie, 1990; Sar, Kundakçt, Kızıltan, Bakim, & Bozkurt, 2000; Seedat, Stein, & Forde, 2003; C. Spitzer et al., 2003, 2004), between various psychiatric populations (Baker et al., 2003; C. Spitzer et al., 2003; Tezcan et al., 2003; G. Waller et al., 2000), or between mixed populations (Grabe et al., 1999; C. Spitzer et al., 2006), others have shown higher levels of dissociation in women from the general population (Maaranen, Tanskanen, Honkalampi, et al., 2005) and in psychiatric inpatients (Tutkun et al., 1998). On the contrary, another investigation found more pathological dissociation in men (Seedat et al., 2003). The same discrepancies apply to somatoform dissociation: The majority of investigations have shown that gender does not have a significant effect on somatoform dissociation (Nijenhuis, 2000; Nijenhuis et al., 1996; Sar et al., 2000; G. Waller et al., 2000). Nevertheless, a number of investigators have found higher levels of dissociation in

women than in men (El-Hage, Darves-Bornoz, Allilaire, & Gaillard, 2002; Nijenhuis, Van der Hart, & Kruger, 2002), whereas one study found the opposite—men showed more somatoform dissociation (Maaranen et al., 2004).

Correlations between each type of dissociation and age are also diverse: In some studies, psychological dissociation was found more frequently among younger participants (Dorahy, Lewis, Millar, & Gee, 2003; Irwin, 1999; Maaranen, Tanskanen, Kaisa, et al., 2005; Näring & Nijenhuis, 2005; Ross et al., 1990; Seedat et al., 2003; C. Spitzer et al., 2006; Tutkun et al., 1998; N. G. Waller & Ross, 1997), whereas other studies did not show any significant correlation (Maaranen, Tanskanen, Honkalampi, et al., 2005; Sar et al., 2000; C. Spitzer et al., 2004; G. Waller et al., 2000). According to some research, somatoform dissociation is not associated with age (El-Hage et al., 2002; Näring & Nijenhuis, 2005; Nijenhuis, 2000; Nijenhuis et al., 1996; G. Waller et al., 2000), whereas other investigations, and in contrast with psychological dissociation, have revealed a positive correlation between age and somatoform dissociation (Maaranen et al., 2004; Sar et al., 2000).

Some studies have shown a relationship between psychological dissociation and being single (Maaranen, Tanskanen, Kaisa, et al., 2005; Seedat et al., 2003; C. Spitzer et al., 2006). Somatoform dissociation is also associated with the subjects being single, divorced, or widowed (Maaranen, Tanskanen, Kaisa, et al., 2005). Finally, educational level has not shown any significant effect on psychological dissociation (Akyüz et al., 1999; Boon & Draijer, 1991; Ross et al., 1990), except in one study (Dunn, Paolo, Ryan, & Van Fleet, 1993), where a higher educational level was associated with a lower rate of dissociation. Similarly, the level of education was negatively correlated with somatoform dissociation (Maaranen et al., 2004; Sar et al., 2000).

Despite this continued interest, there are no published studies on dissociation in Portugal, and in Europe there are few studies on dissociation, especially when compared with the United States. For this reason, our study investigated the frequency of dissociation in different nonclinical and clinical samples and explored the factors that were independently associated with both types of dissociation after the measurement of the presence of psychopathological symptoms in various demographic characteristics. We examined the two forms of dissociation to fill the existing lacuna.

