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# Dissociative symptoms and sleep parameters — an all-night polysomnography study in patients with insomnia

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**Abstract**

**Background:** Dissociative disorders encompass a range of symptoms varying from severe absent-mindedness and memory problems to confusion about one's own identity. Recent studies suggest that these symptoms may be the by-products of a labile sleep–wake cycle.
**Methods:** In the current study, we explored this issue in patients suffering from insomnia ($N=46$). We investigated whether these patients have raised levels of dissociative symptoms and whether these are related to objective sleep parameters. Patients stayed for at least one night in a specialized sleep clinic, while sleep EEG data were obtained. In addition, they completed self-report measures on dissociative symptoms, psychological problems, and sleep characteristics.
**Results:** Dissociative symptom levels were elevated in patients suffering from insomnia, and were correlated with unusual sleep experiences and poor sleep quality. Longer REM sleep periods and less time spent awake during the night were predictive of dissociation.
**Conclusions:** This is the first study to show that insomnia patients have raised dissociative symptom levels and that their dissociative symptoms are related to objective EEG parameters. These findings are important because they may inspire sleep-related treatment methods for dissociative disorders.


## 1. Introduction

Dissociative symptoms form a heterogeneous class of experiences varying from absent-mindedness, excessive daydreaming, and memory problems to confusion about one's own identity. In their most radical version, such symptoms define conditions like dissociative amnesia and depersonalization disorder. Given their stark heterogeneity, it is not surprising that dissociative disorders are among the most controversial nosological categories listed in the *Diagnostic and Statistic Manual of Mental Disorders* (DSM-IV-TR) [1]. To date, there is no agreed-upon conceptualization of the taxonomy and aetiology of dissociative symptoms [2].

Epidemiological studies among psychiatric inpatients and outpatients have yielded prevalence estimates of severe dissociative symptoms, with rates usually exceeding 10% [3], while a recent epidemiological study in the UK general population found a prevalence rate of 0.95% [4]. Dissociative symptoms are not restricted to the dissociative disorders. Certain diagnostic groups, notably patients with borderline personality disorder, post-traumatic stress disorder (PTSD), obsessive compulsive disorder, and schizophrenia also display heightened levels of dissociative symptoms [5–7]. Prevalence rates of dissociative symptoms may also be raised in certain populations like, for example, homeless and runaway youths [8].

A recurrent theme in the clinical literature on dissociative symptoms is that they are caused by aversive experiences.

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More specifically, the idea is that dissociative symptoms like amnesia and derealisation help individuals to detach themselves from aversive life experiences [9]. Although there is correlational evidence to back up the link between dissociative symptoms and aversive life experiences [10], the question remains how such experiences might set into motion dissociative symptomatology.

An older idea that recently gained momentum focuses on sleep disturbances and how these disturbances might contribute to dissociative symptomatology. Thus, Levitan [11] hypothesized that "depersonalization is a compromise state between dreaming and waking" (p. 157). Recent studies have found a robust link between dissociation and self-reported sleep disturbances [12–14]. This finding has inspired some authors to speculate that a labile sleep–wake cycle may undermine cognitive efficiency and cause dreamlike mentation to emerge during waking consciousness, thereby fuelling dissociative symptoms [15]. There is some indirect evidence to support this hypothesis. For example, McNally and Clancy [16] relied on a sample of individuals who reported a history of child sexual abuse. In their sample, dissociative symptoms were more common in participants who had experienced sleep paralysis compared to those without such experiences. Dissociative symptoms also go along with increased frequencies of nightmare reports [17] and PTSD patients not only have raised levels of dissociative symptoms, but they also exhibit increased nightmare frequency and REM sleep density, and often suffer from insomnia [18].

Particularly interesting but under-researched is the potential link between REM sleep and dissociative symptoms. In her recent review, Llewellyn [19] stressed that REM sleep is usually accompanied by associative and visual hyperactivity so as to encode episodic memories. This author summarizes evidence to show that during REM sleep, the pre-frontal areas are in a state of de-activation resulting in fluid reasoning and bizarre thoughts. Thus, an excess of REM sleep and/or REM sleep activity throughout the day could lend dissociative qualities to cognitive functioning.

If sleep disturbances are a critical factor in the development of dissociative psychopathology, one would expect that patients with insomnia have heightened levels of dissociative symptoms. After all, the majority of patients who suffer from (primary) insomnia have a disturbed sleep–wake cycle [20]. In this study, we examined whether patients with insomnia have, indeed, raised scores on a validated questionnaire measuring dissociative symptoms. Additionally, and more exploratory, we investigated to what extent these symptoms are related to unusual sleep experiences, sleep quality, and EEG parameters. Previous studies relied on self-reported sleep disturbances. We were interested in whether the sleep–dissociation link is also evident when one looks at objective EEG indices, particularly REM sleep.

## 2. Methods and materials

### 2.1. Patients

The sample consisted of 45 consecutive inpatients (18 men, 28 women), who had been referred to Antwerp University Hospital, Belgium in the period between January 2010 and April 2010. Only patients with a diagnosis of primary insomnia were included. They had a variety of sleep complaints, such as having trouble with falling asleep, night-time awakenings, waking up early, and/or non-refreshing sleep. Mean age of the patients was 41.5 years (sd = 13.68; range: 17 to 78 years). Most of them were married or lived together with their partner (71.2%). A minority was either divorced (6.5%) or single (19.6%). Educational background ranged from limited (lower secondary education; 10.8%) to extended (higher education / university degree / postgraduate; 39.1%). Thirty-four patients (73.9%) were using medication during the study. Medication included benzodiazepines (21.7%), melatonin (2.2%), antidepressants (32.6%), pain medication (13%), and neuroleptics (4.3%). Twenty-eight percent of the patients suffered from a (self-reported) psychiatric disorder (e.g., mood-, or anxiety disorder) at the time of the study, and were unable to work due to their complaints for a mean of 22 days (sd = 35.9) over the last three months. On average, the current sample had not been able to execute their normal activities for 18.5 days (sd = 34.0) during the last three months. Eight patients (17.4%) had been hospitalized (mean duration: 1.98 days; sd = 9.01) in the last three months.

All patients had been referred for assessment of their persisting insomnia complaints. As part of the routine procedure, participants completed a number of self-report questionnaires (see Measures) during their stay of one or two nights in the specialized sleep clinic of Antwerp University Hospital. During their stay, data on sleep parameters were collected. For participants who underwent two night sessions ($N = 13$, 28%), data of the second night were employed in analyses.

Patients provided written informed consent for the use of their data for the purpose of the present study. The study was approved by the standing ethical committee of the Antwerp University Hospital (B30020107809).

### 2.2. Measures

#### 2.2.1. Dissociative Experiences Scale (DES [21])

The DES is a self-report scale that requires participants to indicate on 100 mm visual analogue scales (anchors: 0 = never; 100 = always) to what extent they experience 28 dissociative experiences in daily life. Examples of such experiences include feelings of depersonalization, derealization, and psychogenic amnesia. Van IJzendoorn and Schuengel [22] provide meta-analytic evidence for the sound psychometric properties of the DES. In the current study, we calculated a mean total score of the 28 DES items.