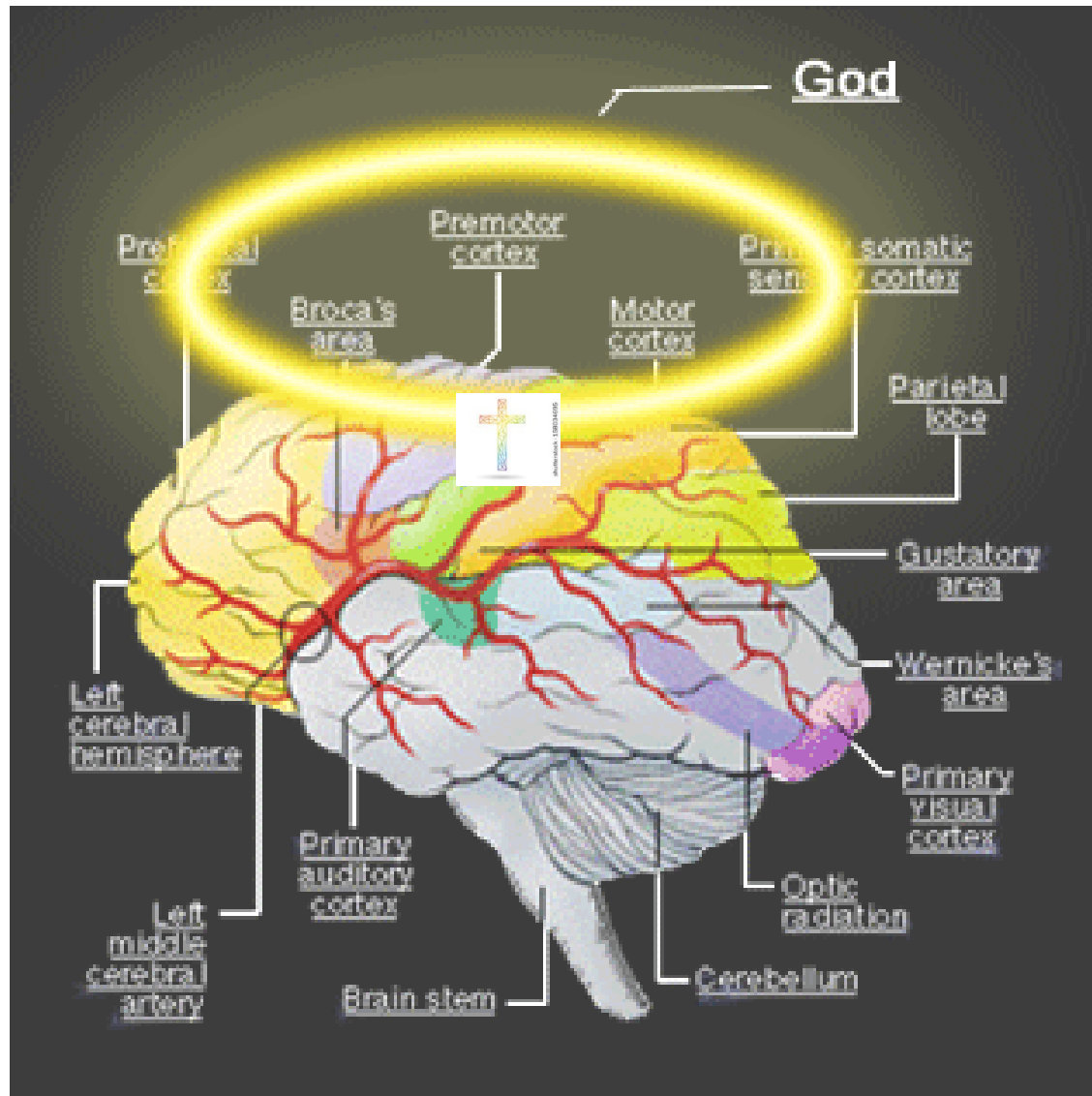


Neuropsychology and Spirituality



- “Science is not only compatible with spirituality; it is a profound source of spirituality...The notion that science and spirituality are somehow mutually exclusive does a disservice to both.”

