

Review

# Spirituality and Religion in Epilepsy

Orrin Devinsky \*, George Lai

*Department of Neurology, NYU School of Medicine, New York University, NYU Epilepsy Center, 403 E 34 St., New York, NY 10016 USA*

Received 19 November 2007; accepted 20 November 2007

Available online 2 January 2008

## Abstract

Revered in some cultures but persecuted by most others, epilepsy patients have, throughout history, been linked with the divine, demonic, and supernatural. Clinical observations during the past 150 years support an association between religious experiences during (ictal), after (postictal), and in between (interictal) seizures. In addition, epileptic seizures may increase, alter, or decrease religious experience especially in a small group of patients with temporal lobe epilepsy (TLE).

Literature surveys have revealed that between .4% and 3.1% of partial epilepsy patients had ictal religious experiences; higher frequencies are found in systematic questionnaires versus spontaneous patient reports. Religious premonitory symptoms or auras were reported by 3.9% of epilepsy patients. Among patients with ictal religious experiences, there is a predominance of patients with right TLE. Postictal and interictal religious experiences occur most often in TLE patients with bilateral seizure foci. Postictal religious experiences occurred in 1.3% of all epilepsy patients and 2.2% of TLE patients. Many of the epilepsy-related religious conversion experiences occurred postictally. Interictal religiosity is more controversial with less consensus among studies. Patients with postictal psychosis may also experience interictal hyper-religiosity, supporting a “pathological” increase in interictal religiosity in some patients.

Although psychologic and social factors such as stigma may contribute to religious experiences with epilepsy, a neurologic mechanism most likely plays a large role. The limbic system is also often suggested as the critical site of religious experience due to the association with temporal lobe epilepsy and the emotional nature of the experiences. Neocortical areas also may be involved, suggested by the presence of visual and auditory hallucinations, complex ideation during many religious experiences, and the large expanse of temporal neocortex. In contrast to the role of the temporal lobe in evoking religious experiences, alterations in frontal functions may contribute to increased religious interests as a personality trait. The two main forms of religious experience, the ongoing belief pattern and set of convictions (the religion of the everyday man) versus the ecstatic religious experience, may be predominantly localized to the frontal and temporal regions, respectively, of the right hemisphere.

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*Keywords:* Epilepsy; Religion; Spirituality

## 1. Introduction

The more subjective the phenomenon, the less easily can science focus on its image. Spiritual and religious experiences are deeply personal and verbally inexpressible. The scientific effort to dissect and define them may miss or destroy their essence. Yet, spiritual and religious thoughts are phenomena of the mind and brain with physiologic and structural correlates.

The presence of spiritual beliefs among all cultures strongly suggests that the human brain is programmed to experience and explain parts of existence in spiritual terms. Like language, spirituality develops in different forms in different cultures, yet the emotional–cognitive processes and underlying anatomy probably share many elements. The aphasias helped usher in modern neurology 150 years ago. Linguists and cognitive neuroscientists actively study normal language function. In contrast, priests and, occasionally, psychiatrists focus on spiritual–religious disorders, but “normal” spirituality and religious experiences rarely reach the fringes of science. Thus, positron emission tomography and functional MRI are routinely used to

\* Corresponding author. Fax: +1 212 263 8342.

E-mail address: [od4@nyu.edu](mailto:od4@nyu.edu) (O. Devinsky).

study language, vision, facial recognition, attention, and other cognitive functions, but very few investigations have sought to identify the structures that are active during religious ideation. In one functional MRI study, the dorsolateral frontal and medial frontoparietal areas were activated during religious recitation in self-identified religious subjects [1]. Yet, it remains uncertain whether any elements of religious experience were activated as these results have not been replicated.

