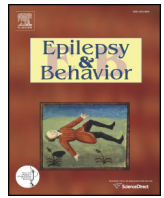




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Review

Dissociative symptoms and epilepsy

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ABSTRACT

This article considers the relationship between various types of dissociative symptoms, including symptoms of depersonalization, derealization, and conversion disorders, and epilepsy. After introductory remarks concerning dissociation, this relationship is discussed through two main themes: firstly, the phenomenology and mechanisms of so-called 'dreamy states' in epilepsy and their closest analogs in psychiatric disorders, and secondly, the similarities and differences between epileptic seizures and psychogenic nonepileptic attacks. Although epileptic and dissociative symptoms may appear similar to observers, they arise through different mechanisms and have different experiential qualities.

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1. Introduction: what is dissociation?

This article considers the relationship between epilepsy and dissociation. Dissociative symptoms are among the most controversial and contested phenomena of neuropsychiatry. These difficulties are, at least in part, due to the breadth of the term 'dissociative' under current definitions and to a lack of clarity regarding the mechanisms through which such symptoms are thought to arise. It is worth examining these issues briefly at the outset.

In DSM-IV, dissociative symptoms are described as reflecting "disruption of the usually integrated functions of consciousness, memory, identity or perception of the environment" [1]. The equivalent description in ICD-10 is very similar: "partial or complete loss of the normal integration between memories of the past, awareness of identity and immediate sensations, and control of bodily movements" [2]. ICD-10 also notes that the older term 'conversion disorders' is essentially synonymous with its category of 'dissociative disorders'. The term 'conversion disorder' refers to the notion that these symptoms arise because of psychological disturbance, often linked to previous trauma or abuse, that is 'converted' into physical and/or cognitive symptoms. Thus, the dissociative conditions comprise a range of quasineurological presentations such as dissociative amnesia (medically inexplicable memory loss, often sudden and apparently global), dissociative motor and sensory conditions (such as medically unexplained hemiparesis or dyskinesia), apparent changes in awareness and consciousness such as fugue and trance states, and dissociative seizures (also known as 'nonepileptic attacks' or 'psychogenic nonepileptic seizures'). The common theme is that the symptoms cannot be accounted for by a

neurological (or other medical) diagnosis and that there is frequently a personal history characterized by repeated exposure to abuse and trauma.

While the two classifications are, thus, in broad agreement about what kinds of symptoms should be termed 'dissociative', they differ in the details of categorization. In particular, DSM-IV includes depersonalization disorder, in which there is a persistent disturbing sense of unreality and estrangement from one's own subjective experience, as a dissociative condition, whereas in ICD-10, this disorder is not classified as dissociative specifically. It has been suggested [3] that dissociation is best seen as a broad term encompassing two major categories, *compartmentalization* and *detachment*. The term compartmentalization refers to those types of dissociation in which some aspect of mind or behavior normally accessible to consciousness (such as autobiographical memory or lower limb motor control) becomes apparently split off (i.e., dissociated) from awareness, resulting in quasineurological deficits, e.g., unusual amnesic syndromes or abnormalities of gait coordination. These deficits are not accompanied by hard neurological signs and typically show some inconsistency on examination. The majority of the dissociative conditions briefly outlined above would, in this scheme, be categorized as examples of compartmentalization. Detachment refers to mental states characterized by depersonalization and/or derealization, and certain trance or fugue states – specifically, those in which conscious awareness is retained but has an altered, dreamlike quality – may also be placed in this category. For these reasons, and because of its relevance to epilepsy, depersonalization is considered here as a dissociative state, as per DSM-IV. Mild, nonpathological depersonalization–derealization states are commonly experienced by healthy people when sleep-deprived or under intense stress, and transient dissociative states of varying intensity and nature are common in psychiatric conditions such as posttraumatic stress

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disorder, panic disorder, major depressive disorder, and emotionally unstable personality disorder.

2. Dissociation in relation to epilepsy

2.1. Depersonalization and the 'dreamy state'

Since dissociative conditions are by definition 'medically unexplained', altered mental and behavioral states associated with epilepsy are not classified as dissociative, but this nevertheless leaves open the possibility that there may be some phenomenological overlap in the experiences that occur in dissociative states and those associated with epilepsy.

Ictal and, less commonly, interictal depersonalization–derealization experiences have long been recognized as associated with complex partial seizures arising from the temporal lobes [4–7]. The eminent Victorian neurologist John Hughlings Jackson wrote a series of papers on a distinctive 'dreamy state', which he described as a 'voluminous' state of mind [8]. Across Jackson's published writings, one finds that the 'dreamy state' is characterized by immersion in a confused inner world of semicoherent thoughts, with a reduction or loss of awareness of external objects, events, and people in one's vicinity. It may also involve déjà-vu experiences, automatisms, and even fully formed visions. Jackson recognized that, in the context of epilepsy, such states were often accompanied by stereotyped phenomena, such as olfactory hallucinations, epigastric sensations, and repeated grimacing or chewing movements, and that these symptoms tended to cooccur in seizures associated with structural lesions of the medial temporal lobes [4,9].