## METHODS

### *Participants and Procedures*

A total of 346 clinical subjects were selected from diverse samples pertaining to other studies, and they were all recruited between 2002 and 2006 (Espirito Santo & Pio Abreu, in press, 2006, 2007). We carried out a longitudinal evaluation of each patient. A “gold standard” was used to validate the clinical diagnoses through the LEAD procedure (R. L. Spitzer, 1983): a *longitudinal evaluation by experts* (a trained psychiatrist with 35 years of practice and a psychologist with 15 years of practice) was performed using *all data available* (nonstructured clinical interviews, and ongoing clinical contact and all available clinical records). A total of 61 patients were evaluated with the Portuguese version of the Dissociative Disorders Interview Schedule for confirmation of the clinical diagnosis. All patients gave their informed consent both orally and in writing, according to the Code of Medical Ethics of the World Medical Association Declaration of Helsinki. Clinical subjects included 83 new referrals and 178 patients in regular care from three psychotherapeutic outpatient centers, and they were successively selected. The remaining 85 patients were receiving full-day treatment from a psychiatric inpatient unit and were consecutively selected from diagnostic referrals of a dissociative or somatoform disorder. Their mean age was 32.11 years ( $SD = 12.67$ ; range = 18–65); their clinical diagnoses according to *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [DSM-IV]; American Psychiatric Association, 1994) criteria were dissociative disorders, somatoform disorders (conversion and somatization), PTSD, depression disorders, and anxiety disorders.

The nonclinical sample, with an age range from 18 to 65 ( $M = 37.31$ ,  $SD = 12.00$ ), was recruited from students, colleagues, friends, and their relatives. The subjects received the results of the questionnaires when requested. This constituted a convenience sample, one not representative of the Portuguese population. The number of participants in each subsample and their demographic characteristics are shown in Table 1. Men and women did not differ significantly in age,  $\chi^2(4) = 5.88$ ,  $p > .05$ ,  $N = 505$ ; marital status,  $\chi^2(1) = 2.39$ ,  $p > .05$ ,  $N = 505$ ; or years of education,  $\chi^2(4) = 7.61$ ,  $p > .05$ ,  $N = 505$ . All 505 participants completed the DES and SDQ-20, and 421 participants also filled out a measure on psychopathology (i.e., Brief Symptom Inventory).

TABLE 1. Demographic characteristics of subsamples.

Subsample	<i>N</i>	Age (Years), <i>M</i> ( <i>SD</i> )	Gender, <i>n</i> (%)		Marital Status, <i>n</i> (%)		School (Years), <i>M</i> ( <i>SD</i> )
			Male	Female	Married	Single	
Dissociative Disorders	37	34.1 (12.0)	11 (29.7)	26 (70.3)	18 (48.6)	19 (51.4)	9.3 (4.3)
Posttraumatic Stress Disorder	50	30.4 (13.6)	16 (32.0)	34 (68.0)	13 (26.0)	37 (74.0)	11.9 (2.5)
Conversion Disorder	26	27.4 (8.8)	6 (23.1)	20 (76.9)	8 (30.8)	18 (69.2)	10.9 (4.1)
Somatization Disorder	59	35.8 (13.4)	19 (32.2)	40 (67.8)	28 (47.5)	31 (52.5)	10.8 (4.0)
Anxiety and Depressive Disorders	174	31.6 (12.5)	60 (34.5)	114 (65.5)	57 (32.7)	117 (67.3)	11.7 (3.9)
Nonclinical	159	37.3 (12.0)	91 (57.2)	68 (42.7)	91 (57.2)	68 (42.8)	12.7 (4.1)
Total	505	33.7 (12.7)	203 (40.2)	302 (59.8)	209 (41.4)	296 (58.6)	11.7 (4.0)

## ***Instruments***

The DES is a self-administered 28-item questionnaire developed by Bernstein and Putnam (1986) for which individuals select the percentage of time that they experience certain events (from 0% to 100%). The Portuguese version assesses psychological dissociation phenomena such as absorption, depersonalization–derealization, amnesia, and distractibility, which is a fourth factor found only in the Portuguese study. Its reliability and validity were comparable with other studies; the cutoff for pathological psychological dissociation was set at 30 (Espirito Santo & Pio Abreu, in press).

The SDQ-20 assesses somatoform phenomena such as sensory disturbances, motor problems, analgesia, pain, anaesthesia, and loss of consciousness. It is a self-report tool consisting of 20 items (Nijenhuis et al., 1996). The reliability and validity of the Portuguese version were comparable to other studies, and the cutoff score for pathological somatoform dissociation was 35 (Espirito Santo & Pio Abreu, 2007). The thresholds of the DES and SDQ-20 were used to select subjects for the statistical analysis.