— [Carl Sagan](#)

Neuroscientific Paradigms for Researching Spirituality

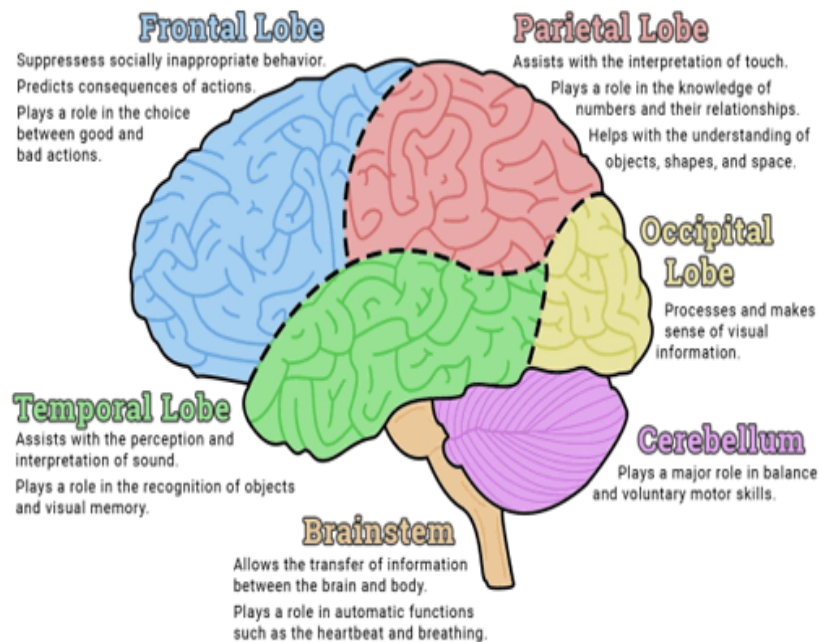
- The Neurophysiology of Spirituality
- Neuropathological and Psychopathologic Spiritual Experiences
- Physical and Psychological Therapeutic Interventions
- Spiritual Experiential development
- Spiritual Interventions associated with psychopharmacological agents
- Drug-induced Spiritual experiences

Structure vs. Function

Neurology is the study of
Brain Structure

Neuropsychology is the
study of Brain Function

The Human Brain



FYI....

Deb is trained as a
Forensic Neuropsychologist
with a Specialty in
Assessment.

She has a Ph.D. in
Clinical Psychology and
has worked in
Private practice,
for the
CA and MA state hospital
system,
and
in Federal and CA State
prisons



Neuropsychological Research

- **Neuropsychological Research** focuses on **Brain Function**
- The most common areas of Neuropsychological Research on Religion/Spirituality are

The relationship between **Religious/Spiritual Practice and Emotional/Cognitive functioning**

***Moral reasoning (and psychopathology)**

***Deb's area of specialization**

Areas of Neuropsychological Functioning

What we call “thinking” is more formally referred to as brain **function**. Brain functioning is commonly divided into different areas of functioning or “cognitive domains.”

These are:

