Dissociative States With Abnormal Temporal Lobe EEG
Multiple Personality and the Illusion of Possession

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- Twelve patients with clinical and EEG manifestations reminiscent of temporal lobe epilepsy reported symptoms of dissociative states. In seven of these patients, the clinical picture was consistent with multiple personality, whereas the other five had the illusion of supernatural possession. These cases suggest that in selected instances dissociative states may constitute complex behavioral manifestations of chronic limbic epilepsy. (Arch Neurol 1981;38:176-181)

Dissociative experiences, such as multiple personality and demonic possession, are enigmatic and rare phenomena that are often attributed to psychiatric causes. Although the etiological mechanisms remain controversial, a relationship between these two conditions has been suggested on clinical grounds. An association of these dissociative states with epilepsy has been implied, but not elaborated. For example, prolonged fugue states with behavioral alterations and subsequent amnesia may appear as a sign or even as the only clinical manifestation of psychomotor epilepsy. Furthermore, paroxysmal abnormalities in the EEG have been described in at least one case of multiple personality. Although the clinical descriptions suggest that many additional cases in the earlier literature were also epileptic,

this is difficult to prove since EEGs were not obtained and since hystero-epileptic convulsions were considered common in cases of dissociative state. This report is based on 12 cases with a clinical picture reminiscent of multiple personality and supernatural possession. These patients had EEGs that displayed different degrees of abnormality, suggestive of focal electrical disturbance predominantly in the temporal lobes. The apparent association between these rare syndromes and focal disturbances of cortical electrical activity in regions of the brain related to the limbic system may provide an insight into etiological mechanisms.

REPORT OF CASES

Each of the 12 cases reported here was seen at the Behavioral Neurology Unit, Boston, an outpatient clinic with a special interest in the psychiatric manifestations of epilepsy and other neurological disorders. In the period of approximately one year during which these 12 cases were seen, 907 patients were referred to the Behavioral Neurology Unit, and the question of psychomotor epilepsy was raised in 61 of these. The EEG recordings were performed with the standard ten to 20 scalp electrode placement. Hyperventilation, photic stimulation, sleep tracings, and nasopharyngeal leads were obtained from virtually all the patients. The EEGs were performed and interpreted by independent observers.

Multiple Personality

Case 1—This is a 19-year-old, left-handed woman. She has never had a convulsion. Brief "absence" attacks were reported since the age of 12 years. At the present, the only experiences that could conceivably be attributed to seizures are poorly defined episodes of visual blurring and distorted color perception. These last ten to 60 minutes and occur once a week.

She is successfully attending a graduate course in journalism and holds a part-time job. Although there is no family history of epilepsy, she reports having suffered head trauma with apparent loss of consciousness at the age of 1 year.

The EEG was abnormal on two consecutive determinations. One showed transient sharp waves and theta slowing over the left temporal leads, and the second showed intermittent sharp waves over central regions bilaterally and independently during drowsiness and light sleep, with a predominance on the left side. Results of neurological examination revealed no abnormalities.

Clinical notes, as well as the reports of a boyfriend, indicate that three autonomous personalities, with different temperaments and responding to different names, intermittently take hold of her consciousness. "Edna" (primary personality, the patient) is an intelligent young woman who is conscientious, dependent, and suggestible. "Linda," the dominant second personality, gives free expression to hostility and has apparently tortured animals and entered fights. "Hanna" has a diminutive role and personifies gullibility, immaturity, and sexual vulnerability. The switch from one personality to another is abrupt and complete. For instance, toward the end of a psychiatric interview with Linda, Edna suddenly emerged and apologized for having missed the appointment, claiming total amnesia for the previous hour. Linda apparently behaves as a co-conscious observer when Edna is in control, but cannot interfere with ongoing activity. Edna, on the other hand, denies direct awareness of Linda, but surmises the latter's experiences through written notes that they exchange.

Edna and Linda have distinctly different styles of speaking. Edna has a high-pitched voice, frequently uses stereotypes and contractions, and writes with her left hand. Linda, on the other hand, speaks in a low-pitched and gutteral tone, uses precise articulation without stereotypes or contractions, and writes with her right hand.
Edna projects an image of naïveté and submissiveness, whereas Linda imparts a sense of authority and self-importance. These two personalities communicate by writing notes to each other. The following notes were written alternately, but apparently with many hours intervening, by Edna and Linda on the same sheet of paper.