The Brief Symptom Inventory is a 53-item self-report clinical rating scale that asks individuals to rate how distressed they have been over the previous 7 days through a list of psychopathological symptoms. In addition to an overall distress score (Global Severity Index), it includes nine symptom subscales: somatization, interpersonal sensitivity, anxiety, phobic anxiety, obsessive compulsion, depression, hostility, paranoid ideation, and psychoticism. The psychometric features of the Portuguese version were similar to those of the original version (Canavarro, 1988).

The Dissociative Disorders Interview Schedule is a structured interview developed by Ross et al. (1989). The Portuguese adaptation (Espirito Santo, Madeira, & Pio Abreu, 2007) permits the recognition of *DSM-IV* diagnoses of all dissociative disorders, somatization disorder, and conversion disorder (with a sensitivity rate of 84% and a specificity rate of 100%).

## ***Statistical Analysis***

As scores for the DES and SDQ-20 deviated from a normal distribution, a usual finding in the literature (Bernstein & Putnam, 1986), nonparametric statistical methods were used to analyze the data. Subjects with the five diagnoses were compared with one another according to the mean scores of dissociative experiences and the mean of the SDQ-20

scores. The Kruskal–Wallis test was used, followed by post hoc Mann–Whitney tests on each pair of groups with the  $p$  value adjusted by the Bonferroni method ( $p < .0007$ ). The mean Brief Symptom Inventory scores of the different demographic categories were compared through the Kruskal–Wallis test (values of this test are reported according to the results of testing the equality of variance assumption [Levene’s test]). Multiple logistic regression analysis was carried out to find factors independently associated with high psychological and somatoform dissociation. Estimates were calculated using SPSS software (SPSS, Chicago, IL).

## RESULTS

### *Pathological Dissociation, Mental Health, and Demographic Variables*

In the total sample, the mean DES score was 19.8 ( $SD = 14.2$ ; range = 0–72.9), and the mean SDQ-20 score was 29.7 ( $SD = 9.8$ ; range = 20.0–76.0). Table 2 presents the mean scores and standard deviations of the DES and SDQ-20 of the various psychopathological groups. There were significant differences between the groups for the DES ( $H = 2468.8$ ;  $p > .001$ ) and SDQ-20 ( $H = 181.1$ ;  $p < .001$ ), except between dissociative and PTSD patients, dissociative and conversion disordered patients, and PTSD and conversion disordered patients ( $-1.1 < z < -12.3$ ,  $p < .0007$ , for the remaining comparisons). The dissociative patients revealed the highest DES scores, followed by conversion disordered patients, then patients suffering from PTSD, somatization, and anxiety and depression; the nonclinical subjects had the lowest scores. In the SDQ-20, conversion disordered patients had the highest scores, followed by dissociative and PTSD patients, somatization patients, and then patients suffering from anxiety and depression; nonclinical subjects again scored the lowest ( $-0.1 < z < -8.9$ ,  $p < .0007$ , for significant comparisons). The Mann–Whitney test revealed that differences did not attain significance in the following comparisons of patients: dissociative disorders versus PTSD, dissociative disorders versus conversion disorders, dissociative disorders versus somatization disorders, and PTSD and conversion disorders.

Table 3 shows the results of the comparisons of psychopathological symptoms between men and women found using the Kruskal–Wallis one-way analysis of variance (the equality of variance was not assumed for depression). Women reported significantly more symptoms of somatization,



TABLE 2. Differences between several psychopathological disorders on the dissociative Experiences Scale (DES) and on the Somatoform Dissociation Questionnaire (SDQ-20).

Measure	Dissociative Disorders	PTSD	Conversion Disorder	Somatization Disorder	Anxiety and Depression Disorders	Nonclinical	Kruskal–Wallis <i>H</i>	<i>p</i>
DES Score	39.2 (12.4)	35.0 (13.5)	38.4 (14.2)	19.0 (10.4)	18.3 (10.1)	9.3 (6.0)	246.8	<.001
SDQ Score	39.1 (11.7)	39.0 (11.8)	39.5 (14.0)	31.8 (9.2)	28.8 (6.6)	23.2 (4.0)	181.1	<.001

Notes: Data are *M* (*SD*), except where noted. PTSD = posttraumatic stress disorder.