William James [2], in 1902, identified two broad categories of religious experiences. The first is the religion provided by our parents and society [p. 6]. The second, and more interesting one, is the “original experiences which were the pattern-setters to all this mass of suggested feeling and imitated conduct... individuals for whom religion exists not as a dull habit but as an acute fever... ‘geniuses’ in the religious line” [p. 7]. James recognized intense religious experiences as special events, occurring in a small group and occasionally having an enormous impact on the larger population. He also cautioned against the reductionist medical materialism that “finishes up Saint Paul by calling his vision on the road to Damascus a discharging lesion of the occipital lobe, he being an epileptic” [p. 12].

James also recognized that those subject to intense religious experiences are often “creatures of exalted emotional sensibility... led a discordant inner life... melancholy... liable to obsessions and fixed ideas... fallen into trances... heard voices, seen visions, and presented all sorts of peculiarities... classed as pathological... [that] helped to give them their religious authority and influence” [p. 8]. Differentiating genius from pathology may be most difficult regarding religious ideation and experience. Who is touched by madness, who by spirits, and who by both? Medically, we can readily diagnose a seizure if the EEG shows epileptiform activity and there are associated features such as olfactory hallucination followed by staring and oral automatisms. Similarly we can diagnose a psychotic disorder if there are nonreligious delusional ideas and characteristic hallucinations and negative symptoms. But how can we distinguish the physiology or validity of a religious experience in someone with epilepsy or psychosis from that of a religious sage? We can’t.

Disorders of spiritual–religious function could result in a relative lack of or excess of activity. Normal function is culturally defined and varies radically. Many cultures actively endorse intense religious experiences through extreme environmental conditions (e.g., sweat lodge, prolonged isolation, fasting) and environmental hallucinogens, often in a ceremonial context. In contrast, several modern cultures (scientific, communist) endorse atheism. Yet, within this vast range, neurologic or psychiatric disorders can dramatically alter both types of James’ religious experiences (ordinary man, ecstatic), which could enhance or diminish religious activity. Neuropsychiatry focuses almost exclusively on hyper-function, although hypo-function is probably of equal interest and importance, but is unrecognized.

Epilepsy, mood disorders (especially mania), and psychosis stand out among human disorders that trigger an excess of spiritual experiences. This review will focus on epilepsy.

## 2. Historical Background

Hippocrates began his discourse on the “sacred disease” by refuting the connection between epilepsy and the divine; he argued against the widespread beliefs of prophetic and mystical powers attributed to persons with epilepsy and the disorder’s divine causation. However, Hippocrates attempt to dissociate epilepsy and religion was unsuccessful. Subsequent religious figures were asked to heal people with epilepsy. The New Testament gospels of Matthew (17:14–20), Mark (9:14–29), and Luke (9:37–43), who was a physician, recount how Jesus cast out the evil spirit from a boy with epilepsy who had just had a seizure, thereby curing him [3]. Throughout the Middle Ages and the Renaissance, religious and magical treatments of epilepsy predominated [4], and in the nineteenth century the religiosity of persons with epilepsy was stressed by physicians such as Esquirol [5], Morel [6], and Maudsley [7]. From ancient to modern times, many cultures viewed seizures as resulting from demonic or divine supernatural influences [8–14]. Maudsley [7] noted that Siberian medicine men of his day always preferred epileptic pupils. Leuba’s [15] classic monograph on religious mysticism noted that “among the dread diseases that afflict humanity there is only one that interests us quite particularly; that disease is epilepsy.” Throughout the twentieth century, many anecdotal reports continued to associate epilepsy with heightened religious sentiment [16–20].

Although the possible association between religion and epilepsy has persisted throughout history, several questions

Table 1  
Religious figures with alleged seizures or epilepsy

Amenhotep IV (c 1411–1375 BCE)	Egyptian proponent of monotheism
Ezekiel (c 597 BCE)	Hebrew prophet
Buddha (c 563–483 BCE)	Founder of Buddhism
Julius Ceasar (c 101–44 BCE)	Chief priest of Rome
St. Paul (c 64 CE)	Christian
St. Cecilia (?–176)	Christian
Mohammed (569–623)	Islam
St. Brigitta (1303–1373)	Christian
Joan of Arc (1412–1431)	Christian
St. Catherine of Genoa (1447–1510)	Christian
St. Teresa of Avila (1515–1582)	Christian
Jakob Bohme (1575–1624)	Christian
George Fox (1624–1691)	Founder of Quakers
St. Marguerite Marie (1647–1690)	Christian
Emmanuel Swedenborg (1688–1772)	Christian mystic
Anne Lee (1736–1784)	Founder of Shakers
Joseph Smith (1805–1844)	Founder of Mormons
Soren Kierkegaard (1813–1855)	Founder of existentialism
St. Therese of Lisieux (1873–1897)	Christian