**Edna** (near, left-handed script): How come you do better than me in practically every course...?

**Linda** (less legible, right-handed script, apparently written many hours later when she was conscious): Scholastic endeavors come naturally to me.

**Edna**: You aren't that smart though. I wouldn't want to trade with you ever. Because you are a cruel monster I'll never envy you.

**Linda**: Sour grapes my child; we understand one another only too well. I will always be dominant.

The patient was given phenytoin, carbamazepine, phenobarbital, and psychotherapy. Although the dissociative episodes decreased on this regimen, the contribution of each therapeutic component to the overall improvement is impossible to assess.

The EEG is consistent with an underlying seizure disorder even though no convulsions have ever occurred. The presence of autonomous personalities with individual communicative styles, the fact that Edna has no direct awareness of the experiences of Linda, whereas Linda is directly conscious of Edna, the communication between the two by written notes, and the emergence of a dominant second personality who is more aggressive and independent make this case very much like the classic case of Miss Beauchamp described by Prince, and fits well Janet's category of dominating somnambulism.

**Case 2**—This is a 21-year-old, right-handed woman. She has never had convulsions. She reports having had auditory hallucinations (church bells), as well as frequent experiences of déjà vu and depersonalization. She is a troubled young woman with several psychiatric hospitalizations and many instances of outbursts of rage, assault, car theft, and arrest.

The EEG showed bitemporal spikes, predominantly on the right side. The results of neurological examination and computerized tomographic (CT) scan were within normal limits.

On one occasion, she said that she had found herself in a different city where people called her by another name. She has no recollection of how she got there or what she had done when answering to the other name. On another occasion, she found herself with a bloody stick next to an unconscious man and surmised that she was responsible for the assault even though she recalled no details. She once held her psychiatrist at knife-point for several hours and was then amnesic for the event. When she reverted to her customary self and heard about this, she apparently felt such remorse that she brought her psychiatrist vial of her own blood. The emergence of multiple personalities was observed by a former roommate, who described two abrupt deviations from the patient's usual self. One represents a childish little girl, the other a tough, angry, and threatening personality. Although the customary self is amnesic for the activities of the other personalities, it has indirect knowledge of their existence because the personalities write notes to each other, as in case 1.

The patient was given carbamazepine, but no response to treatment could be ascertained.

This case forms a transition between multiple personality and multiple fugue states. In contrast with patient 1, the different personalities do not seem to have an orderly recurrence or autonomous existences. Instead, there are periods of acting-out that are then not available to the consciousness of the customary self. This type of criminal fugue has sometimes been described as typical of multiple personality in epileptics. In some instances, her altered states are sufficiently prolonged that she can find herself in a different city, with a different identity, and answering to a different name. The length of such episodes makes it unlikely that the altered behavior is merely a reflection of an ictal confusional state. Moreover, the fact that the different personalities exchange notes and that abrupt transitions from one personality to another occur are features quite characteristic of multiple personality. The EEG is distinctly abnormal.

**Case 3**—This is a 27-year-old, ambidextrous woman. She has never had convulsions, but reports frequent experiences of sudden dread, associated with epigastric distress, episodes of olfactory hallucinations (bleach or ammonia), dizziness, and often loss of consciousness. She denies the experience of depersonalization, but reports frequent feelings of déjà vu. She is a highly capable young woman who has command of English, German (her native tongue), Italian, and Latin, and who plays the flute for relaxation.

The EEGs gave variable results. One showed sharp wave activity, predominantly on the right. Two subsequent EEGs were unremarkable. A fourth with nosopharyngeal leads showed two very brief sharp wave discharges that emanated from the left ventricle made real and extended to the left anterior temporal region. The results of neurological examination were normal.

According to her husband, the patient shows abrupt changes in ongoing behavior, and "personalities" that represent the patient at younger ages (4, 7, 16 years, etc) spontaneously emerge to talk to him. Each personality announces its intended age, and the patient's overall behavior changes accordingly. For example, the younger personalities are not without inconsistency. For instance, a personality who declared herself to be 6 years old would write and speak with a vocabulary much too advanced for that age. The patient is completely amnesic for these episodes and her husband is the sole source of information concerning this unusual phenomenon. On the other hand, the additional personalities probably share co-consciousness with the customary self, since they can be called into existence, virtually at will, by her husband. The various personalities apparently do not communicate with each other by note. The patient calls the other personalities "little people," believes that they are each independent personalities who happen to share a common body, and does not appear particularly mortified at being the source of so singular a phenomenon.