Significant post hoc Mann–Whitney pairwise comparisons ( $p < .0007$ , Bonferroni-corrected; other comparisons nonsignificant):

DES: Dissociative > Somatization, Dissociative > Anxiety and Depression, Dissociative > Nonclinical; PTSD > Somatization, PTSD > Anxiety and Depression, PTSD > Nonclinical, Conversion > Somatization, Conversion > Anxiety and Depression, Conversion > Nonclinical, Somatization > Nonclinical.

SDQ: Dissociative > Somatization, Dissociation > Anxiety and Depression, Dissociation > Nonclinical, PTSD > Somatization, PTSD > Anxiety and Depression, PTSD > Nonclinical, Conversion > Anxiety and Depression, Conversion > Nonclinical; Somatization > Nonclinical.

TABLE 3. Comparisons of psychopathological symptoms (BSI Subscales) between women and men in clinical and nonclinical samples.

BSI Subscale	Women, <i>M</i> ( <i>SD</i> )	Men, <i>M</i> ( <i>SD</i> )	Kruskal–Wallis <i>H</i>	<i>p</i>
Global Severity Index	1.2 (0.7)	1.0 (0.7)	15.0	.000
Somatization	1.0 (0.8)	0.7 (0.8)	16.2	.000
Interpersonal Sensitivity	1.4 (0.8)	1.1 (0.9)	12.6	.000
Anxiety	1.3 (0.8)	1.0 (0.8)	14.5	.000
Phobic Anxiety	0.8 (0.8)	0.6 (0.8)	7.0	.008
Obsessive Compulsion	1.5 (0.8)	1.3 (0.7)	9.2	.002
Depression	1.4 (0.8)	1.0 (0.8)	16.2	.000
Hostility	1.1 (0.8)	1.0 (0.7)	1.8	.174
Paranoid Ideation	1.4 (0.8)	1.2 (0.8)	6.9	.008
Psychoticism	1.1 (0.8)	0.8 (0.7)	10.5	.001

Notes: BSI = Brief Symptom Inventory.

interpersonal sensitivity, anxiety, phobic anxiety, obsessive compulsion, depression, paranoid ideation, and psychoticism than men, but they did not display more hostility symptoms ( $p < .01$ ).

The other demographic categories also showed significant differences. The younger subjects (18–29 years) revealed significantly more symptoms of interpersonal sensitivity, anxiety, phobic anxiety, obsessive compulsion, depression, and hostility ( $p < .05$ ). Subjects who were single showed significantly more symptoms of interpersonal sensitivity, anxiety, phobic anxiety, obsessive compulsion, depression, paranoia, psychoticism, and hostility ( $p < .01$ ). Finally, less educated subjects showed significantly more symptoms of somatization and depression ( $p < .05$ ).

### ***Factors Associated with High versus Low Dissociation (Psychological and Somatoform)***

Using multiple logistic regression we found that both men and women were more likely to have pathological psychological dissociation when they had a combination of symptoms of paranoid ideation, psychoticism, and depression. Men were more vulnerable to psychological dissociation when they had symptoms of obsession and paranoid ideation, and women when they had symptoms of psychoticism and paranoid ideation.

Women with less education were more likely to have pathological somatoform dissociation. The symptoms of somatization and psychoticism

TABLE 4. Multiple regression analysis of psychopathological factors associated with pathological dissociation (psychological and somatoform) among clinical and nonclinical subjects ( $N = 505$ ) in a portuguese sample.