Attention

Memory

Sensori- (or psycho-) motor

Motor

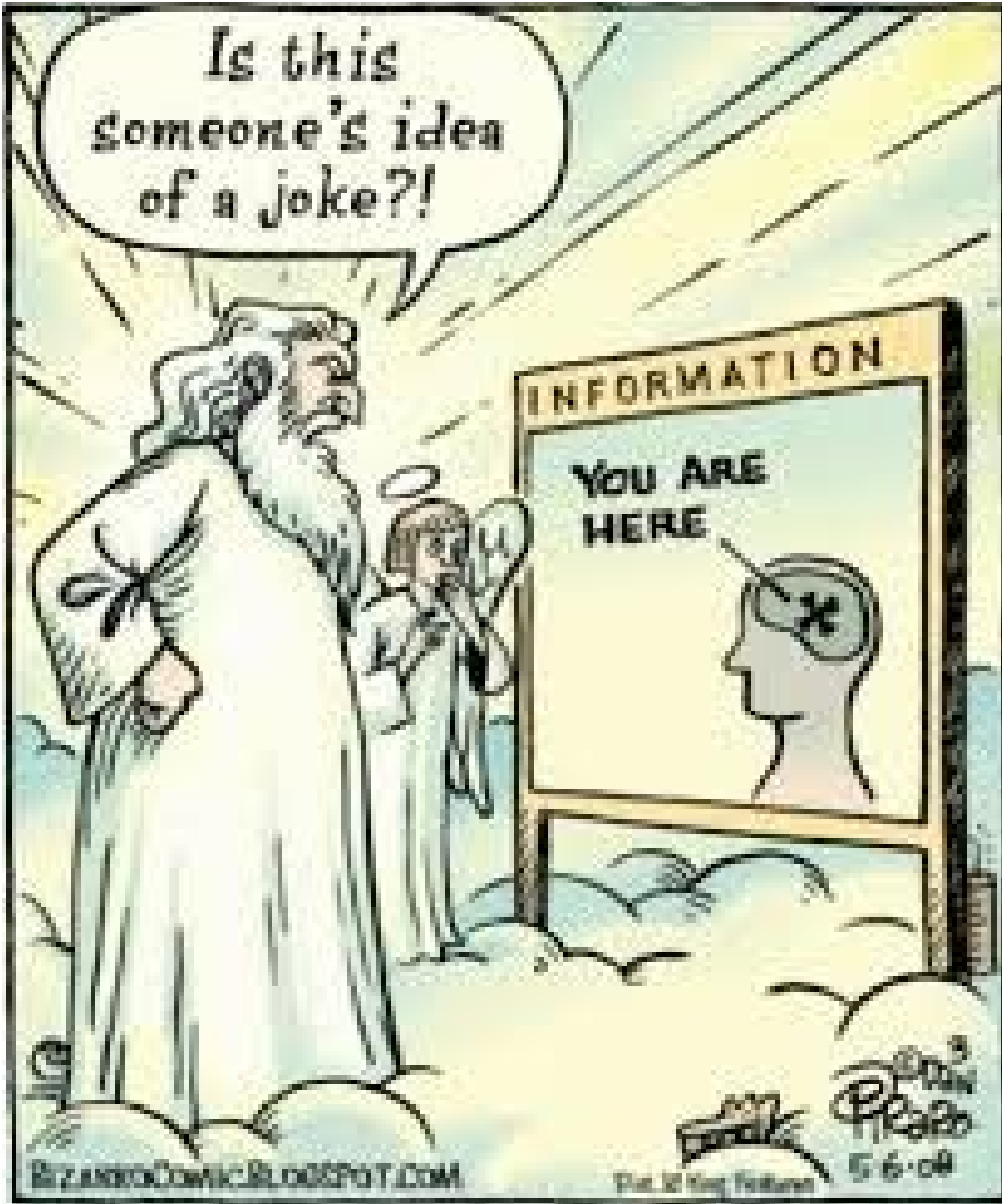
Language, and

Executive Functioning

Neurology Research

- **Neurology research** focuses on **Brain Structure**.
- There is a great deal of focus on where different behaviors, feelings, and thoughts originate in the brain.
- Some of the topics popular in Neurology research related to Spirituality and Religion are:
 - “**The God Spot**” – is there a certain place in the brain where the concept of God “lives”?
 - “**Neurotheology**” - what can we see in **the brain associated with Religious and Spiritual Practices?**
 - The association between **Neurological Disorders and Spiritual/Religious phenomenon**

Is this
someone's idea
of a joke?!





“The God Spot”