Phenobarbital decreased the episodes of distress and loss of consciousness, but did not alter the dissociative phenomena.

The number of different personalities is potentially limitless, and the distinguishing variable is age rather than individual behavioral traces. In Janet's terminology, this case would constitute an example of complex somnambulism. The EEG is only minimally suggestive of an underlying seizure disorder. However, the feelings of sudden dread, epigastric distress, olfactory hallucinations, and déjà vu are reminiscent of psychomotor epilepsy.

**Case 4**—This is a 37-year-old, right-handed woman. There is no history of convulsions in the patient or in members of her family. She reports frequent episodes of "staring," memory lapse, and disorientation. She has sought outpatient psychiatric treatment on several occasions for vague symptoms that have a depressive component. She completed college and has done very well in additional graduate courses. Although born a Jew, she is now a devout Roman Catholic with a strong awareness of the persecution of the Jewish people. She is a prolific writer of poetry and short stories. Her manner of speech displays a high degree of circumstantiality in her thought processes.

The EEG shows rhythmic bursts of theta activity in the right temporal lobe during waking and a spike focus over the right anterior temporal region during drowsiness. Results of neurological examination were unremarkable.

The patient referred herself to the psychiatric services with a chief complaint of "multiple personality" and provided a writ-
The patient related the occurrence of dissociative episodes four or five years ago. At that time, she strongly believed that she alternated among two or three different persons, each with a different character, all simultaneously in existence, and each aware of the others. She even called herself "Susan-1," "Susan-2," or "Susan-3," depending on which personality she represented. The "s" personality embodied a protecting and strong character, whereas the "z" personality represented a defenseless child in need of protection. Although she now realizes that this must have represented her subjective interpretation of temperamental states, she clearly states that four or five years ago she was convinced that there were two or three autonomous persons inhabiting the same body.

Because dissociative states were no longer present at the time of examination, their response to anticonvulsants could not be assessed. However, the abdominal pains, hallucinations, and attacks of fear responded well to administration of phenobarbital.

At the time of the dissociative episodes, this patient presented a clinical profile very much like that of patient 4, in whom multiple personality was not associated with amnesia. The EEG in this case indicated partial epilepsy.

**Case 6.**—This is a 30-year-old, left-handed white woman. She gave no personal or family history of convulsions. There is a vague description of black-out spells. She also describes sudden distortions of color perception (things appear yellow-orange) that precede a temper outburst, as well as auditory hallucinations of hearing several conversations simultaneously. Multiple psychiatric hospitalizations have followed suicidal intentions. She completed college, but is now working as a janitor.

The EEG shows paroxysmal theta and sharp waves in the temporal lobes while alert. Neuropsychological testing shows a verbal IQ of 104, a performance IQ of 103, and a memory quotient of 106.

The patient described the feeling that there are two additional people inside her. One is a black girl named Mary, who emerges to the surface for very short periods of time and who is aggressive and combative. Mary resembles a black china doll that was the patient's favorite toy. An additional personality is characterized as a 2-year-old boy with a gentle disposition. At least on one occasion, she looked at the mirror expecting to see a little black girl and was surprised to see her own reflection.

While receiving valproate sodium, the visual and auditory hallucinations decreased, but the effect of this medication on the dissociative states could not be assessed.

The absence of amnesia places the patient in the same category as patients 4 and 5. The patient apparently personifies different temperamental states to such an extent that they assume psychological independence. The EEG is consistent with partial epilepsy.

**Case 7.**—This is a 33-year-old, right-handed woman. There is no history of convulsion in the patient or her family. She reports frequent attacks of anxiety, depersonalization, and déjà vu. Multiple psychiatric hospitalizations indicate a diagnosis of hysterical psychiatric reaction. Despite her borderline level of intelligence and absence of any intellectual interest, she writes extensively about God and moral precepts.

The EEG during drowsiness shows mid-temporal spikes, more on the left.