Sources [21–28].

still surround the relationship. Do a subgroup of persons with epilepsy experience intense religious experiences in relation to seizures or postictal states? Are persons with epilepsy more likely to be religious than those in the general population? The evidence supports both of these associations. Table 1 lists prominent religious figures including major saints and prophets and founders of major religions who allegedly had epilepsy. The evidence supporting epilepsy in these individuals varies, but most appear to have had seizures. The nature of religious experiences lays open the question as to how many other religious figures could have had epilepsy. For example, Moses' experience was one in which he saw a burning bush unconsumed by the fire and heard God's voice. A medical explanation might attribute his experience to a temporal lobe ecstatic seizure with visual and auditory hallucinations.

### 3. Ictal Religious Experiences

Ictal religious experiences are a form of ecstatic seizures, occurring most often in patients with temporal lobe seizure foci. Other ecstatic seizures include the emotion of intense pleasure, joy, or contentment [29,30]. Among patients with emotional simple partial seizures, between 7% and 23% reported pleasurable sensations [31,32]. Of 606 patients with temporal lobe epilepsy (TLE), six (1%) had ictal religious experiences [33]. In a survey of 234 patients with epilepsy, one (0.4%) had a religious experience during a simple partial seizure of temporal lobe origin [34]. This patient experienced auditory hallucinations of deities telling her to "kneel and pray before the Gods and Buddha." In a structured interview of 128 patients with complex partial seizures (CPS), four (3.1%) reported ictal pleasure and three (2.3%) reported ictal mystical experiences [35]. A religious aura or a premonitory period of hours or several days associated with religiosity was reported in 52 (3.9%) of 1325 patients with epilepsy [36].

Dostoyevsky eloquently described his own ictal religious experience [37]:

The air was filled with a big noise, and I thought that it had engulfed me. I have really touched God. He came into me myself, yes, God exists, I cried, and I don't remember anything else. You all, healthy people, he said, can't imagine the happiness which we epileptics feel during the second before our attack. I don't know if this felicity lasts for seconds, hours, or months, but believe me, for all the joys that life may bring, I would not exchange this one... Such instants were characterized by a fulguration of the consciousness and by a supreme exaltation of emotional subjectivity.

Several case reports and small series document religious or mystical experiences during partial seizures [30,38–40]. The nature of ictal religious seizures varies, including intense emotions of God's presence, the sense of being connected to the infinite [37], hallucinations of God's voice [30], the visual hallucination of a religious figure [17], as

well as clairvoyance and telepathy, or repetition of a religious phrase [40]. Four of the five well documented cases of ictal religious events were associated with right temporal (three cases) or right frontotemporal (one case) seizure foci. When localization within the temporal lobe was available, it was in the anteromesial region in all three cases.

Ictal autoscopy is the experience of seeing oneself. There are two main types of autoscopic phenomena: the visual hallucination of seeing one's own double, and the experience of leaving one's own body and viewing it from an external perspective (an out-of-body experience). Autoscopic phenomena can occur in healthy individuals as well as in patients with various medical, psychiatric, and neurologic disorders [41]. Anxiety and fatigue increase the tendency toward autoscopic experiences in healthy persons and have occurred in up to 50% of individuals after near-death experiences [42]. In a consecutive series of 158 patients with epilepsy, nine (5.7%) reported ictal autoscopy. Thirty-three additional cases were identified from the literature. Of these, 36 had partial epilepsy, two had generalized epilepsy, three had electroconvulsive shock therapy, and one had toxemia. A temporal lobe seizure focus was identified in 86% of the cases. The seizure focus was equally distributed on the left and right sides in cases with the visual hallucination of seeing one's double, but was two-fold greater on the right side in cases with an out-of-body experience [41].