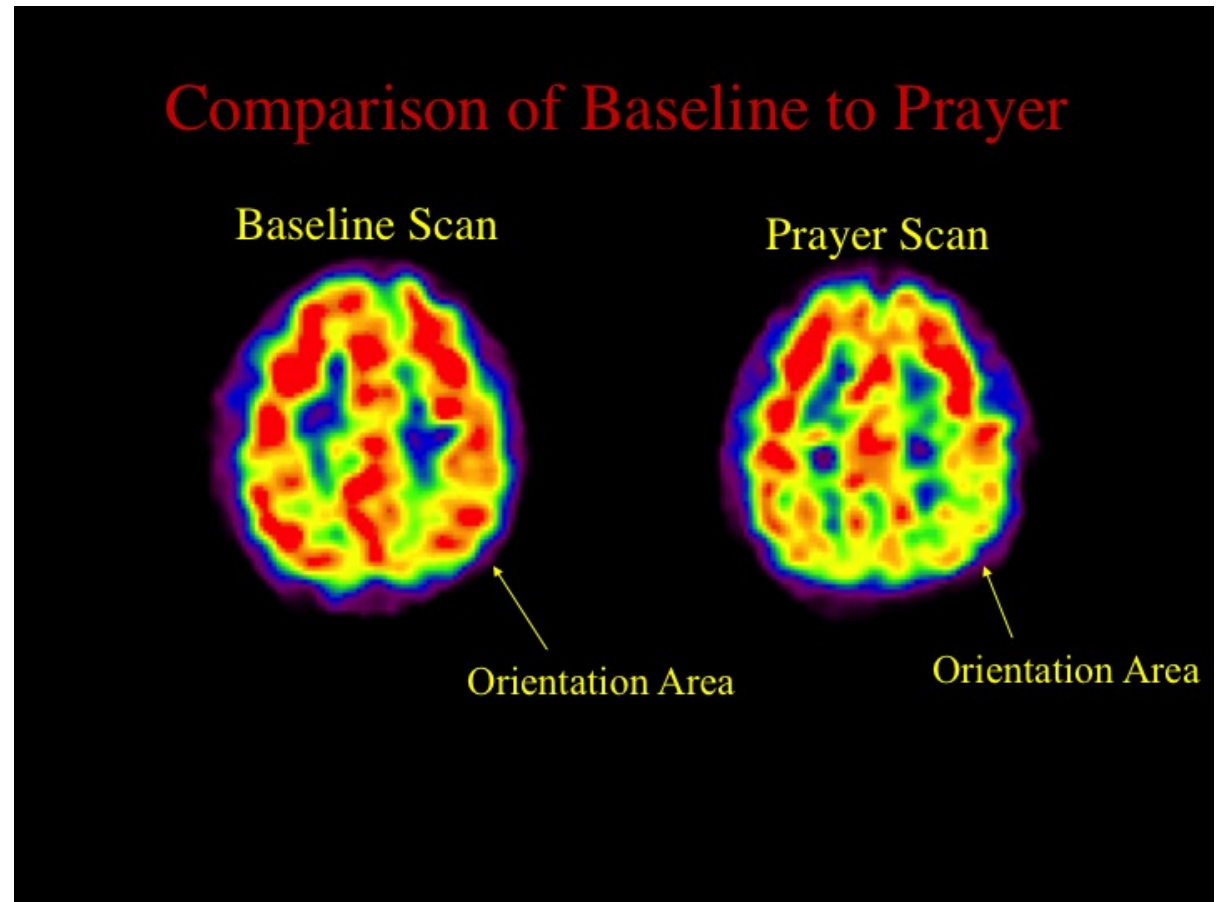
- Some theorists have posited that there is a specific area in the brain (in the prefrontal cortex) associated with religious/mystical experiences
- Research has NOT supported a single “God spot,” suggesting that religious/spiritual experiences trigger complex activity in the brain
- Researchers have identified a frontal-parietal circuit (dorsolateral prefrontal, dorsomedial frontal and medial parietal cortex)

Social tasks and associated brain areas

- **Inferior Frontal Cortex (includes mirror neurons)**
 - **Prefrontal Cortex**
 - **Amygdala**
- Interactive social behaviors, imitation of social behaviors
 - Motivation, reward, planning and anticipation of consequences, empathy
 - Emotion related to reward/punishment

