



Neurotheology: How God Changes our Brain and Its Implications for Modern Healthcare

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Spirituality and Health

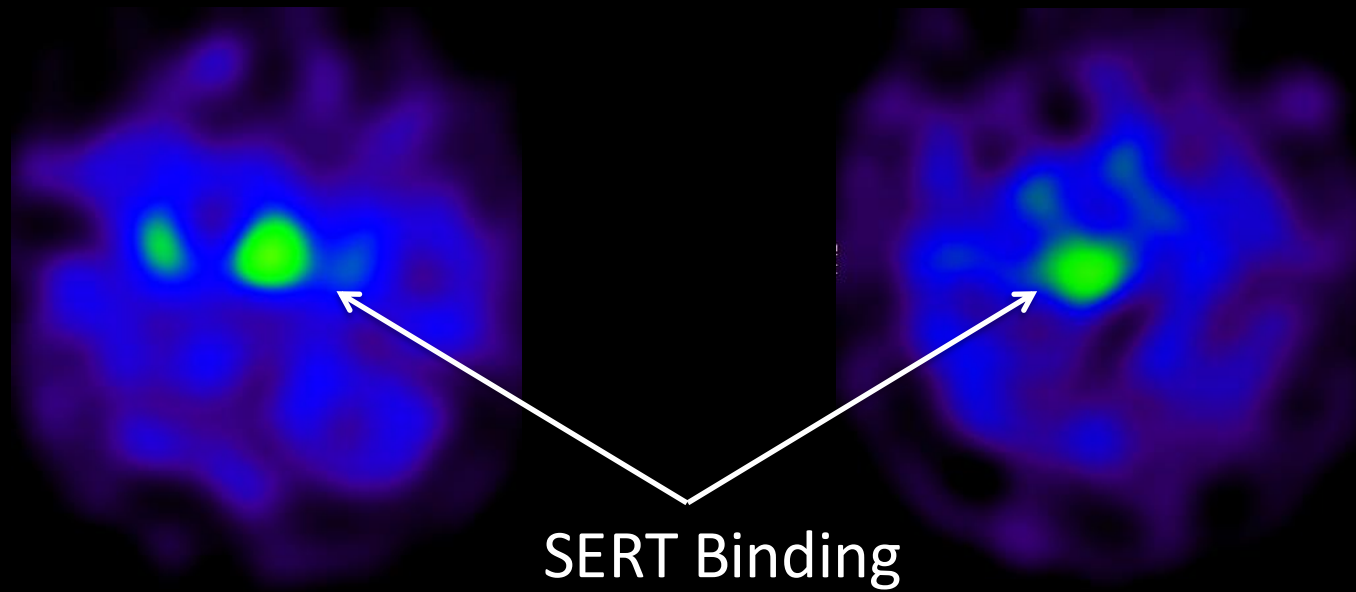
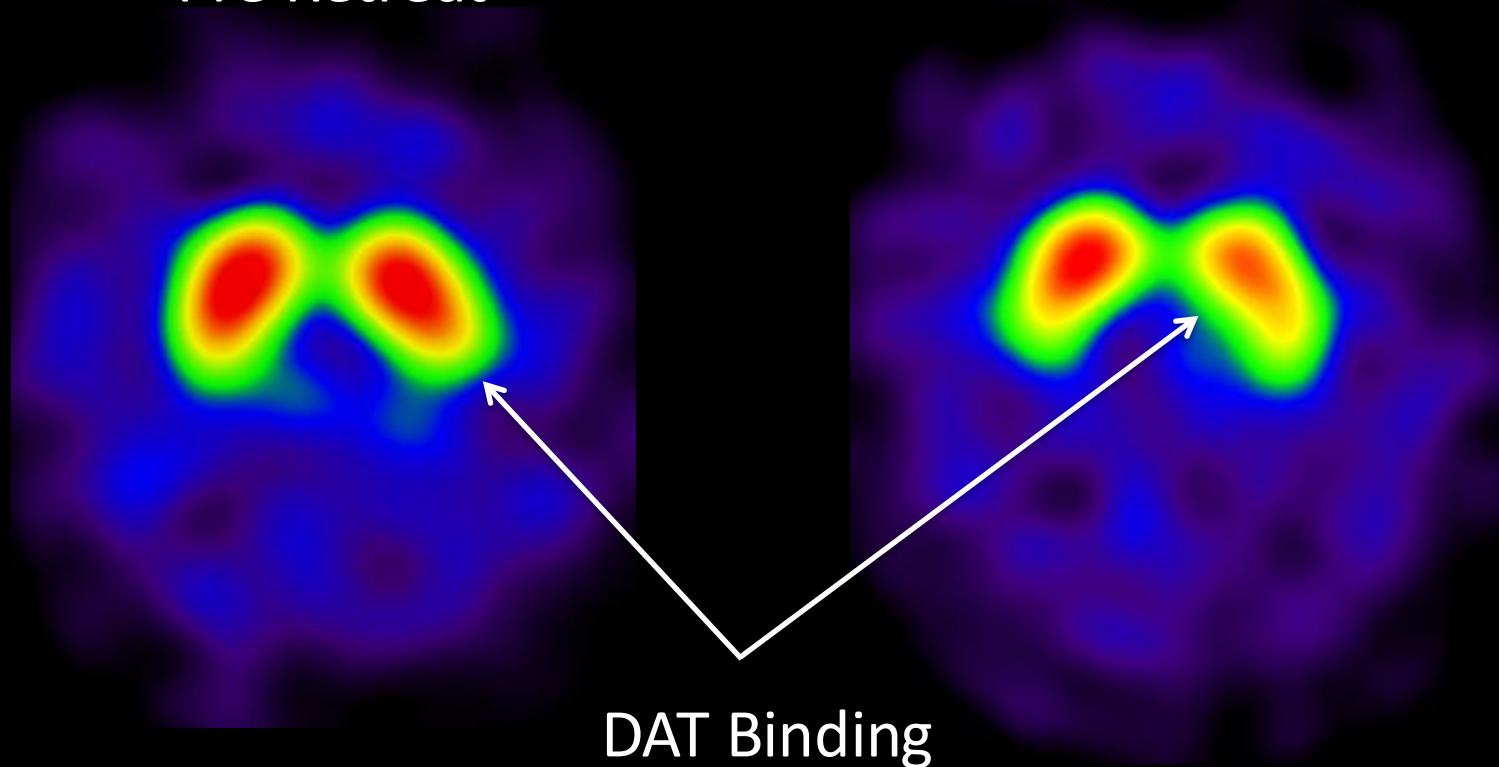
- Why study religion and health?
 - Many studies have shown the effects of religion on psychological and physical health
 - How and why do these effects occur?
 - What are the health and religious implications?
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Spirituality and Health