### 4. Postictal Religious Experiences

Intense religious experiences and delusions often occur during postictal psychoses [43]. These symptoms tend to be prolonged, often lasting hours to days, in contrast with ictal phenomena, which typically last seconds or minutes. Howden [44] observed a man who had a religious conversion after a generalized seizure in which he was "in Heaven." The experience involved a depersonalized state, and it took three days for his body to be reunited with its soul. Mabilie [45] described a patient who, after a seizure, reported that God had given him a mission to bring law to the world and that God and the Virgin Mary commanded him not to eat until success was achieved. Boven [46] reported a 14-year-old boy who "saw the good God and the angels, and heard a celestial fanfare of music."

Dewhurst and Beard [47] reported six patients with TLE who underwent sudden religious conversions. Some of them had prior or active psychiatric disorders. There was a clear temporal relationship between conversion and first seizure or increased seizure frequency in five patients, and a marked decrease in seizure frequency prior to conversion in one patient (she attributed her improved seizure disorder to the Almighty). In these five patients, clinical evidence suggested that the religious conversion was part of a postictal state. There was no predominant lateralization of TLE in these patients. The investigators viewed the conversion experience through Jackson's theory [48]: the 'duplex' nature of the discharge caused loss of function of the highest

centers with a superimposed increased function of the lower centers. The resulting alteration in the level of consciousness provided the psychological milieu for a conversion experience to take place.

Postictal religious conversions are well documented [49,50]. In reporting a patient who had a conversion experience following an epileptic seizure, Howden [44] wrote, “He maintained that God had sent (the vision) to him as a means of conversion, that he was now a new man and had never before known what true peace was.”

In a survey of 234 epilepsy patients, three (1.3%) had postictal religious experiences; all three had TLE [34]. Among the 137 subjects with TLE, 2.2% had postictal religious experiences. Religious ideation occurred in three of 11 TLE patients (27%) with postictal psychosis. Notably, all three of these patients also experienced interictal hyper-religiosity.

Two personal cases of postictal religiosity highlight the emotional intensity and potential consequences of the disorder:

*Case 1:* A 45-year-old left-handed man experienced afebrile seizures at age 16 months and, later, febrile convulsions. His brother had partial epilepsy. He had normal developmental milestones, graduated from high school, and worked in electronics. CPS with an aura of “an odd feeling” occurred one to four times a week and secondary generalized tonic-clonic (SGTC) seizures occurred two to four times a year. He could become irritable, verbally hostile, and violent following seizure clusters and, on several occasions, heard Jesus talking to him after a seizure. There was no history of a chronic psychiatric disorder.

At age 27, he had an episode that “changed his life.” One night he woke from sleep, during or shortly after a seizure, and had a vision in which he saw Christ and heard a voice that commanded him to kill his wife and then himself. He proceeded to act upon the hallucinations. He killed his wife by stabbing her repetitively, then stabbed himself numerous times and set his house on fire. He wrote of the incident several years later in prison:

I was in bed and I was called out into the living room. I saw a vision of Christ and I asked him what he wanted. He told me my time had come. I stepped into the kitchen and this strange feeling and vision left me. I stood in between the living room and the kitchen and the strange feeling returned. I looked down the hallway and the voice said: whatever you do, do not wake your wife up. I did not know what was going on. So I went into the bedroom and tapped my wife on the shoulder and told her that Jesus is out in the living room. He likes to talk to us. My wife woke up and looked over her shoulder and said, what!! I then went back out into the living room and again the strange feeling came back. The voice said, now you have to take her with you. I said forget it and I argued with it. Next, I recall getting a knife from my toolbox. Next, I remember being with