Her first question during her initial visit was whether it was possible to be "two persons in one." She then explained that she felt as if she were two different persons. One is good and religious, whereas the second is the opposite. On further questioning, she explained that she really did not believe that these two were autonomous but, rather, that they represented two aspects of her personality.

Her behavior showed no alteration while she received phenytoin.

This is the mildest case of dissociation, since the patient can easily make the distinction between autonomous personalities and different temperamental states. Nevertheless, it is interesting that her opening statement in her first visit referred to being "two persons in one." The EEG is abnormal and consistent with temporal lobe epilepsy.

**Possession**

**Case 8.**—This is a 36-year-old, right-handed Roman Catholic woman. She reports multiple episodes of altered consciousness associated with lip smacking and rocking movements. There are also panic episodes, auditory and visual hallucinations, déjà vu, déjà vect, and depersonalization. Many psychiatric hospitalizations became necessary after psychotic breaks, attacks of rage, and suicide attempts. During her adolescence, she was institutionalized for four years with life-threatening anorexia nervosa. She is now attending extension courses at the college level and obtaining mostly As.

The EEG showed anterior bitemporal spikes. A CT scan and results of neurological examination are within normal limits.

The patient stated her conviction that she is possessed by the devil. She feels that there is a demon in her body who cackles inside her head. She hears his voice telling her to do horrible things, ranging from throwing cups of coffee at other people's faces to killing herself. During an episode of possession a priest was brought to see her, but she spat on the Bible he had brought along. She was subsequently taken through the rite of exorcism. She cannot recall the episode since she lost consciousness at the onset, but felt much relieved.
when she recovered her senses. The priest then announced that she had been exorcised. A conversation with the patient was recorded:

**Patient:** I remember feeling possessed at Mass and I remember going over to see a priest... a priest coming to see me and saying that he thought I was possessed and referring me to another priest... and going to see him.

**Physician:** What is possession?

**Patient:** Satan takes over my body.

**Physician:** What does that feel like, how do you know?

**Patient:** He talks to me, he tells me to do terrible things.

**Physician:** Are you actually, at those times, convinced that Satan is in your body or do you just think it feels that way?

**Patient:** I think I was possessed.

While receiving several drugs, including phenytoin, carbamazepine, phenobarbital, and acetazolamide (Diamox), the episodes of panic, lip smacking, and possession diminished in frequency.

This patient was convinced that her body was possessed by the devil. She was quite clear in stating that this was not just a metaphor to describe unacceptable traits in her character, but a clear conviction of being invaded by an alien entity.

**Case 9.**—This is a 38-year-old, right-handed Roman Catholic man who had no prior history of neurological or psychiatric impairment. An abscess of the right parietooccipital region was surgically excised and he did well postoperatively despite a residual left visual field deficit. Several months later, he reported experiences as if "my head is empty". "I have no thoughts," "I feel hypnotized." These feelings are associated with blurry vision, abdominal discomfort, sensation of imminent death, intense fear, and the conviction that his body is being controlled by external forces. Two years after surgery, he had a grand mal seizure and was admitted to the hospital. The patient completed eighth grade with difficulty and works as a laborer. He was not unusually religious, but become preoccupied with religion after surgery and started to write excessively even though he was virtually illiterate.

The EEG showed a sharp wave and spike focus mostly on the right midtemporal area. The CT scan showed an area of low density in the right parietooccipital region. Neurological examination showed sensory extinction on the left.

The patient kept voluminous notes concerning his spells:

9:45—inside me I am scared but I am going through it. I try to live a good life, and I try to have good faith.

11:00—I feel like the devil is trying to get in me.

11:30—While reading my Bible I've got a good feeling inside me.

In the course of his hospitalization, he frequently expressed the conviction that he was possessed by the devil and that the devil was playing horrible tricks with his body. When he was offered the alternate explanation that it might merely feel as if he were possessed, the patient repeated his conviction that the devil was actually inside him. His manifestations disappeared and he stopped believing that he was possessed.

Patients 8 and 9 have several similarities. They share a literal belief in the reality of possession and they both have strong feelings of depersonalization and ictal dread. Their conditions responded to administration of conventional anticonvulsants. It is interesting that patient 9, the only man in the series, is also the only patient in whom the seizure disorder is not idiopathic.