Selflessness and Spirituality

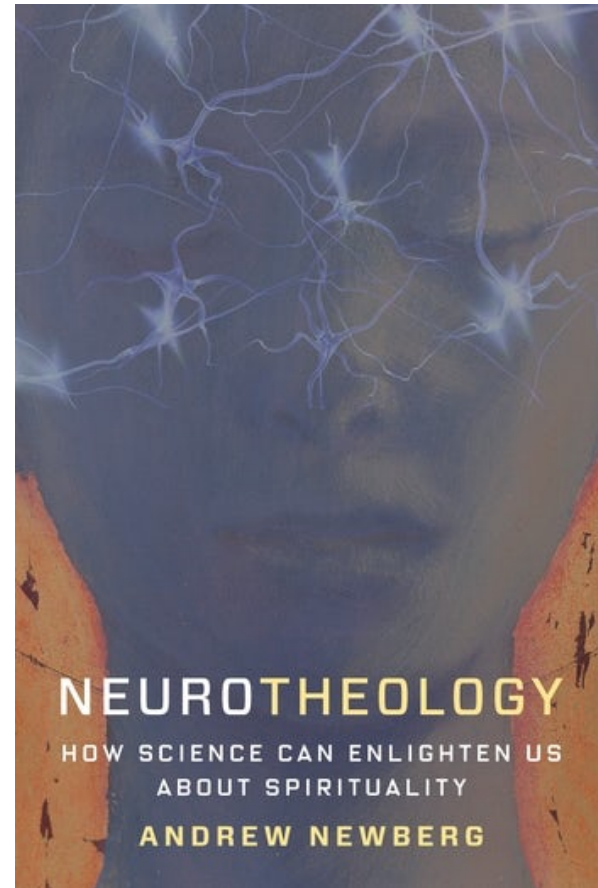
Researchers have found decreased blood flow in functional magnetic resonant imaging (fMRI) scans in the brains of individuals while they are meditating and/or praying.



Neurotheology

“Neurotheology” is a unique field of scholarship and investigation that seeks to understand the relationship specifically between the brain and theology, and more broadly between the mind and religion. ”