- Applications related to religious and spiritual beliefs in the context of health and well being
- Spiritual practices and health
- Religion as beneficial or detrimental to health
- Religion as coping
- Clinical and physiological effects
- Long term effects
- Training for health care professionals

Pre Retreat

Post Retreat



Definition of Neurotheology

- Neurotheology refers to the field of study linking the neurosciences with religion and theology.
- It is not a neuroscientific study of theology
- It is not a theological study of neuroscience
- For neurotheology to be successful, science must be kept rigorous and religion must be kept religious
- “Neuro” and “theology” should be defined broadly
- Topics range from very practical to deeply philosophical

What are the Issues with Studying Neurotheology and Health?

- Definitions
- Targets
- Measurements
- Clinical Relationship
- Mechanisms



Definitions of Spirituality and Religion

- Must develop an operational definition
 - Avoid narrow definitions that might impede research
 - Avoid broad definitions that cannot be measured
 - Differentiate elements related to spirituality, religion, well being, emotions, cognitions
 - Develop appropriate measurement tools
- 



One Approach Offered by Scientists

Criteria for Spirituality

- The subjective feelings, thoughts, experiences, and behaviors that arise from a search or quest for the sacred
- “Search” refers to attempts to identify, articulate, maintain, or transform
- “Sacred” refers to what the individual perceives as a divine being, ultimate reality or ultimate truth

Criteria for Religion/Religiousness

- Includes the criteria for spirituality and/or
- A search for non-sacred goals (such as identity, belonging, meaning, health, or wellness) in the context of spiritual criteria
- The means and methods of the search receive general validation and support from within an identifiable group of people



What Can Be Targeted for Study and Clinical Assessment?

1. Religious/Spiritual Preference or Affiliation
 2. Religious/Spiritual History
 3. Religious/Spiritual Community and Connection
 4. Religious/Spiritual Private Practices
 5. Religious/Spiritual Support
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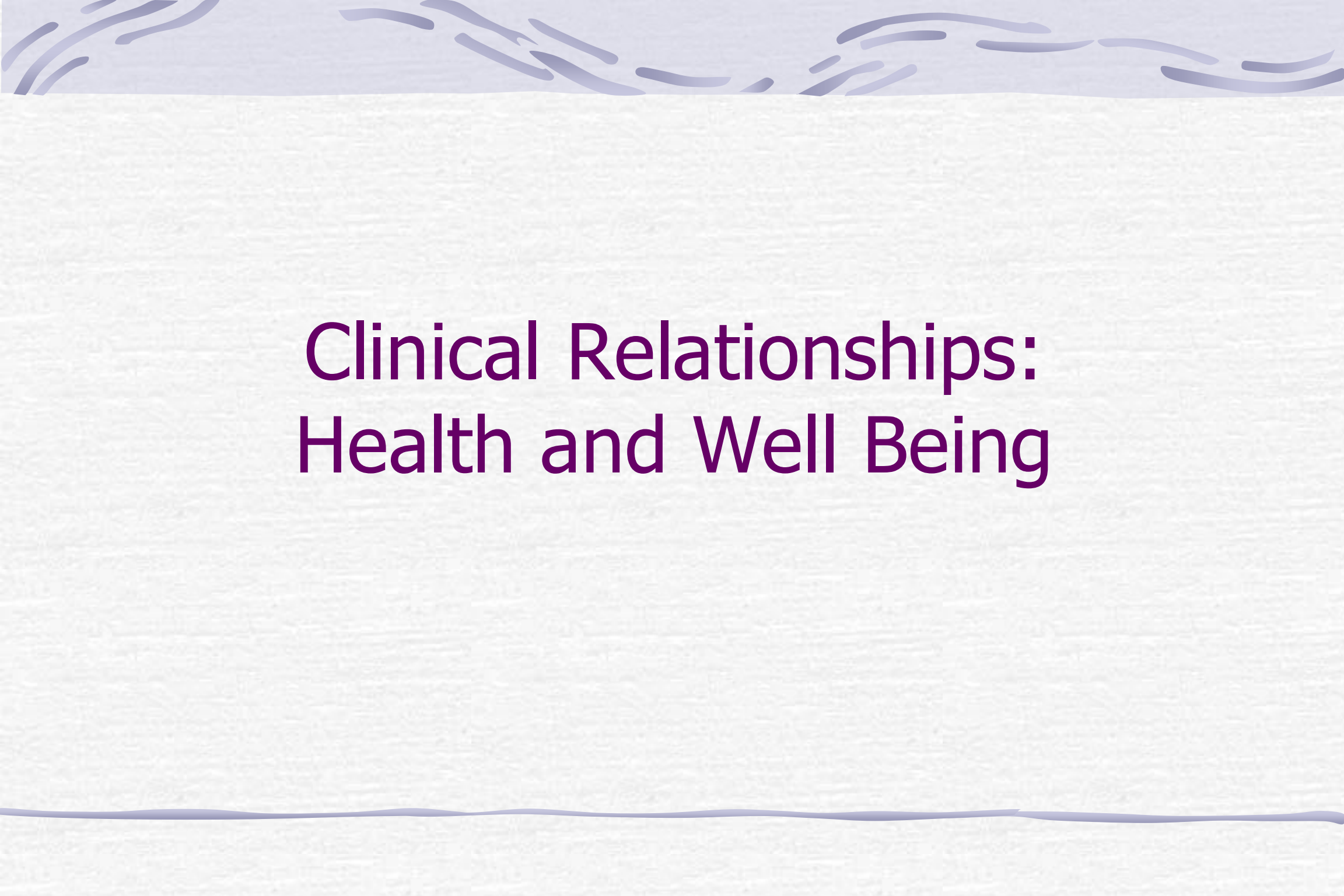


What Can Be Targeted for Study and Clinical Applications?

