



## Psychogenic non-epileptic seizures and functional motor symptoms: A common phenomenology? ☆☆☆☆☆☆☆☆☆



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### ABSTRACT

**Objective:** Recent studies have attempted to compare patients affected by psychogenic non-epileptic seizures (PNES) to patients affected by functional motor symptoms (FMS) from a demographic, clinical and psychological perspective. Nevertheless, results are quite controversial and significant conclusions have not been drawn. The aim of our study was to evaluate the phenomenology of psychology of the two groups assessing levels of dissociation and its subcomponents, alexithymia and interoceptive sensitivity in patients with PNES and in patients with FMS.

**Methods:** We conducted a cross-sectional study recruiting 20 patients with PNES, 20 patients with FMS and 20 healthy subjects as a control group. All subjects underwent: Dissociative Experience Scale (DES), Somatoform Dissociation Questionnaire (SDQ-20), Cambridge Depersonalization Scale (CDS), Toronto Alexithymia Scale (TAS-20), Hamilton Rating Scale for Depression (HAM-D), Hamilton Rating Scale for anxiety (HAM-A), heart beat detection task.

**Results:** Our data suggest that PNES group scored significantly higher than the healthy control group on a measure of detachment (CDS). Also at the DES, a measure of psychoform dissociation, PNES patients scored significantly higher than healthy subjects. On the other hand patients affected by FMS scored significantly higher than the healthy control group on the SDQ but they did not report more experiences of detachment on the CDS. Patients affected by PNES and FMS were significantly more alexithymic than healthy controls, with a third of them scoring >61 on the TAS-20.

**Significance:** Our data show different psychological mechanisms underlying patients with PNES and patients with FMS. This might lead also to potential implications for treatment.

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## 1. Introduction

Psychogenic non-epileptic seizures (PNES) and functional motor symptoms (FMS) are part of the wide spectrum of functional neurological symptoms (FNS) [1]. The fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) [2] has modified the definition and diagnostic criteria for what it was previously named conversion disorders in DSM-IV-TR; indeed, the additional label of functional neurological symptoms has been added; the presence of a psychological factor is now a supportive criterion instead of an essential one; and emphasis on the importance of positive signs at the neurological examination has been given [2].

Nonetheless, DSM-5 still refers to these two conditions (PNES and FMS), which clearly differ a lot from a clinical point of view, as a whole entity. This unifying conceptualization implicitly assumes a common aetiopathogenesis of the two entities.

Despite more recent papers have extensively scale down the role of psychological factors in the pathogenesis of FNS, particularly of FMS [3–4], and have underlined the crucial role of cognitive and neurobiological processes [5], the traditional psychodynamic theory might still represent a bias.

Only few studies have attempted to compare PNES and FMS patients from demographic, clinical and psychological perspectives [6–9]. Results have been quite controversial and inconsistent; some studies [6,7] have supported the heterogeneity of the two populations; some others [8–9] have revealed more similarities, suggesting that they might be expressions of the same psychopathology. In a recent review, Erro et al. [10] suggested an overlapping between PNES and FMS, and a unifying pathophysiology with different phenotypic manifestations.

Different mechanisms have been implicated in the phenomenology of FNS.

One of the most studied mechanisms is dissociation, a term describing a range of psychopathological processes altering a person's level of awareness and/or the integration of sensorimotor function, emotions, thoughts, memories and identity which may be subjectively perceived as a sense of disconnection [11]. Dissociation has been conceptualised in different ways and a distinction has been made between detachment and compartmentalization (somatoform dissociation). Detachment is defined as an altered state of consciousness characterized by a sense of separation or alienation from aspects of everyday experience, becoming evident as derealisation and/or depersonalization. On the other hand compartmentalization is a phenomenon characterized by a deficit in the ability to deliberately control processes or actions that would normally be amenable to such control [12–15].

Another mechanism has been suggested for FNS, involving different aspects of the emotional processing regulation. In particular, it has been suggested that patients with FNS have high level of alexithymia [16] and reduced awareness of internal body signals (namely interoceptive sensitivity) [17].

The aim of our study was to evaluate the phenomenology of psychology of the two groups assessing levels of dissociation and its subcomponents, alexithymia and interoceptive sensitivity in patients with PNES and in patients with FMS. To do this we conducted a cross-sectional study recruiting a sample of patients with PNES, a sample of patients with FMS and a group of healthy subjects, matched for age and gender.