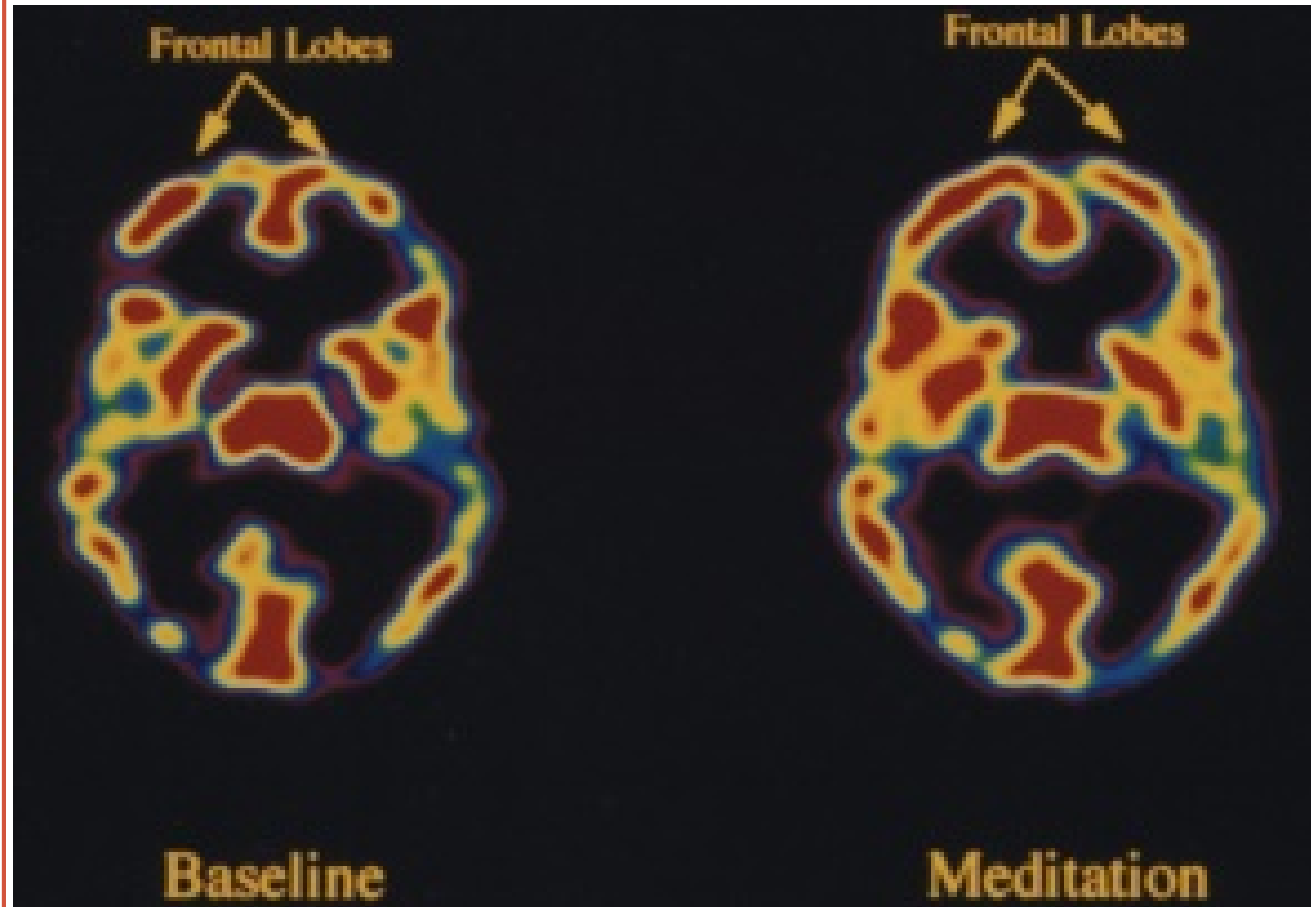
-Andrew
Newberg



SPECT (Single-photon emission computed tomography (**SPECT**) scans reveal structural changes in the brain in those in states of deep meditation or prayer

Specifically, there is increased frontal lobe functioning and decreased parietal lobe functioning when someone feels in touch with the supernatural. Andrew Newberg suggests that this is due to increased focused attention and decreased sensory input – or what Newberg suggests is the center of the “sense of self.”

- Neurological signs of prayer





NEUROPSYCHOLOGICAL ASSESSMENT

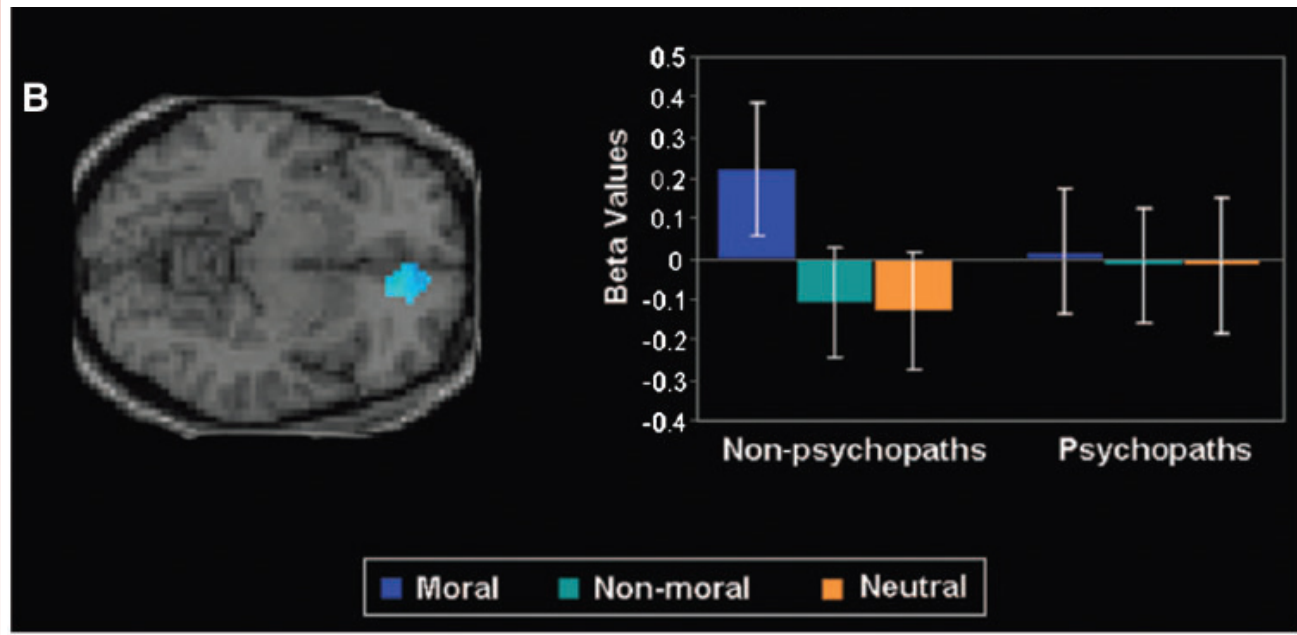
Statistical Analysis of the neuropsychological functioning of brain-injured patients indicates that decreased **Right Parietal Lobe functioning** is significantly associated with increased spiritual transcendence.