**Case 10.**—This is a 23-year-old, ambidextrous woman. There is no history of convulsions in the patient or family members. She reports olfactory hallucinations (burnt rubber), sudden attacks of fear, and delusions of the head to the right. The experience of déja vu or depersonalization are denied. She had a very poor performance in school and can only hold menial jobs. She usually has a rather placid temperament.

One EEG shows paroxysm of sharp waves, and another shows paroxysm of theta waves while awake. No localization is obvious. Psychological testing shows a verbal IQ of 98, performance IQ of 77, and a memory quotient of 84.

She displays an unusually strong religious involvement, including the belief that she has seen God, Mary, and the devil. The patient feels "different" at times. During these episodes, she can "just tear the whole place apart, walk through walls." When she feels that way, she can look at the mirror and not recognize herself, touch herself and not feel it. When asked for an explanation for these alterations, she volunteered the belief that she was mostly "the devil" at those times. The interview was recorded and she said, "I know this will sound weird and I never saw The Exorcist, but I did ask the doctor if he thought I was possessed. Do you think I need to get evil spirits out of me?"

The response of her condition to phenytoin and phenobarbital was difficult to assess, even though she reported a certain decrease in the frequency of the dissociative episodes.

In this case, the experience of demonic possession was much less intense than in the first two cases. However, many of the features are reminiscent of cases 8 and 9.

**Case 11.**—This is a 29-year-old, right-handed woman. She reports the occurrence of generalized convulsions with loss of consciousness, but the details are vague. She also describes olfactory (rotten peanuts) and auditory hallucinations, dream-like states of unreality, and the feeling that she is watching herself from the outside. She has had multiple psychiatric hospitalizations, mostly for suicidal intent. She is a very intelligent woman who has been drifting through the world without consistent jobs or interpersonal relationships.

Several EEGs are reported as showing "dysrhythmia" in left temporal leads. However, the EEG was performed in another institution and neither the tracings nor the final report were available to us. Psychological testing showed a verbal IQ of 123, performance IQ of 119, and a memory quotient of 118. Results of neurological examination were within normal limits.

The patient says, "The devil, I know it's inside of me." This conviction is based on a voice that she hears inside her head that tells her to do negative things. In addition, she also experiences multiple personalities—one who wears bright colors, another who wears dark colors. She calls them "different people within me," and says "I am there, and they are there, and they are a part of me but it's just like one part of me becomes stronger and outweighs everything else. And, you know, two of them can exist at the same time and they can have conversations.

Response to medication cannot be assessed.

This patient combines the features of possession and multiple personality.

**Case 12.**—This is a 44-year-old woman. She reports having had full-blown grand mal seizures for the past ten years. The frequency is now two to three seizures per year. She reports having had strong experiences of déja vu, jamais vu, and depersonalization. She has a history of many psychiatric hospitalizations. Her psychiatric history includes sexual acting out, drug abuse, and multiple delusional states. She completed college as well as graduate courses on creative writing. She writes extensively, and has practiced Presbyterianism, Judaism, and Episcopalism.

The EEG shows bilateral spike over the temporal lobes and surrounding regions. The results of neurological examination were not remarkable. Psychological testing shows a verbal IQ of 134, a performance IQ of 104, and a memory quotient of 120.

On repeated occasions, she has believed that she was the Messiah and that she has a special mission to fulfill. Some of these episodes last for almost a year. During one of these she believed she was called by God to enter politics, ran for an important public office, and almost won the election. One subjective description she offers for these grandiose episodes is being "possessed by God."

Phenytoin controls the grand mal seizure, but its effects on the mesiianic states cannot be determined.

Several authors stress the point that possession need not be demonic. The
experience of "ecstasy" can be considered a form of beatific possession, and this patient seems to manifest it.

**COMMENT**

Each of the patients was initially seen in psychiatric consultation. The diagnosis of hysteria was considered in cases 1, 3, and 7 and that of schizophrenia in cases 8 and 12. However, atypical features in these patients, as well as in the other cases, prompted subsequent neurological evaluation that led to the discovery of the abnormal EEG.