Variable	DES $\geq$ 30		DES $\geq$ 30 (Men)		DES $\geq$ 30 (Women)		SDQ $\geq$ 35		SDQ $\geq$ 35 (Men)		SDQ $\geq$ 35 (Women)	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Somatization	0.77	0.45–1.30	0.99	0.31–3.14	1.23	0.66–2.40	2.66*	1.60–4.41	3.23*	0.98–10.58	2.28*	1.27–4.11
Interpersonal Sensitivity	1.46	0.76–2.80	1.02	0.24–4.34	0.84	0.37–1.91	1.06	0.58–1.95	2.23	0.58–8.63	0.87	0.43–1.77
Anxiety	0.76	0.35–1.65	0.79	0.17–3.66	1.41	0.53–3.76	1.07	0.53–2.16	0.84	0.18–4.00	1.37	0.58–3.23
Phobic Anxiety	1.11	0.64–1.93	3.30	0.95–11.46	0.73	0.37–1.45	0.99	0.59–1.68	1.17	0.38–3.62	0.85	0.45–1.59
Obsessive Compulsion	0.61	0.30–1.23	0.83*	0.16–4.29	4.96	2.00–12.28	0.94	0.47–1.87	0.22	0.04–1.31	1.28	0.58–2.80
Depression	1.92*	1.05–3.48	6.32	1.54–25.00	1.05	0.44–2.50	0.93	0.54–1.58	0.43	0.09–2.06	0.96	0.53–1.74
Hostility	0.88	0.55–1.41	0.24	0.04–1.26	0.61	0.31–1.22	1.33	0.83–2.13	1.85	0.68–5.00	1.25	0.72–2.17
Paranoid Ideation	.33*	0.18–0.61	0.90	0.36–2.22	1.07	0.60–1.91	1.33	0.76–2.31	2.71	0.72–10.21	1.24	0.65–2.35
Psychoticism	0.29*	0.14–0.60	3.50*	1.03–11.83	2.78	1.32–5.87	2.59*	1.29–5.16	8.39*	1.40–50.35	1.96	0.90–4.28

Notes: DES = Dissociative Experiences Scale; SDQ = Somatoform Dissociation Questionnaire; OR = odds ratio; CI = confidence interval.  
\* $p < .05$ .

TABLE 5. Multiple regression analysis of demographic factors associated with pathological psychological dissociation ( $DES \geq 30$ ) and pathological somatoform dissociation ( $SDQ \geq 35$ ) among clinical and nonclinical subjects ( $N = 505$ ) in a portuguese sample.

Variable	Pathological Psychological Dissociation		Pathological Somatoform Dissociation	
	OR	95% CI	OR	95% CI
Gender				
Male	0.57*	0.34–0.95	0.51*	0.32–0.80
Female	1.75*	1.05–2.92	1.97*	1.25–3.12
Age	0.94*	0.91–0.97	0.20	0.68–6.14
Years of Education	0.93*	0.87–1.00	0.86*	0.81–0.92
Marital Status				
Married	1.10	0.57–2.13	1.22	0.68–2.22
Single	0.91	0.47–1.74	0.82	0.45–1.48

Notes: DES = Dissociative Experiences Scale; SDQ = Somatoform Dissociation Questionnaire; OR = odds ratio; CI = confidence interval.

\* $p < .05$ .

were significantly associated with pathological somatoform dissociation for both men and women. Men were more vulnerable to pathological somatoform dissociation when they had symptoms of somatization and psychoticism, and women when they had symptoms of somatization (Table 4). Higher psychological dissociation was significantly more frequent in women, in the youngest of the subjects, and in those with less education (Table 5).

## DISCUSSION

This study focuses on demographic variables and mental health in the dissociation variation of a Portuguese sample. The mean scores of the DES ( $9.3 \pm 6$ ) and SDQ-20 ( $23.2 \pm 4.00$ ) were comparable to those in other investigations. The major studies of psychopathological dissociation in countries other than Canada or the United States were performed in representative samples of the general population and estimated similar mean scores: In Finland the mean was  $8.0 \pm 8.1$  (Maaranen, Tanskanen,

Honkalampi, et al., 2005), in Germany  $2.3 \pm 4.2$ , in The Netherlands  $10.4 \pm 9.6$  (Modestin & Erni, 2004), and in Turkey  $6.7 \pm 6.1$ . The studies of somatoform dissociation in general populations are fewer: Finland had a mean of  $23.3 \pm 6.1$  (Maaranen et al., 2004), The Netherlands a range between  $23.20 \pm 4.97$  and  $24.43 \pm 4.36$  (Näring & Nijenhuis, 2005), and Turkey  $27.4 \pm 8.2$  (Sar et al., 2000). This indicates that both types of dissociation are stable constructs across cultures.