Increased **Frontal-lobe functioning** is significantly associate with more frequent religious practice.

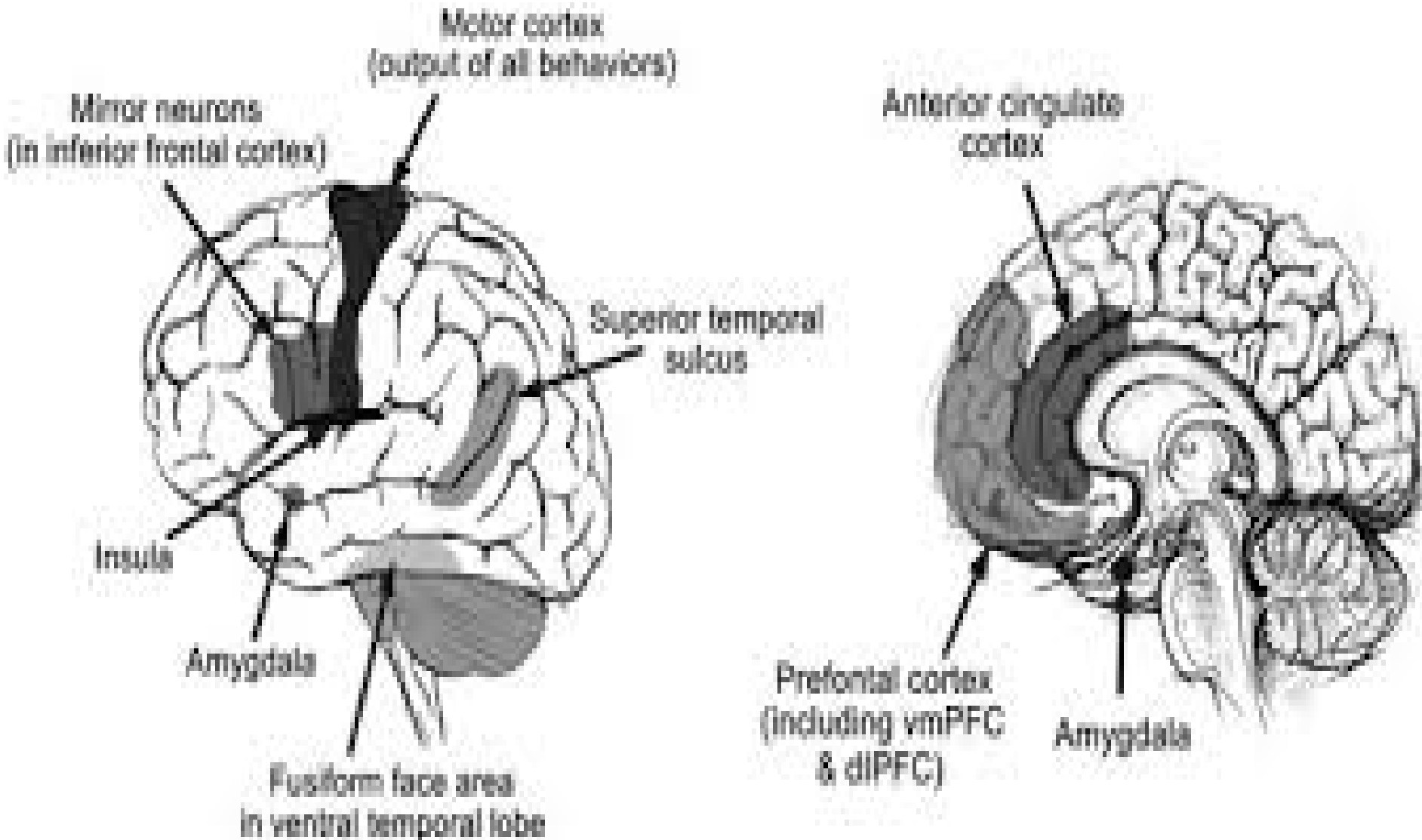


Executive Function in Morality

Several Researchers have explored the role of the Frontal Lobes in moral development and religious beliefs. Findings consistently identify a relationship between the prefrontal cortex and moral reasoning. Religious beliefs relate positively to moral attitudes.