In these 12 cases, clinical syndromes reminiscent of multiple personality or possession emerged on a background of an abnormal EEG. Four of the patients (cases 1 through 4) had a colorful and dramatic clinical picture consistent with the classic descriptions of multiple personality. Another three were convinced that they were possessed, two by the devil (cases 8 and 9) and one by a benevolent power (case 12). These seven patients displayed the most florid symptomatology and volunteered the relevant details spontaneously. In the other five cases, the symptoms were either milder (cases 6, 7, 10, 11) or dormant at the time of the clinical interview (case 5). With the exception of two cases with mild or questionable readings (cases 3 and 11), the EEG was distinctly abnormal, with a predilection for the temporal lobe. With three exceptions (8, 9, and 12), there were no convulsions or definite automatisms. In the absence of such motor manifestations, the description of these patients as epileptic may be questioned. However, the occurrence of electrical temporal-lobe paroxysms and concomitant psychomotor phenomena in patients who do not display abnormal movement is well known. Thus, in these patients, the words "epilepsy" and "seizure" refer primarily to an abnormality in the EEG consistent with an underlying focus of pathological irritation.

Multiple personality and possession are rare occurrences in contemporary psychiatric practice. Nevertheless, the experience of the Behavioral Neurology Unit shows that of 61 patients in whom the possibility of psychomotor epilepsy was raised, 12 gave a history consistent with these syndromes. Furthermore, a similar clinical picture was not encountered among the 246 patients with other primary diagnoses who were seen during the same time span of approximately one year. Our clinic undoubtedly attracts a disproportionately large number of referrals in whom severe psychiatric disturbances occur in conjunction with epilepsy; nevertheless, the high incidence of these otherwise rare syndromes and their association with abnormal EEGs raise the possibility that multiple personality and possession may constitute one behavioral manifestation of abnormal electrical activity in the temporal lobes. This conclusion is consistent with many other clinical series in which a large spectrum of behavioral alterations, ranging from unusual religiosity to hysteria and paranoid psychosis, has been attributed to psychomotor epilepsy. Although focal EEG abnormality may occur in otherwise idiopathic hysteria or schizophrenia, the incidence of this appears to be quite low. In fact, in a study of 410 schizophrenic patients, focal EEG abnormality was found in only 1%. Nevertheless, the possibility must be considered that the association reported in our cases merely reflects the chance occurrence of an abnormal EEG in patients with otherwise functional psychiatric disturbances. Some of the patients (cases 8, 9, 10, and 12) were taking phenothiazine compounds, so that some of the EEG abnormalities in these cases could conceivably be attributed to the effect of these drugs. Furthermore, since a suspicion of epilepsy was the basis for referral to our clinic, this sample does not rule out the possibility that most cases of dissociative states remain free of any abnormality in their EEGs.

Several instances of prolonged fugues have been described in epileptics. However, the specific correlation between epilepsy and dissociative states has not been stressed, even though isolated cases with such an association have been reported. Most convincing is the case described by Horton and Miller, a 16-year-old girl whose EEG contained paroxysmal discharges and abortive spikes and who showed a classic case of amnesic somnambulism with four distinct personalities. There are at least five other cases in the literature in which a similar association with epilepsy can be inferred on the basis of the clinical description, but in which confirmatory EEG evidence is lacking. Sörgel, the case of von Feuerbach, was an epileptic who showed a dramatic dissociation into decent and criminal personalities. The decent personality was amnesic for the activities of its criminal counterpart, including one episode during which Sörgel chopped up an old woodcutter and drank his blood. Two other famous reports, that of Louis Vivé and that of Ansel Bourne, also contain evidence for multiple personality in the presence of a convulsive disorder. A similar association occurs in the case of Tucker and Shields. Furthermore, Jackson's celebrated patient Dr Z, who suffered from psychomotor epilepsy, also displayed unusual behavioral alterations. Jackson and Colman wrote, "On another occasion there were postepileptic actions by Z during 'unconsciousness,' of a kind which in a man fully himself would be criminal, and must have led to very serious consequences had not, fortunately, his condition been known." Thus, the case of Dr Z was probably the first published description of a person in whom multiple personality emerged on the background of psychomotor epilepsy. There are two reasons for believing that the literature may underestimate this association. First, there was a common tendency to ascribe convulsions to hysterepilepsy, especially when they occurred in the presence of dissociative states. However, as Gastaut has pointed out, many of these atypical convulsions may well have been manifestations of what would now be called psychomotor epilepsy. Second, in the absence of the EEG, patients without motor convulsions like the ones described earlier would pass unnoticed even if they had paroxysmal abnormalities of cerebral electrical activity. Thus, the association of multiple personality with epilepsy is probably higher than that suggested by a survey of published cases.

