Is the brain hardwired for religion?

by Molly Edmonds

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It started out as an ordinary day for Saul back in A.D. 36. He wanted to murder disciples of a man who claimed to be the Messiah, and he was on his way to Damascus to do so. Then, on the way to Damascus, a light flashed all around Saul. He fell to the ground and heard a voice that claimed to be Jesus Christ. The voice told him to continue to the town, a task likely made no easier by the blindness Saul experienced when he got up. Saul remained blind for three days, until a disciple named Ananias laid hands upon him. Saul's sight was restored, and he immediately became baptized. After his experience, Saul became a powerful preacher for Jesus; today, he's better known as St. Paul.

Paul's story is interesting not just to biblical scholars, but to neuroscientists as well. Some scientists claim that the account of this conversion, found in the book of Acts, contains enough evidence to diagnose Paul with temporal lobe epilepsy. The flash of light, the voices and the fall to the ground are the evidence of a seizure, according to these neuroscientists, with the blindness a result of the postictal state that follows a seizure [source: Brorson, Brewer]. While most doctors agree that it's impossible to diagnose epilepsy definitively in someone who lived so long ago, Paul would join some other religious figures reputed to have brain disorders, including Moses and St. Teresa of Avila [sources: BBC, Begley].

The link between epilepsy and the Lord doesn't end with that list, though. In one study, researchers examined how certain words affected those with epilepsy compared to those without. The words were divided into three groups: neutral words, like "table," erotic words, such as "sex," and religious words, such as "God." In those without epilepsy, erotic words produced the biggest change in body chemistry, but in people with epilepsy, religious words created the biggest emotional effect. Sexual words had a much lower response [source: BBC]. Like the story of Paul, this study seemed to suggest that the temporal lobe has something to do with religious feelings.

These examples represent the intersection of science and religion, a field currently known as neurotheology. The goal of neurotheology is to determine what's happening in the brain during a religious experience. Obviously, the field can be a bit controversial; those with deeply spiritual beliefs about the connection between a person and his or her maker aren't thrilled about reducing religion to something happening in the brain. But the work of the scientists does seem to show that there's some connection with our gray matters and our pray matters. So, is nirvana all in our noggin? Are we simply responding to brain firings when we drag ourselves out of bed on Sunday morning? Read on to find out what God might be doing to your brain.
Because of the work connecting temporal lobe epilepsy and spiritual experiences, scientists previously believed that the temporal lobe was the only part of the brain involved in religious feelings. Recent imaging studies, however, have shown that many parts of the brain are activated during a religious experience.

At the forefront of these imaging studies is Andrew Newberg, a doctor at the University of Pennsylvania. Newberg used single photon emission computed tomography, or SPECT, imaging to take pictures of the brain during religious activity. SPECT provides a picture of blood flow in the brain at a given moment, so more blood flow indicates more activity.

One of Newberg's studies examined the brains of Tibetan Buddhist monks as they meditated. The monks indicated to Newberg that they were beginning to enter a meditative state by pulling on a piece of string. At that moment, Newberg injected radioactive dye via an intravenous line and imaged the brain. Newberg found increased activity in the frontal lobe, which deals with concentration; the monks obviously were concentrating on the activity [source: Vedantam].

But Newberg also found an immense decrease of activity in the parietal lobe. The parietal lobe, among other things, orients a person in a three-dimensional space. This lobe helps you look around to determine that you're 15 feet (4.6 meters) away from a bathroom, 6 feet (1.8 meters) away from a door and so on. Newberg hypothesizes that the decreased activity of the meditating monks indicates that they lose their ability to differentiate where they end and something else begins [source: Peters].

Newberg's work has been supported by other scientists conducting imaging studies, some have a problem with the basis of the experiment. Critics of Newberg's work argue that you can't reduce all religious behaviors to just meditating or praying [source: PBS]. Religion encompasses more than that. What, for example, might happen in the brain of someone doing charity work for the poor? What happens when someone makes a moral choice based on his or her belief system? Newberg's work as of yet is focused on individual, private experiences, as opposed to the relationships and experiences that happen between other people [source: Peters].