These descriptions were pioneering and insightful; they remain largely consistent with modern concepts of complex partial seizures arising from the temporal lobe. One revision of Jackson's ideas, however, concerns his view that 'dreamy' states either immediately preceded or followed the epileptic discharge (reflecting pre- or postseizure neurophysiological changes) but were not directly caused by the discharge itself. It is now known that dreamlike states and their associated phenomena are often ictal events and not solely peri- or postictal. Jackson's reasoning, however, seems to have been that the 'dreamy state' was too complex to be produced by a localized epileptic discharge, or to put it another way, that the network of brain regions implicated in the 'dreamy state' must be too widely distributed for the state to reflect localized disturbance. This belief was rooted in the idea that the nervous system was arranged in different evolutionary levels: the more recent (in evolutionary terms) the level, the more sophisticated the representation and support of organismic functions, with higher levels able to exert some regulatory influences on the older lower levels. This schema led Jackson to propose the notion of 'positive' and 'negative' symptoms: the idea that pathological disruption or loss of function at the highest level can lead to both 'negative' symptoms (i.e., deficits associated with that loss of function), and 'positive' ones which emerge as 'release' phenomena when the higher-level mechanisms which usually inhibit them are compromised by pathological insult [9,10]. Thus, in the 'dreamy state', examples of 'negative' symptoms would be complex sensory distortions and compromised awareness of external events, caused by a high-level disruption of awareness and perceptual integration. 'Positive' symptoms would be lower-level phenomena such as spontaneous stereotyped mouth movements or unusual epigastric sensations, released from their normal inhibition. Contemporary surveys of anomalous experience in epilepsy support the idea of lower- and higher-level phenomena, with simple elemental visual hallucinations as examples of the former and complex psychotic states at the other end of the spectrum [11,12]. The Jacksonian idea of symptoms arising through a failure of inhibitory regulation finds an interesting modern parallel (or perhaps mirror) in contemporary functional neuroimaging research into dissociative conditions, considered further below. In addition, the general theme of 'levels of consciousness', with disruption at different levels producing

different alterations in behavior and subjective experience, finds its modern equivalent in studies of the neural mechanisms of impairments of consciousness in epilepsy. There is increasing evidence that the nature and degree of conscious impairment during epileptic seizures depend on the degree to which epileptic activity propagates through both cortical and subcortical (particularly thalamocortical) networks [13,14].

The association between dreamlike states, apparently similar to dissociative states, and complex partial seizures arising from the temporal lobe is now well established [7]. Published case reports and series include descriptions of pathology affecting the right and left temporal lobes in roughly equal numbers (with some cases of bilateral disease). However, Lambert et al. [7] note that, in 51 published cases of depersonalization associated with neurological conditions, when disease or damage was localized to only one temporal lobe, it was almost always to the left, whereas cases marked by right temporal lobe pathology almost always involved diffuse disease.

Smirnov [6], in a survey of ictal experiences reported by patients with temporal lobe neoplasms, notes that derealization – the experience that one's surroundings have become oddly and intensely unreal – was usually accompanied by some change in experience of self, such as somatic distortions or a sense of having become somehow dual. These observations are consistent with descriptions of depersonalization–derealization symptoms in depersonalization disorder (DPD), where the altered, remote, estranged quality of experience arises in the absence of epilepsy or other neurological disorder and is typically pervasive across many aspects of functioning. For example, patients with DPD frequently report reductions in emotional responsiveness ("deaffectualization") and physical sensation ("desomatization") [15–17]. Indeed, the phenomenology of chronic depersonalization is sufficiently rich that it should probably be considered as a syndrome rather than considered as a single symptom [18]. Two detailed phenomenological studies of DPD have supported the idea that it comprises a cluster of symptoms across different domains of experience [19,20].

The Cambridge Depersonalization Scale [21] is a self-report measure consisting of 29 statements briefly describing DPD-relevant experiences from a first-person perspective (e.g., "What I see looks flat or lifeless, as if I were looking at a picture", "Parts of my body feel like they don't belong to me"). Respondents give scores for the frequency and duration of each experience described. The creators of this scale administered it to 35 patients with DPD, 22 with anxiety disorders, and 20 with confirmed temporal lobe epilepsy (TLE) and found that patients with TLE tended to report more depersonalization-related experiences than patients with anxiety disorders but fewer than those with a diagnosis of DPD. In addition, patients with TLE tended to report much shorter duration of such experiences, usually endorsing the CDS duration option of "a few minutes", whereas patients with DPD often describe experiences as lasting for hours or days, or as continual. This is perhaps unsurprising, as seizure-related experiences are likely to be brief and stereotyped by their nature, and some aspects of chronic depersonalization may be absent in more acute states: for example, 'deaffectualization' (see above), the subjective sense that one's emotional responses have become oddly blunted or muted, is a phenomenon that probably requires some time and reflection to become apparent to one who experiences it. As such, it is unlikely to be consciously registered or reported as a component of brief, self-limiting altered states in epilepsy.

2.2. Dissociative seizures

Dissociative (psychogenic nonepileptic) seizures (PNES) are discrete episodes that resemble epileptic seizures. This resemblance is sometimes superficial, sometimes close. Most commonly, nonepileptic attacks involve generalized shaking, particularly of the upper body and limbs [22–25]. Typically, the shaking movements differ from the convulsions of epilepsy in being more elaborate (sometimes, there are dramatic

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