6. Religious/Spiritual Coping
 7. Religious/Spiritual Beliefs and Values
 8. Religious/Spiritual Commitment
 9. Religious/Spiritual Techniques
 10. Religious/Spiritual Experiences
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Current Assessment of Spirituality and Religion

- ✓ Church attendance, religious attitudes
- ✓ These and other measures are generally underutilized
- ✓ Many measures are unavailable
- ✓ Most measures rely on self-reporting
- ✓ Measures of Religiosity



Clinical Relationships: Health and Well Being

Impact of Spirituality on Health Outcome

- Church attendance associated with decreased heart disease, blood pressure, emphysema, cirrhosis, and suicide
- A systematic review of 16 studies showed 75% found less heart disease and mortality among the more religious
- Cancer patients frequently cite religion and spirituality as a method of coping

Death and Religion

- Reduced all cause mortality associated with more frequent church attendance
- Reduced death following cardiac surgery in patients receiving support from religion
- Greater religiousness predicted a lower likelihood of dying from cancer
- But nursing home patients showed no clear relationship between death rates and religiousness

Negative Health Effects of Spirituality

- ✧ Religion sometimes viewed negatively (i.e. a punishing God)
- ✧ Lack of spirituality may be blamed as cause of physical or psychological disorder
- ✧ Spiritual suffering and alienation
- ✧ Even positive experiences may result in increased anxiety and depression
- ✧ Cults associated with poor outcomes especially when they involve mass suicide



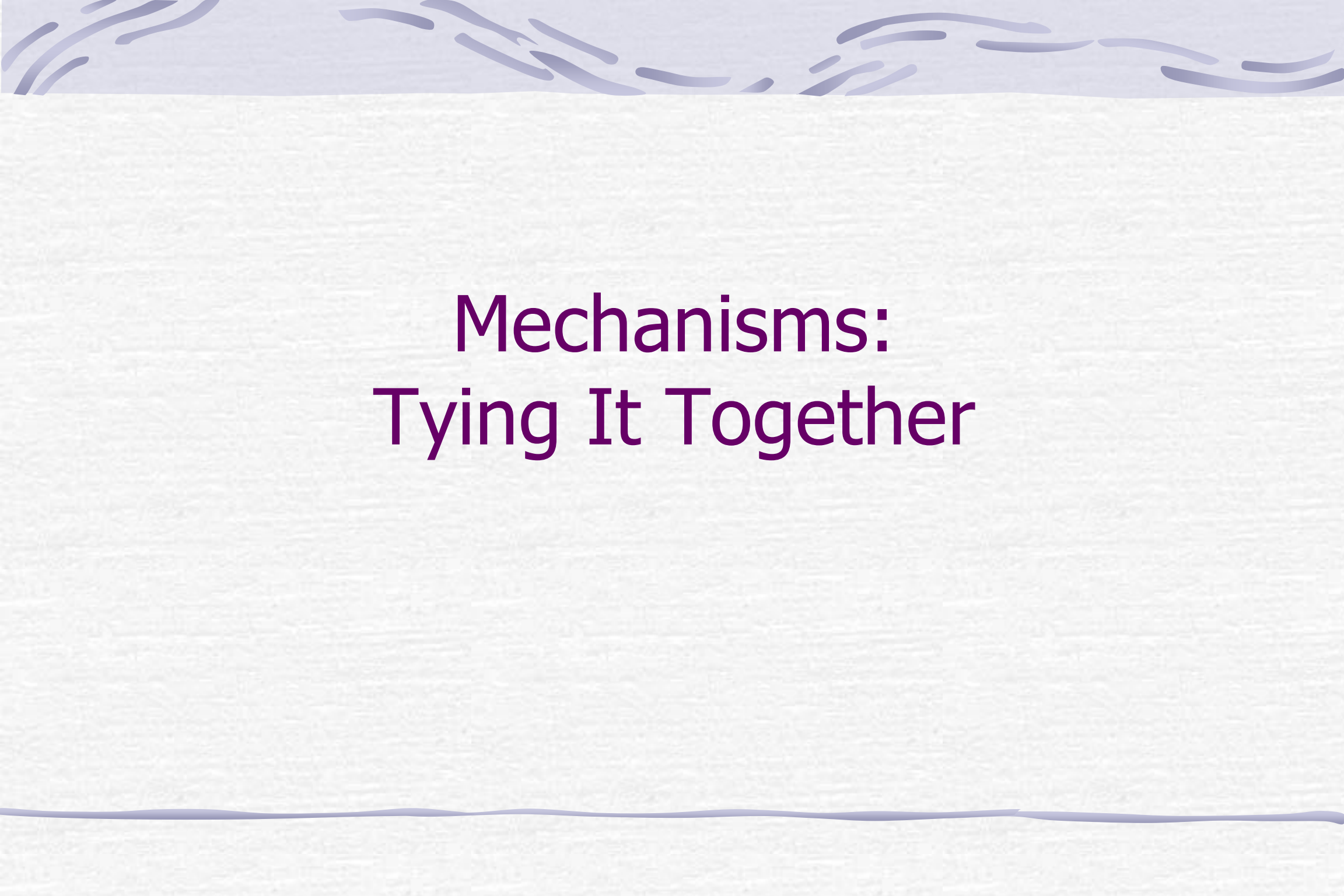
Religiousness in Mental Disorders

- ☛ Temporal Lobe Epilepsy
 - ☛ Schizophrenia
 - ☛ Mania
- 



Religious Approaches to the Treatment of Mental Disorders

- Meditation based interventions result in decreased anxiety and depression
 - Meditation based interventions result in decreased alcohol/drug abuse
 - Religiously oriented/hybrid therapies are as successful as standard psychotherapy
- 