The Social Brain Network





Psychopathology and Spirituality

Seizures

- Individuals with epilepsy with frequent auras report experiential spiritual phenomena AND report non-traditional religious ideas.
- Individuals with Geschwind syndrome (associated with temporal lobe epilepsy) report intense emotional states that have been associated with religious thinking.

Schizophrenia

- Religious delusions are common in Schizophrenia. Some researchers have suggested they are associated with poorer treatment outcomes.



RELIGION AND MENTAL HEALTH

Studies have demonstrated:

Life satisfaction is higher in individuals who describe experiencing spiritual experiences, religious practices and compassion.

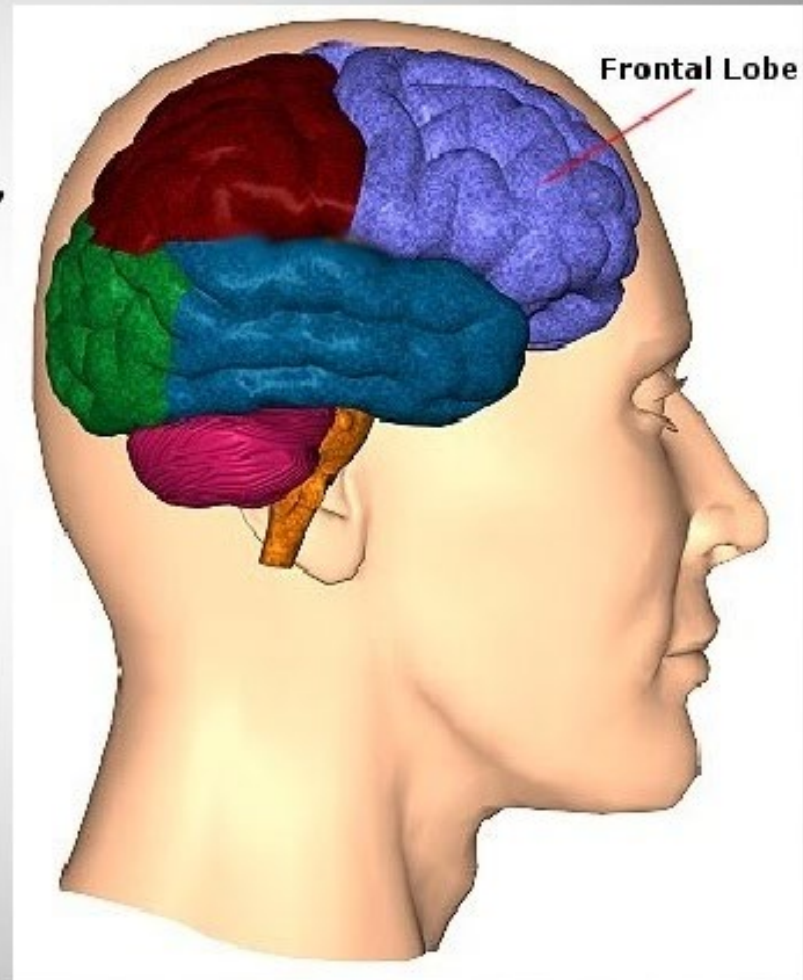
Spirituality is positively related to Positive Caregiving Behavior among those caring for family members with Alzheimer's disease.

Religiousness remains an important aspect of human life and it usually has a positive association with good mental health.

Religion and the Brain

Patrick McNamara, Raymon Durso,
Ariel Brown, and Erica Harris (1984),

- Positive correlations with religion and health have also been noted in research on dopaminergic neurons, and their managerial properties in relation to the autonomic nervous system.



Questions?