my wife in the living room. As I was handing her the knife, I was telling her I am not lying. I saw what I saw. She then stabbed me. Next, I remember being in my work area. I took a hammer out of my toolbox and hammered the knife into myself. Then I stabbed myself a couple of times. I went back out into the living room and I was on all fours over my wife. I said I think I am dying. I said I am sorry, it is all my fault. I laid down next to my wife and I saw two white souls going upward. I said what is wrong? and the voice said do you want to spend eternity in hell. I said of course not. The voice said you cannot get to heaven if you commit suicide. Next thing I recall was waking up in the hospital and seeing my mother. I asked her if my wife was dead. Her reply was “Oh my God, he knows.”

He was incarcerated at a psychiatric prison facility after being convicted as criminally insane. He remained interested in religious matters and in questions of morality but was not delusional. However, occasionally during group therapy, he would become more religious and pray aloud, claiming to hear God’s voice and attempting to preach to those around him.

Video-EEG documented a right temporal lobe focus. MRI of his head showed mesial temporal sclerosis on the right side. PET showed hypometabolism in the right temporal lobe. The Wada test revealed left hemisphere language dominance and impaired right hemisphere memory. Following a right temporal lobectomy, he has been seizure free and off antiepileptic drugs for more than 10 years. He has not experienced any more delusions or religious thoughts. Neuropsychologic testing showed improved memory after surgery. He is now employed and lives independently.

*Case 2:* A 38-year-old right-handed woman with a history of febrile seizures had SGTC seizures at age 12 and CPS without an aura at age 20 years. She was brought up in a religious family and was active in church life. She worked as a legal secretary, but was later disabled by epilepsy. Over the past three years, she was hospitalized several times for mild postictal psychosis with prominent religious ideation and persistent *déjà vu*.

Following one seizure, she felt that everything she heard had been said before and was related to something she had done. After several SGTC seizures, she recalled “heavy theological thoughts and memory flashbacks” while regaining consciousness. “I thought I was losing my salvation.... I felt the anti-Christ. I was scared.” She was deeply disturbed by these thoughts. After one of these seizures, she asked her husband to call the pastor at his home, and he reassured her. After another cluster of CPS, the patient and her husband were about to leave their house to visit friends when she heard “cheering voices of a parade” and asked him, “Are you sure if we go outside we will see other people, people like us, people we know?...” On several occasions, she asked whether the number “66” in the middle of her social security number meant anything. She had other post-

ictal delusions and visual and auditory hallucinations with paranoid features. Interictally, her thoughts were clear, without religious preoccupation, delusions, or hallucinations.

MRI of her head revealed a small, nonspecific white matter lesion in the right periventricular region. A routine EEG showed independent temporal spikes bilaterally, more on the left side than the right. Video-EEG identified left temporal lobe focus. The Wada test revealed left hemisphere language dominance and impaired memory. She underwent left temporal lobectomy with a greater than 90% reduction in seizure frequency and resolution of religious ideation and delusions. Pathologic examination revealed mild cortical dysplasia.

## 5. Interictal Religiosity

While ictal and postictal religiosity are “religious fevers,” interictal religiosity usually takes the form of a heightened state of religious conviction. Unlike the “acute infections” of religious experience, interictal religiosity is a more continuous behavioral trait. Religiosity is an uncommon personality feature among individuals with epilepsy. Rather, it affects a subgroup of epilepsy patients, especially those with TLE [51–53]. These individuals have unusually strong religious beliefs, often associated with an increased sense of personal destiny, strong moral beliefs, and philosophical interests [51–53]. Although most persons with interictal religiosity do not have ictal religious experiences, some, like Dostoyevsky, have both. Individuals with interictal religiosity often have a history of postictal psychosis and bilateral cerebral dysfunction [53].