## 2. Materials and methods

### 2.1. Subjects

Patients affected by PNES and FMS were recruited from the neurology outpatient clinics respectively at the Regional Epileptic Center of San Paolo Hospital and at Besta Neurological Institute in Milano. Twenty consecutive patients affected by PNES assessed between January and May 2015 were included in the study, and they were compared to 20 age- and sex-matched consecutive patients with a diagnosis of FMS and 20 age- and sex-matched healthy controls. All patients with PNES reported at least one attack in the month preceding the study evaluation. All patients with FMS had symptoms at the time of the examination.

The diagnosis of PNES was done on the basis of the consensus of at least two epilepsy specialists based on the clinical history and video-EEG monitoring. Typical non-epileptic attacks had been captured by video-EEG for all patients with PNES and PNES were therefore “documented” according to the diagnostic certainty levels described in LaFrance et al. [18] Panic attacks as an alternative explanation of the paroxysmal symptoms of PNES was excluded by psychiatric examination. FMS patients were included if they had “clinically established”

[19] FMS according to Fahn & Williams criteria. The diagnosis was ascertained by a neurologist and psychiatrist on the basis of clinical presentation and appropriate investigations. We specifically selected patients with non-remittent FMS in order to have a more homogeneous group. A sample of 20 healthy subjects was recruited from staff members, their friends and relatives. Psychiatric, neurological and medical disorders were excluded by means of a complete anamnestic questionnaire and a clinical interview.

### 2.2. Exclusion criteria

Exclusion criteria for all the three groups were: (i) age <18 years; (ii) inability to communicate with the researcher or complete questionnaires because of language difficulties, severe learning disabilities or dementia; (iii) any other serious neurological (epilepsia included) or medical illnesses; (iv) overlay between functional and organic movement disorders.

Psychiatric assessment took place at San Paolo Hospital. Demographic information was obtained from each participant through a brief self-report questionnaire designed for the study. Chart reviews of all the patients have been revised to obtain anamnestic information.

All participants gave informed consent for the study. The Ethics Committee of San Paolo Hospital reviewed and approved the study protocol.

### 2.3. Assessment

#### 2.3.1. Questionnaires

- Dissociative Experience Scale (DES). The DES [20] was used as a generic measure of dissociation for comparative purposes. The DES is a 28-item self-report questionnaire designed to assess dissociation as defined by the unidimensional model. Each item describes a different dissociative experience and participants are asked to indicate the percentage of time they have that experience. The DES score is then calculated as the mean of all item scores, ranging from 0 to 100. The DES has excellent internal consistency [21] and split-half reliability [20].
- Somatoform Dissociation Questionnaire (SDQ-20). The SDQ-20 [22] measured somatic symptoms which may be a proxy to compartmentalization. This is a 20-item self-report measure using a 5-point Likert scale. The items relate to physical symptoms or bodily experiences that are commonly reported by patients with dissociative disorders [21]. Such “unexplained” neurological symptoms are also characteristic of the conversion disorders and are regarded as compartmentalization phenomena. Total scores are obtained by summing the individual item scores and range from 20 to 100; a score of 20 indicates that the individual has not experienced any of the symptoms on the scale in the past year. Several studies have demonstrated the reliability and validity of the scale [23].
- Cambridge Depersonalization Scale (CDS). The CDS [24] was selected as a measure of detachment. It is a 29-item self-report scale designed to measure the frequency and duration of depersonalization symptoms. Respondents indicate the frequency and duration of depersonalization symptoms over the preceding 6 months. Scores for frequency and duration are summed to create an item score; a global score is calculated by summing the item scores. The reliability and validity of the scale are well established.
- Toronto Alexithymia Scale (TAS-20). The TAS-20 was used as a measure of alexithymia. The TAS-20 is the most commonly used self-report measurement of alexithymia [25], with demonstrated good reliability and factorial validity [26]. The scale consists of 20 items rated on a 5-point scale, anchored at ‘1 = strongly disagree’ to ‘5 = strongly agree’, with a total score ranging from 20 to 100. Higher scores indicate greater alexithymia. A total score of above 61 is considered the cut off score for alexithymia based on studies on the general population [25].

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