Mechanisms: Tying It Together



Indirect Mechanisms of Action

- Decreased participation in high risk behaviors such as alcohol, smoking, drugs, and promiscuity
 - Certain religious groups promote healthy dietary practices
 - Church attendance is associated with increased social support
- 

Direct Mechanisms of Action

- Meditation and prayer can induce the “relaxation response” including lower HR and BP
- This is mediated by activity in the anterior pituitary/adrenocortical axis
- Altered heart rate variability
- Meaning and purpose in life as benefit
- Spiritual practices and experiences can induce persistent changes in brain and immune function

Survey of Spiritual Experiences

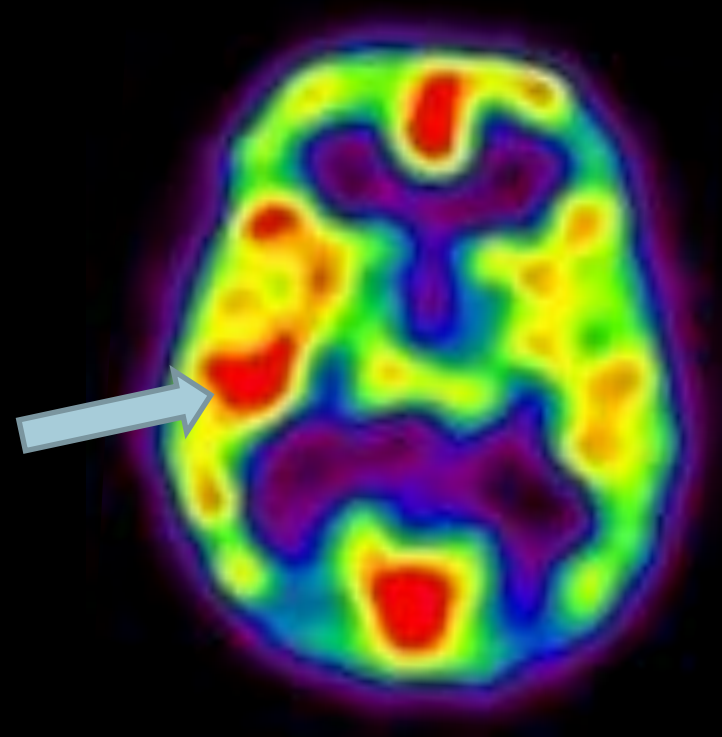
- ☛ 5 year online survey of people's most intense mystical or spiritual experiences
- ☛ Received about 2000 respondents
- ☛ Obtained demographic and religious background data
- ☛ People provided a narrative of the experience.
- ☛ People answered questionnaires about their spirituality, psychology, beliefs

What are the Core Components of Mystical Experiences?

- ✓ 1. Intensity
- ✓ 2. Clarity
- ✓ 3. Unity
- ✓ 4. Surrender
- ✓ 5. Permanence

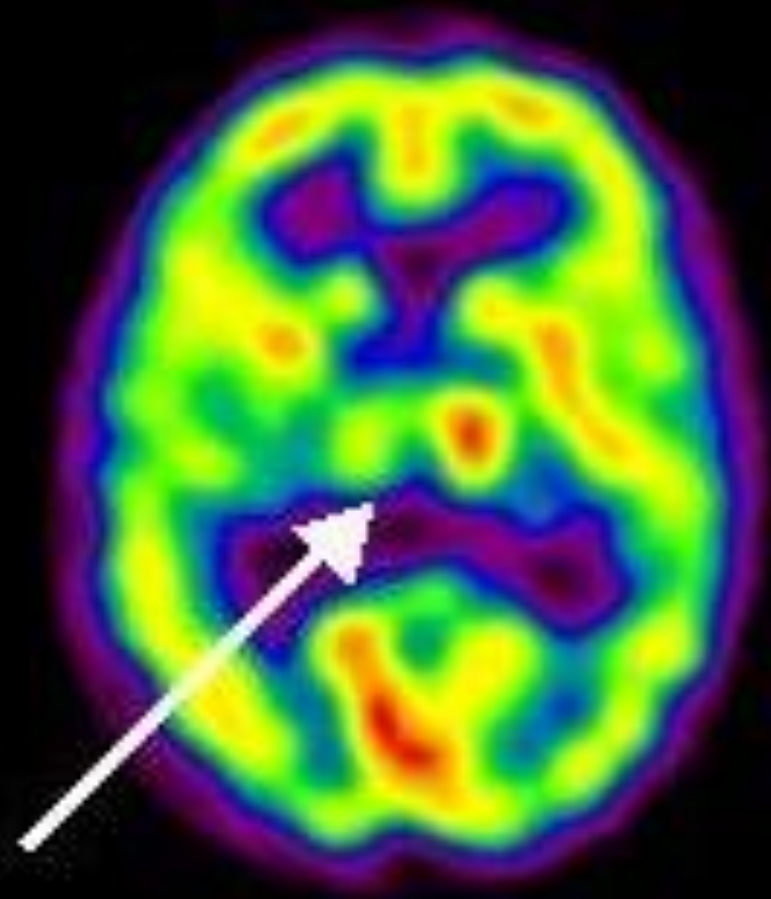
Intensity in the Experience of a 43 Year Old Male

- I, as an un-namable but individual being, was travelling down an infinite rollercoaster like waves of pure white ecstatic light. The ecstasy was overwhelming and rose and fell in intensity with the waves of light. The light path seemed infinitely long in both directions. The sense of the being and the light was INFINITELY MORE REAL than anything I had ever experienced