How strong is the evidence to support interictal hyper-religiosity among individuals with TLE? The literature on epilepsy and interictal religious beliefs is limited by the small samples in almost all studies, which usually consist of fewer than 80 patients with epilepsy. Religiosity was one of the 18 personality traits that Bear and Fedio [52] identified as allegedly associated with TLE. They found that the frequency of increased religious sentiments was greater amongst the TLE group than the normal or neuromuscular disorder control samples. Two subsequent studies utilizing religion questionnaires failed to find any differences between patients with right-sided versus left-sided TLE, TLE versus idiopathic generalized epilepsy, or between patients with epilepsy and control subjects [54,55]. In contrast, Roberts and Guberman [49] found that 60% of 57 consecutive patients with epilepsy had abnormal interests in religion.

Trimble and Freeman [53] studied 28 TLE patients with prominent religious inclinations over a period of at least one year (TLE-relig) and compared them with 22 TLE (TLE-nonrelig) patients without religiosity and 27 regular churchgoers without epilepsy (control). The frequency of depression, postictal psychosis, and belonging to a non-mainstream religion was noted. On the Bear–Fedio inventory [52], the TLE-relig group had higher scores on almost all traits compared with the TLE-nonrelig group. Patients with bilateral temporal foci had greater religious inclina-

tions and experiences than patients with unilateral left-sided or right-sided temporal foci.

There is evidence that some patients with epilepsy, especially those with TLE, have increased rates of unusually strong religious beliefs, however the incidence of interictal religiosity is not well defined. The Gastaut–Geschwind syndrome is found in approximately 7% of TLE patients [56], but the frequency of isolated features such as hyper-religiosity may be higher or lower. Although distinct from ictal and postictal religious experiences, interictal religiosity may either precede or follow peri-ictal religious experiences [34,53].

Changes in either temporal or frontal lobe functions would contribute to increased religious interests as a personality trait. The frontal lobes are dominant for personality. However, motivational interest is critically dependent on both the frontal and temporal neocortical areas. Wuerfel et al. [57] selectively studied mesial temporal structures on MRI in 33 patients with refractory partial epilepsy, comparing 22 patients without and 11 patients with hyper-religiosity. High ratings on the religiosity scale were associated with a significantly smaller hippocampus on the right side, but had no relationship with the amygdala volume. Notably, frontal regions were not studied. The hippocampal atrophy may correctly mark the side of involvement, but this lesion may reflect the duration and severity of religiosity rather than the critical site from which the “positive symptom” of religiosity arises. Changes have been found in amygdala volume in epileptic patients with a comorbid affective disorder [58], affective aggression [59], and psychosis [60].

## 6. Indeterminant States Between Peri-ictal and Interictal Experiences

Determining the precise boundaries between premonitory, ictal, postictal, and interictal experiences can be difficult. Although a carefully obtained history can often distinguish between these states, they can merge with each other and overlap or transform over time. Thus, recurrent postictal psychosis can evolve to interictal psychosis [61]. Similarly, postictal phenomena that occur immediately after a seizure can have different clinical features and pathophysiologic mechanisms.

Determining the temporal relation of religious experiences and ideation to seizures can be difficult. Consider the cases reported by Spratling [36]. In the first case, he described one of his own patients:

A man of forty-three years, under my care, whose epilepsy had followed scarlatinal nephritis at the age of seven years, and who was subject to long remissions in his disease, had serial attacks from three to four weeks apart. The first indication noted of his approaching fits was his fault-finding at the table. He suddenly objected to his neighbor, calling him a vile name. At the next

meal he refused to sit beside him and at the next meal failed to appear at all. He was found in his room shortly after, moody, sullen, and irritable, reading the Bible. He kept this up all night and the better part of the following day, when he suddenly lay his Bible aside and began to loudly revile everyone within hearing, in the most profane and violent language. On his finally attempting to assault his nurse and physician, he was placed in restraint. A few hours later, he had three severe attacks in rapid succession, six hours after which he was composed and agreeable to all about him. His malady followed this course for many years.