The main objective of our study was to explore which factors were associated with dissociation. In relation to psychological dissociation, symptoms of paranoid ideation, psychoticism, and depression were significantly associated with high psychological dissociation in both men and women; men with high dissociation had more symptoms of obsession and paranoid ideation, and women had more symptoms of psychoticism and paranoid ideation. Some studies support the relationship between dissociation and psychoticism (Allen et al., 1996; Kennedy et al., 2004; H. Merckelbach et al., 2000; Moskowitz et al., 2005; C. Spitzer et al., 2006), between dissociation and paranoid ideation (Moskowitz et al., 2005), and between dissociation and symptoms of obsession (Grabe et al., 1999; Prueter et al., 2002; Rufer et al., 2006). We found a negative relationship between age and dissociation, which is consistent with what other investigators have found (Näring & Nijenhuis, 2005; Seedat et al., 2003; C. Spitzer et al., 2006). Our findings did not sustain the association between marital status and dissociation; this contradicts some studies (Maaranen, Tanskanen, Kaisa, et al., 2005; Seedat et al., 2003; C. Spitzer et al., 2006). Educational level was negatively associated with dissociation; there was a similar trend in a substance abuse study (Dunn et al., 1993).

Factors associated with high somatoform dissociation were symptoms of somatization and psychoticism for men, symptoms of somatization for women, and symptoms of somatization and psychoticism for both men and women. The association with symptoms of somatization is supported by a previous study (Nijenhuis et al., 1999). Age was not associated with somatoform dissociation; the majority of the studies support this finding, with the exception of two (Maaranen et al., 2004; Sar et al., 2000). Lower educational level was associated with higher dissociation; similar findings were reported in two studies (Maaranen et al., 2004; Sar et al., 2000). Marital status had no significant relationship with somatoform dissociation.

The association between psychological dissociation and psychoticism and between psychological dissociation and paranoid ideation is under discussion. Some investigations indicate that traumatic etiology may contribute to both psychotic-like experiences and dissociation (Irwin, 2001);

others point to sleep disturbances as common grounds for both dissociative and schizotypal features (M. Merckelbach & Giesbrecht, 2006).

Our study was not intended to explore primarily the association between dissociation and psychiatric disorders; nevertheless, we should note that patients with dissociative disorders and conversion disorders reported higher dissociation levels, followed by those diagnosed with PTSD. This finding is similar to the *International Classification of Diseases–10* (World Health Organization, 1992) categorization, where conversion disorders, but not somatization disorder, are classified as dissociative. C. Spitzer, Spelsberg, Grabe, Mundt, and Freyberger (1999) and Nemiah (1993) also suggested that conversion disorders be regrouped with the dissociative disorders in the *DSM*.

The inclusion of a clinical and a nonclinical control sample, and various clinical groups, were strong points of our study. However, our clinical sample included more women, and they had more psychopathological symptoms; a more balanced sample could have given different results for associations between dissociation and the analyzed factors. We should interpret with care the fact that subjects with lower educational levels reported higher dissociation, because difficulties in comprehension may have contributed to that.

Finally, some notes of caution are required due to methodological aspects. A limitation, as C. Spitzer et al. (2006) pointed out, was the use of cutoff thresholds for determination of pathological psychological dissociation. This methodology is not universally used; G. Waller, Ohanian, Meyer, Everill, and Rouse (2001) and Seedat et al., (2003) employed it, but others have used a categorical DES taxon (Simeon, Knutelska, Nelson Guralnik, & Schmeidler, 2003; C. Spitzer et al., 2006). Another methodological constraint is that we used the entire DES scale, including items of nonpathological dissociation.

A highly structured interview such as the Dissociative Disorders Interview Schedule reduces and controls the implicit assumptions of the interviewers. However, we did not use the structured interview for the assessment of dissociative symptoms in all patients. The use of the LEAD procedure could be a strongpoint of our study, but some consider that this methodology has flaws (Kranzler, Tennen, Babor, Kadden, & Rounsaville, 1997). As with most studies in this field, a constraint of our study was its cross-sectional nature, which prevented us from establishing causal relationships.

To conclude, it would be valuable to investigate the prevalence, etiology, and correlates of pathological dissociation in representative, balanced, and randomized samples from different cultures. This is an

important issue, as cross-cultural comparisons are now possible because reliable screening instruments have been constructed and adapted for use in various countries. In order to control for cultural aspects, comparable measures, samples, and procedures are required.

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