Others are more concerned with the implications of the study. If religion is just an activation of certain parts of the brain, does that mean God or any higher power is just in our heads? That's not necessarily what scientists are trying to prove or disprove. After all, if we are wired to believe in God, then it's not a far leap to believe that God is the one who wired humans that way. But if we have this structure, is there any way to tinker with it so that we can have mystical experiences all the time? And is there any benefit to this brain activity in the parietal lobe, seemingly indicating that the nuns lost their sense of self in relation to the real world and were able to achieve communion with God [source: Paulson].

There were, however, slight differences in the brain activity of one religious group: Pentecostal Christians who speak in tongues. The Pentecostals actually experienced a decrease in frontal lobe activity instead of focusing their attention as the nuns and monks did, they paid less attention to the task at hand [source: Carey]. Even though they spoke in tongues, the language center of the brain wasn't activated [source: Paulson]. This brain activity is fairly consistent with descriptions of what speaking in tongues is like -- you lose control of yourself as a person, and God speaks through you.

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Do We Need the God Helmet?

As we learn more about what happens in the brain during a religious experience, is it possible that we'll ever be able to create them ourselves? Could we flip a switch and see the face of God? No more meditation, prayer or fasting? A scientist named Michael Persinger thinks it's possible.

Persinger has gained attention for his work with the "God Helmet," headgear so named because it may induce a person to feel the presence of God. The God Helmet includes electrodes that Persinger uses to alter the electromagnetic field at the temporal lobes. Persinger claims he can create a religious experience for anyone by disrupting the brain with regular electric pulses. This will cause the left parietal lobe to explain the activity in the right side of the brain as a sensed presence. The sensed presence could be anything from God to demons, and when not told what the experiment involved, about 80 percent of God Helmet wearers reported sensing something nearby [source: BBC].

Will it work for everyone? Richard Dawkins, famous for his criticism of religion, reported only slight dizziness and twitching in the legs after some time in the God Helmet [source: Horgan]. Persinger says that some people may just be more genetically predisposed to sensing God or another higher power, and they may not need a God Helmet to do so [source: Hit]. According to Persinger, naturally occurring electromagnetic fields can also cause religious experiences, particularly in those with this predisposition to sensing God. For example, powerful meteor showers were occurring when Joseph Smith, founder of the Church of Latter Day Saints, was visited by the angel Moroni, and when Charles Taze Russell formed the Jehovah's Witnesses [source: Hit].

But is there any advantage to being genetically open to God? Scientists are trying to discern if there's an evolutionary reason for why our brains are so receptive to religious experiences. Religion might be a side effect of a developing brain; our brains needed ways to explain the world around us, so they may have created a belief system that could serve as kind of default place to turn in the case of questions. Religion could serve that purpose to early man, with its somewhat supernatural stories to explain cause-and-effect. But now, religion is an expensive trait to carry forward; it involves time and sacrifice, such as fasting. And now, there are scientific methods to explaining the world. Shouldn't religion have died by now?

Atheists may, of course, say yes, but as one anthropologist points out, even some atheists cross their fingers when a plane experiences turbulence. This may indicate that our brain will always seek out some sort of transcendent hope or otherworldly protection, even if it's not called God [source: Henig]. And some evolutionary biologists argue that there are important individual and collective benefits to a mind hardwired for religion [source: The Economist]. Individually, people who believe that someone bigger than themselves is watching them may make better choices in terms of their evolutionary fitness; they may be less likely to drink or engage in other dangerous behaviors if they feel something or someone higher than them may disapprove. But the real benefit may come down to a facet of Darwinism that doesn't get much attention anymore: survival of entire groups.

One study evaluated the success of various communions in 19th-century America. The communions with a secular ideology were four times as likely to disband in any given year [source: The Economist]. But in religious communions, such as modern-day kibbutzim in Israel, those subject to the strongest religious rules have been shown to be the most altruistic and cooperative of the bunch. In tests that examine an individual's generosity when the entire group is at stake, those living in these types of communities of faith are more likely to pool resources, which promotes the survival of the collective [source: The Economist]. Religion in that sense is a way for people to work together, to have an interest in an entire group's survival due to shared beliefs.
While scientists in the field of neurotheology continue to examine these types of issues, head on over to the next page for more interesting articles on the brain.

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Sources