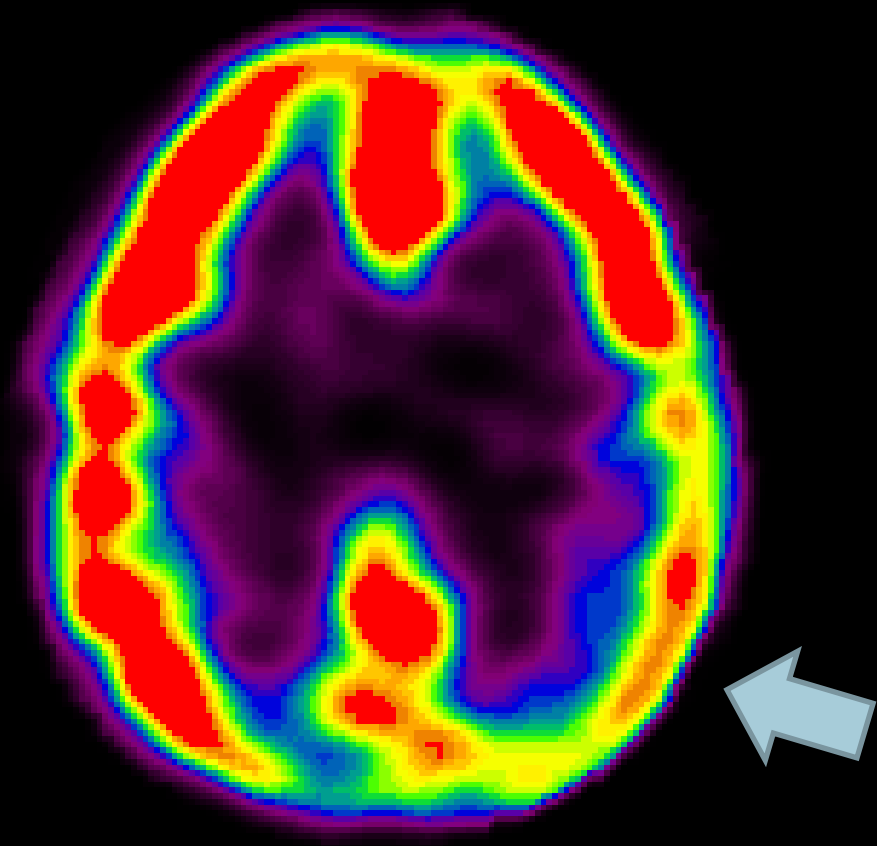
Clarity in the Experience of a 37 Year Old Female Scientist

- Everything in life seemed to click. I had this clarity and it was as if I was looking at life from the inside out. Despite my trepidation, this experience seemed to satisfy my proof-oriented mentality with the concept of intuition. It was almost as if my intuition from somewhere "deeper" had offered some sort of direct experience that offered up proof.



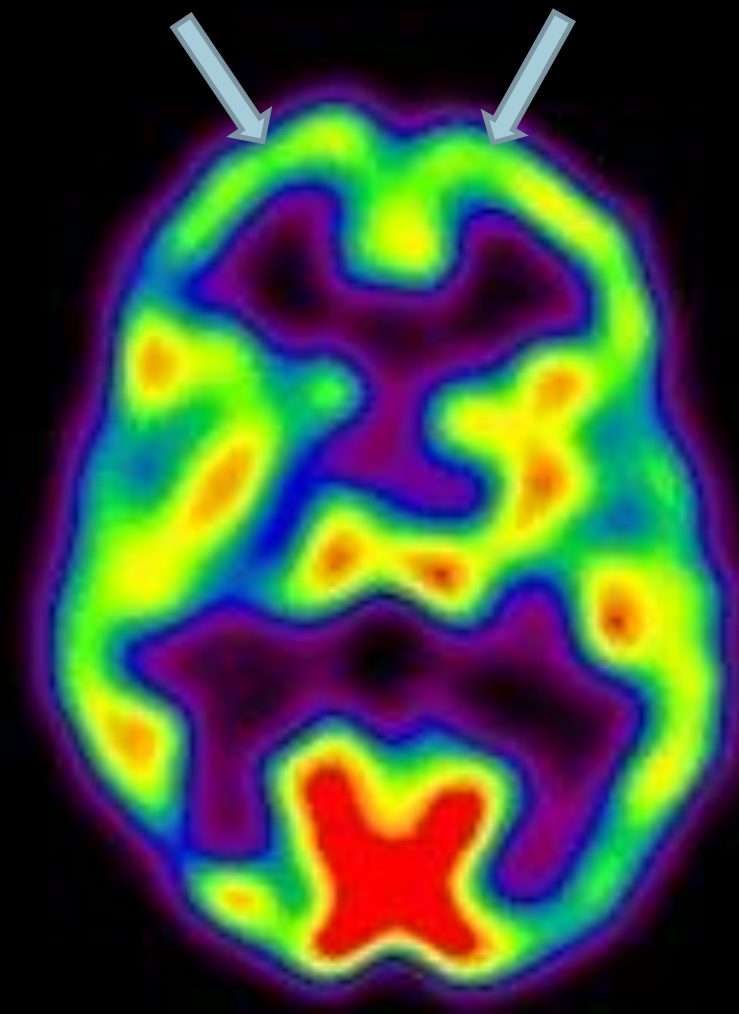
Feeling of Unity in a 45 Year Old Hindu Female Scientist

- During my meditation, tears were streaming down my cheeks, when I experienced the feeling of "ONENESS" with all beings. My body felt very light. Rather, there was no separation between me and other external reality. There was no sense of "SELF".



Surrender n the Experience of 48 Year Old Christian Woman

- I *surrendered* everything, including my faith and my salvation, and only for one reason. I loved God so much that I would truly give up everything to be connected with Him. I said “yes” and in an instant, God returned everything to me, transformed. From that day forward, a new relationship exists between God and me. It is ever present, no distance, no separation. I am not attached to doctrine, dogmas, or rituals. I see God’s action all around me.