In the second case, he cited a report from Clouston [62] who, in 1884, had

...mentioned a lad in whom religiosity was a sure prelude to a fit or a series of fits. Before these periods, the patient read his Bible continually, and when spoken to answered fiercely, "Don't trouble me; I am a good man, I'm a servant of God." The day after he would walk up and down and strike any one who came near him. If any one spoke to him, he replied maniacally, "You are a damned liar. Don't insult me." In a few hours, he would have one or more fits, remain stupid for awhile, then be as well as ever.

These two cases suggest that religious fever can also occur as a premonitory state before convulsions. The continuous nature of these symptoms argues against the occurrence of simple or complex partial seizures. Partial seizures may have occurred and were not recognized or the religiosity may have been a postictal state after partial seizures that resolved after one or more tonic-clonic seizures. Such a course would be extremely unusual and has not been well documented in the modern era of video-EEG monitoring. Thus, premonitory religiosity remains the most likely diagnosis in these cases.

Recent evidence suggests that religious episodes in epilepsy are consistent with peri-ictal psychoses. Oshima et al. [63] described a peri-ictal psychosis that differs from the classic postictal psychosis, as defined by Logsdail and Toone [64]; psychiatric symptoms could precede the onset of seizures and additional seizures could occur during the psychotic phase. They suggested that such cases are often missed because of the emphasis on symptoms occurring in the artificial setting of video-EEG monitoring (consistent with the cases cited above), the focus on psychiatric symptoms that occur after seizures, and failure to obtain a careful history of events before the seizure cluster.

## 7. Pathophysiology of Religiosity

The brain mediates religious experience, emotion, and thought. Ictal and postictal religious phenomena result from alterations in cortical function. Limbic system dysfunction is often postulated [53,65], and is supported by

the emotional content of these experiences. This is reflected in the term Spratling [36] used to describe auras with religious content: paradoxical religious emotionalism. However, involvement of neocortical areas is supported by the complex visual and auditory hallucinations that often accompany religious experiences, as well as the complex ideational content. Intense religious experiences occur with other alterations of brain function, and support neurologic mechanisms; these include sleep deprivation, sensory isolation, hallucinogenic drugs, mania, schizophrenia, neurosyphilis, and dementia.

A neurologic mechanism probably plays a dominant role in the underlying interictal religiosity, although psychological and social factors may also contribute. The social isolation and stigma caused by epilepsy have been considered critical factors in the strength of religious beliefs in some patients since the early nineteenth century [5,6,54]. Howden [44] viewed religiosity as a personality trait, describing "a strong devotional feeling, manifesting itself... in decided religious delusions" among epilepsy patients. However, he viewed this trait as a craving for sympathy by the desperate, helpless, intellectually deteriorating patient.

The incidence of religious experiences is probably underestimated in epilepsy patients. Few neurologists or psychiatrists routinely ask patients with epilepsy about their religious belief system or religious experiences. Many patients suffer from postictal retrograde amnesia and cannot recall the events; others may not offer the information if they are not asked specifically about religious experiences. Many patients consider their religious experiences as something that medical personnel will consider psychiatric.

The literature and personally observed cases suggest that ictal religious experiences, like other ictal experiential phenomena, are more common with a seizure focus in the right hemisphere [29,30,39,40]. Postictal religiosity, like postictal psychosis and delusions, is associated with bilateral temporal lobe seizure foci or dysfunction [53,66].

The right hemisphere may play a special role in experiential and personality features related to the corporeal, emotional, and spiritual self [67]. The right frontal lobe may be primarily responsible for those elements of self that are ingrained elements of personality, such as social, political, and religious values. Of 72 patients with frontotemporal dementia, Miller et al. [68] identified seven patients who had dramatic changes in self, defined as a change in political, social, or religious views. Six of the seven patients had selective dysfunction affecting the nondominant frontal lobe.

In contrast, the right temporal lobe may be critical in the experience of intense spiritual phenomena. This is exemplified by the intense religious experiences during and after temporal lobe seizures. Thus, the two main forms of religious experience identified by William James—the belief and value system of the average person and the intense experiential ecstatic mystical event—may be primarily localized to the frontal and temporal regions, respectively, of the right hemisphere.

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