The relationship between epilepsy and possession is more difficult to surmise. Convulsions are very frequently described in cases of demonic possession. It is likely that most of these are of a hysterical nature, especially since it is not unusual for the phenomenon of possession to spread contagiously among members of a group, and since epilepsy would almost certainly not manifest a similar epidemiology. A second difficulty arises because the word "possession" has several distinct uses. It has been used to describe not only invasion by a spiritual entity, but also a state of inspiration and even the mere presence of a disease state, especially epilepsy. Thus, in the frequently quoted passage from the New Testament (Mark 9:17-27), the "dumb spirit" who throws the man on the floor and makes him foam at the mouth seems to represent ordinary epilepsy, even though this passage is often quoted as
an example of demonic possession and its successful exorcism. As a consequence of the high frequency of hysterical convulsions and a lack of uniformity of nomenclature, it is very difficult to ascertain the association of possession with epilepsy. Although the superstitious tendency in the past was to attribute epilepsy to possession by evil spirits, it is interesting that the cases reported here suggest that focal epilepsy may in some cases lead to the illusion of possession.

It is becoming increasingly clear that a bewildering variety of behavioral changes occur in conjunction with partial epilepsy located in the temporal lobe.1-11 Although the precise reasons for this association remain speculative, several anatomical features of the temporal lobe deserve comment. First, the temporal lobe, and especially its medial portions that so often become the focus of psychomotor epilepsy, contain not only structures such as the fusiform and parahippocampal gyri (where complex sensory associations are formed), but also structures such as the amygdala and hippocampus, which are pivotal components of the limbic system and which have direct access to the hormonal, visceral, and motivational mechanisms of the hypothalamus.12 Moreover, there are powerful monosynaptic connections in the medial temporal lobe between sensory association cortex and limbic structures.15-27 Thus, the ictal manifestations of temporal lobe epilepsy may be either purely sensory, as in the case of hallucinations or illusions; purely affective, as in the case of spontaneous dread, panic, and sadness; or a combination of the two, as in the case of déjà vu, jamais vu, depersonalization, or feelings of unreality.

The pattern of anatomical connections suggests that the temporal lobe may be involved in the integration of affective tone with sensory information and, perhaps, thought processes. Under usual conditions, the affective tone imparted to perception or thought is expected to reflect the subject’s past experience, present internal state, and the value of the relevant mental experience. In patients with temporal lobe epilepsy, this relationship may be severely disrupted by the presence of an autonomous and paroxysmal focus of neural discharge. This focus may lead to unpredictable affective coloring of mental activity and may disrupt the balance between affect on one hand and perception and thought on the other. Thus, in addition to ictal experiences such as hallucinations, panic, or déjà vu, more complex and pervasive interictal behavioral changes may become established as a manifestation of chronic temporal lobe epilepsy. In some instances, these changes take the form of character traits, such as aggressiveness, religiosity, or humorlessness, and become incorporated into the fabric of the underlying personality. In other cases, these changes may be so drastic or may occur in such a manner that integration becomes impossible and dissociative states emerge, especially in susceptible persons.

The question is asked why some patients with temporal lobe epilepsy merely have personality traits, such as religiosity or humorlessness, whereas others manifest the dramatic symptoms of dissociative states. Although our sample is too small for such analyses, a review of the seven cases in which the EEG abnormality was asymmetrical suggests that the left hemisphere was rarely the dominant focus in right handers (2/7 cases), whereas the occurrence of a right-sided focus in right handers or left-sided focus in left handers was more frequent (5/7 cases). Hence, dissociative phenomena may be more likely to occur in patients whose predominant EEG abnormality is in the nondominant temporal lobe. It is conceivable that autonomous mental events that originate in the nondominant hemisphere are more likely to lead to dissociative states, whereas those that originate in the hemisphere dominant for language may be more likely to be adopted as part of the self. Larger series of patients will need to be investigated to test the validity of this hypothesis.

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Nonproprietary Name and Trademark of Drug

Valproate sodium—Depakene Syrup.

References