Permanent Results of Spiritual Experiences

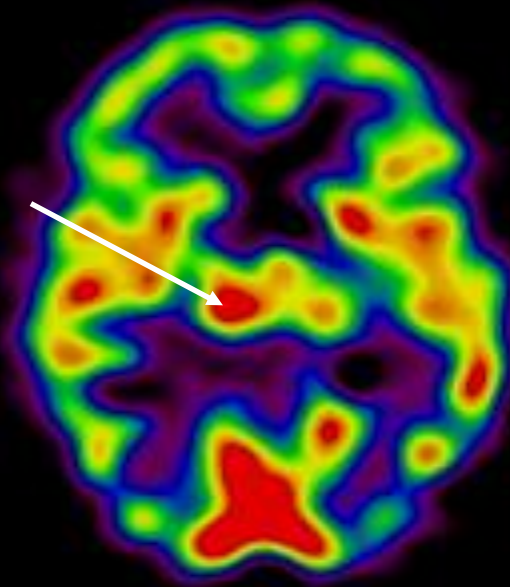
	How has this experience changed the following				
	Much Better	Somewhat Better	No Change	Somewhat Worse	Much Worse
Family Relationships	32.8%	27.4%	33.5%	4.9%	1.5%
Fear of Death	55.3%	20.4%	23.1%	0.8%	0.4%
Health	27.9%	28.0%	41.7%	1.7%	0.7%
Purpose in Life	55.5%	25.3%	16.8%	1.9%	0.4%
Religiousness	27.3%	25.2%	37.0%	4.7%	5.8%
Spirituality	71.2%	18.0%	9.2%	0.8%	0.8%

How Do Spiritual Experiences Change the Brain Over Time?

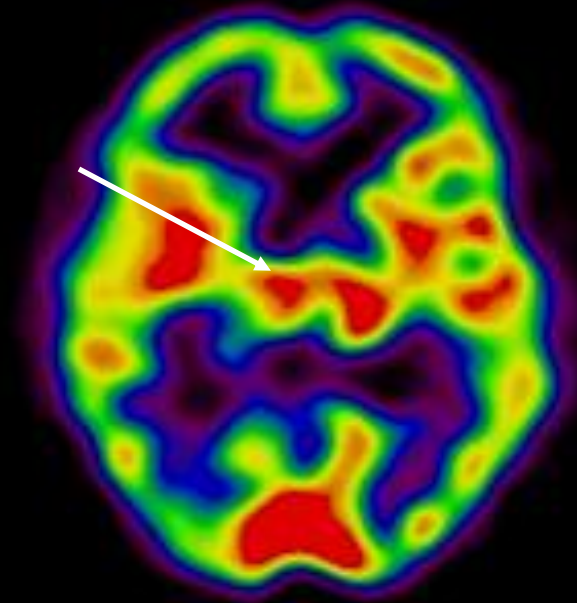
- ☛ Combine imaging and other scientific measures with subjective and phenomenological evaluation
- ☛ Longitudinal findings
 - Comparison of long-term meditators with non-meditators
 - Do religious/spiritual practices affect the brain over time?

Kirtan Kriya Meditation Study

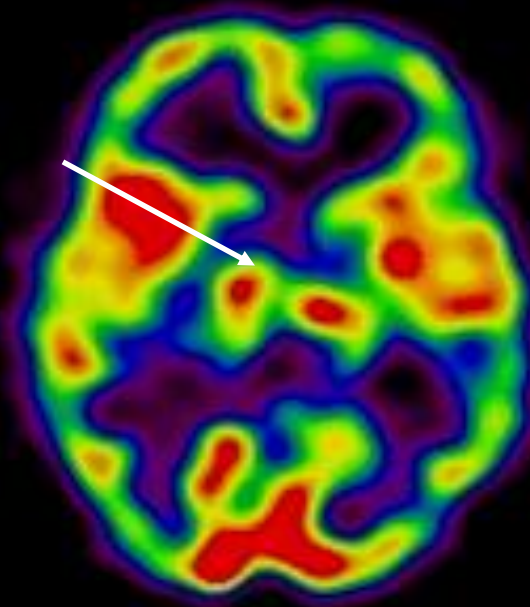
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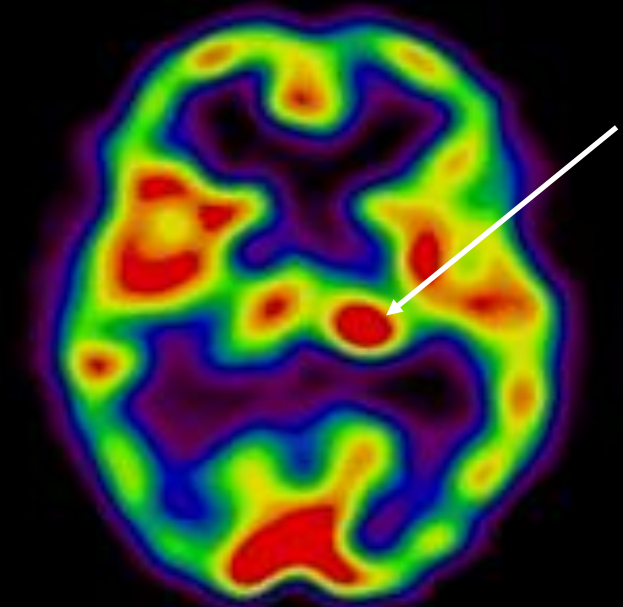
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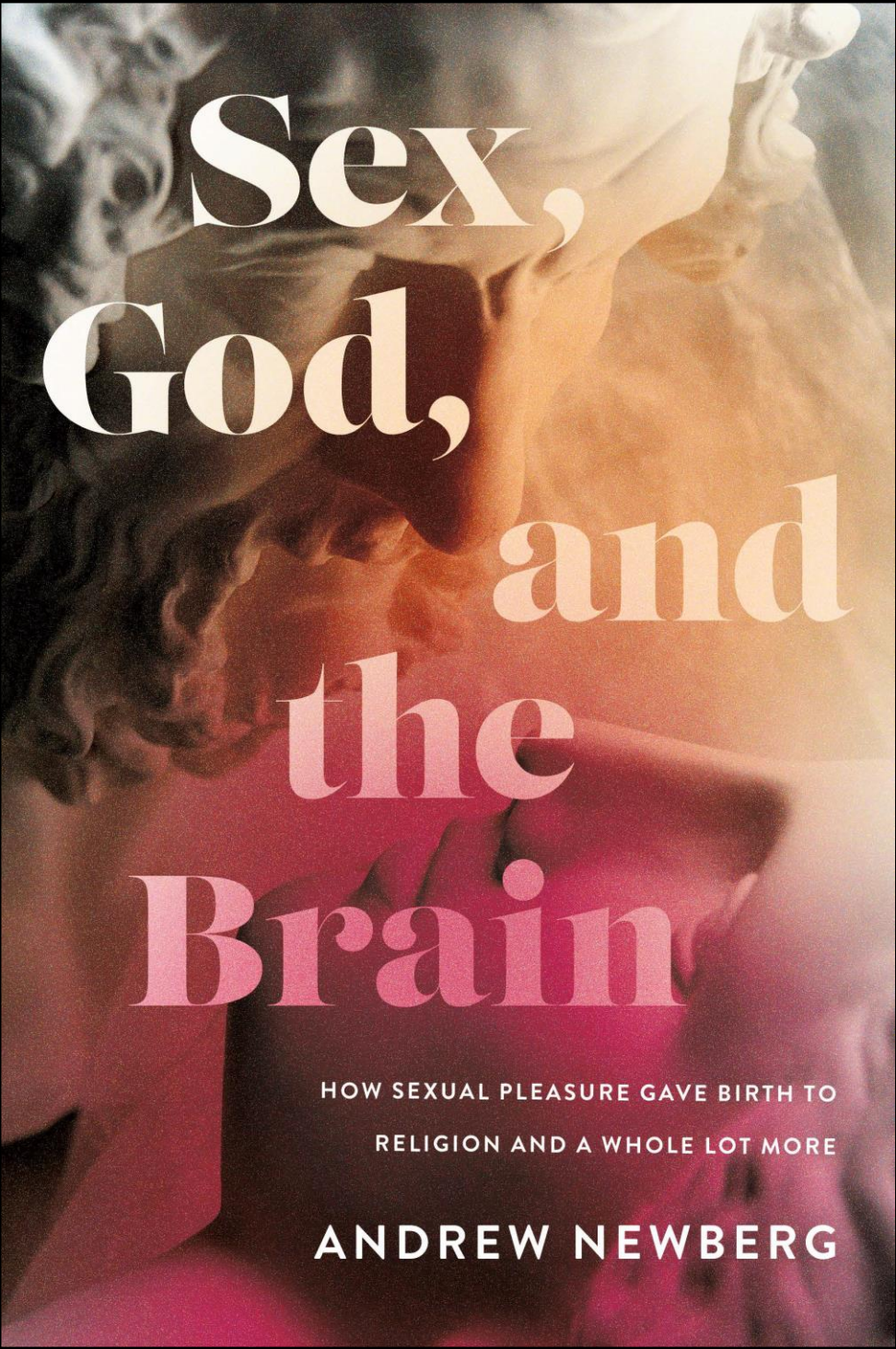


Conclusions and Future Directions

- ☛ What is the intervention?
- ☛ Does it work? How does it compare?
- ☛ What are the critical ingredients?
- ☛ Who is the practice for?
- ☛ How does it interact with other health variables?
- ☛ What is the target population?
- ☛ How is change measured?

Future Directions for Neurotheology

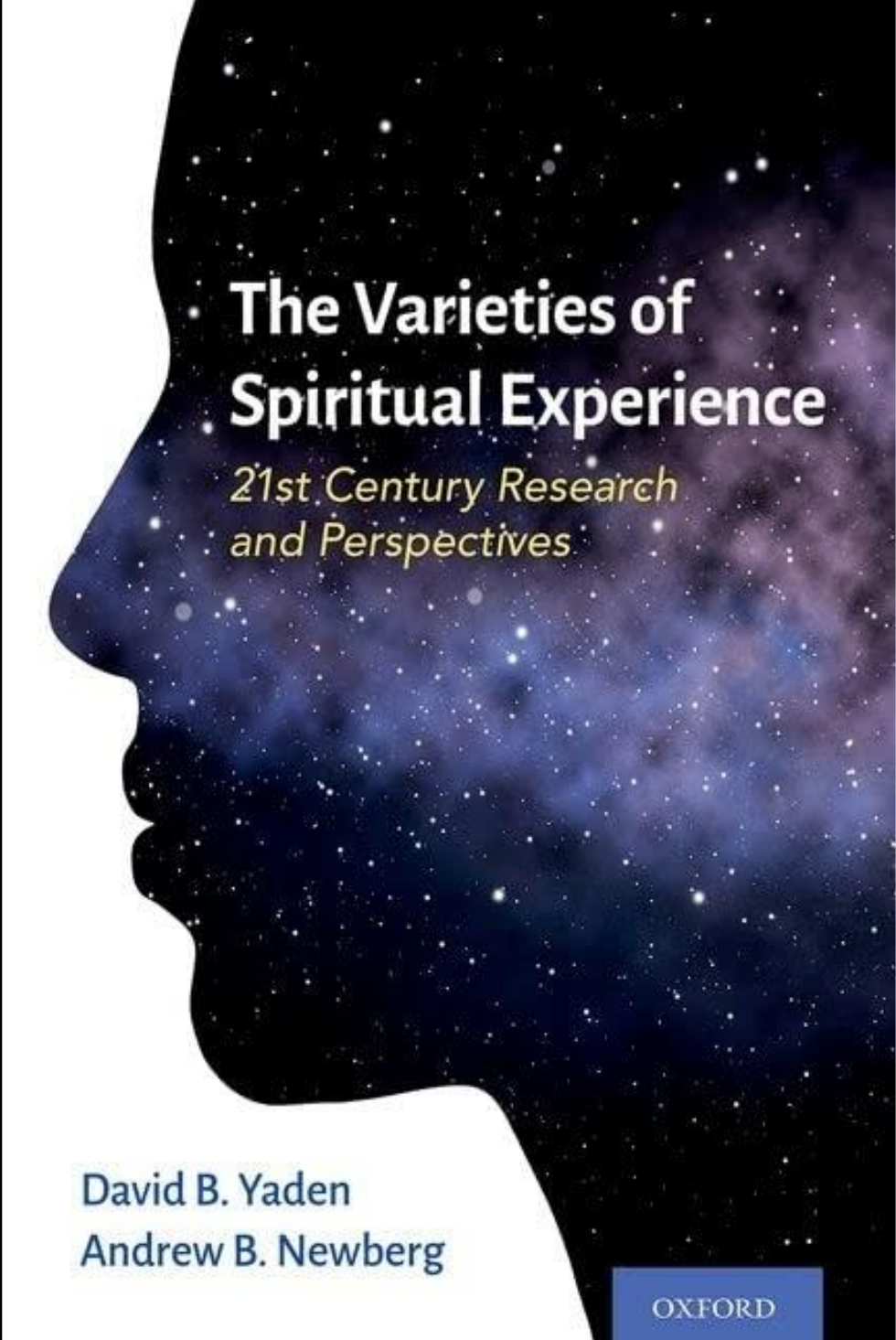
- More research into mental and physical health outcomes related to R/S
- Improve our understanding of the brain and consciousness
- Address theological questions such as belief in God, meaning and purpose, morality
- Address philosophical questions related to free will, epistemology, the nature of reality



Sex, God, and the Brain

HOW SEXUAL PLEASURE GAVE BIRTH TO
RELIGION AND A WHOLE LOT MORE

ANDREW NEWBERG

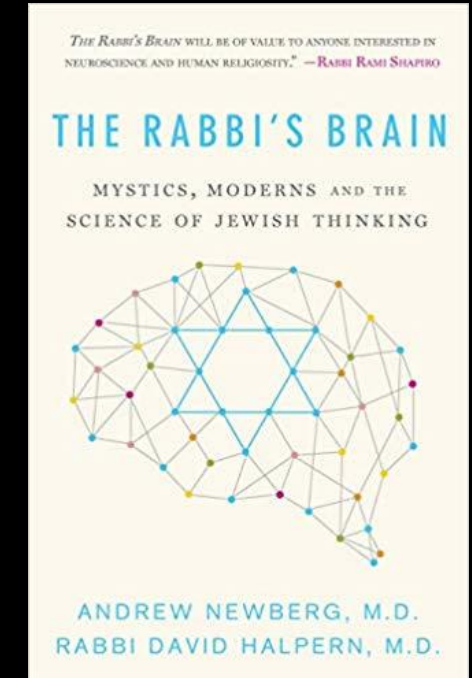
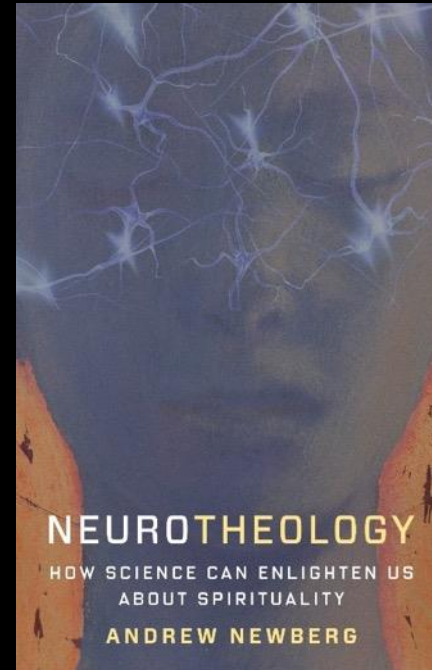
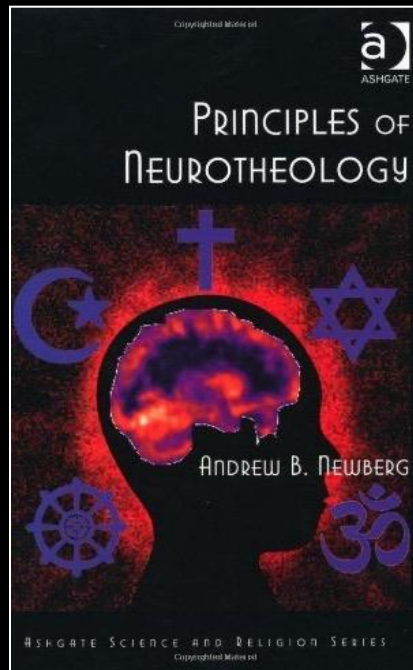
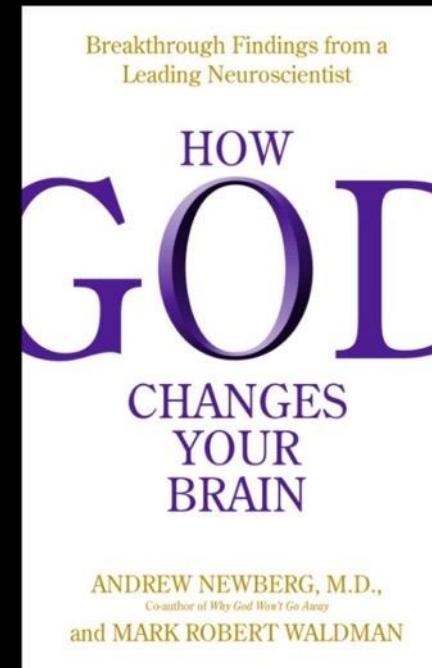
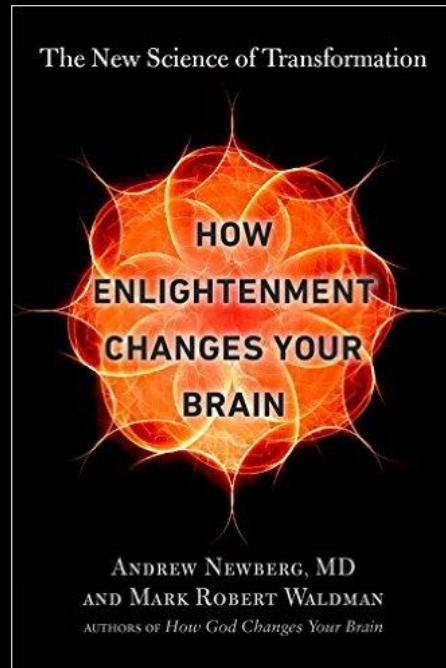


The Varieties of Spiritual Experience

*21st Century Research
and Perspectives*

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OXFORD



The End

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