

*These notes are to be used with Dr. Chen's Power Point presentation. Thank you!*

## NEUROSCIENCE, THE BODY, AND BIBLICAL COUNSELING

DR. JENN CHEN

APRIL 16, 2024

### See Slides 1 – 2

#### Professional Background

- MA in Marriage and Family Therapy
- MA & PsyD in Clinical Psychology
  - Scientist-Practitioner model
    - Research
    - Neuropsychology
  - Evidence Based Practices in trauma
- MABC!!!

### See Slides 3 – 6

#### OVERVIEW

- Science and threats to science
- What is Neuroscience
- The Body

#### OBJECTIVES

- Help you to see worldviews and presuppositions that may contrast with a biblical worldview, so that you will be better able to identify what can appear to be merely descriptive
- Help you better understand neuroscience and its limitations
- Assure you that as a biblical counselor, you do not need the neurosciences to be effective

#### Science

#### Worldviews and Presuppositions

- Worldview: the basic frame of reference by which one interprets reality (facts, objects, events, etc.).
- Presupposition: a belief over which no other takes precedence

### See Slide 7

#### A Biblical Worldview of Man: Five Nested Circles

David Powlison, "Theology and Secular Psychology Course Notebook," CCEF, 2012.

### See Slide 8 with the Five Nested Circles

#### Personal Agency: The Heart

- Our soul: the center of cognition, affection, volition
- Proverbs 4:23
- Matthew 15:18

### See Slide 9 with the Five Nested Circles

#### Physically-Embodied

- Heart influenced by body: Luke 4:1- 13; Matt 26:41; 1 Kings 17:4-6
- Body influenced by heart: Psalm 38:2-8
- Not determinative on our hearts: 2 Cor 4:16
- “Physical and mental limitations may shape the form that our faith and obedience take, but they cannot prevent a response of faith.”– Winston Smith

### See Slide 10 with the Five Nested Circles

#### Socially-embedded

- Influences of Relationships
- Influences of Society and Culture
- A window to the heart: Matt 22:34-30

### See Slide 11 with the Five Nested Circles

#### Spiritually-embattled

Spiritual battle – Eph. 6:12

Satan

- Ruler of this world – John 14:30; 1 Jn 2:16-17 (in this world: desires of the flesh, desires of the eyes, pride of life)
- Thief, murderer, destroyer – John 10:1-19
- Father of lies, deceiver - John 8:44; Gen 3:1-6
- Accuser – Rev 12:10

### See Slide 12 with the Five Nested Circles

#### God is man's environment

- Romans 11:36
- Colossians 1:16
- Job 42:2

### See Slide 13

#### Worldviews and Presuppositions of Science

- Scientism: An exaggerated trust in the methods of natural science applied to all areas of investigation
- Naturalism: the idea that only natural laws and forces (as opposed to supernatural ones) operate in the universe
- Reductionism: reduces complex phenomena to a basic explanation or component
  - Biological reductionism: reduces behavior to a physical level and explains it in terms of genes, neurons, neurotransmitters, hormones, brain structure, etc.
- Determinism: all human behaviors result from specific, efficient causal antecedents, such as biological structures or processes, environmental conditions, or past experience

**See Slide 14, includes *Limitation of Science* book cover**

### **Limitations of Science**

Science Fictions: How FRAUD, BIAS, NEGLIGENCE, and HYPE Undermine the Search for Truth

Stuart Ritchie

- PhD in Psychology, The University of Edinburgh
- Lecturer at the Social, Genetic, and Developmental Psychiatry Centre, King's College London

“Points the way to reforms that could make science trustworthy once again.”

**See Slide 15**

### **Fraud**

“...Much of science, despite its built-in organized skepticism, comes down to trust: trust that the studies really occur as reported, that the numbers really are what came out of the statistical analysis, and the [outcomes are as claimed].” (Ritchie, *Science Fictions*, 53)

- Changing data
- Forging datasets
- Altering scientific images
- Adding a high-profile scientist as a co-author without their knowledge or consent

**See Slide 16**

### **Bias**

- Definition: Any process at any stage of investigation which tends to produce results or conclusions that differ systematically from the truth
- Process: a series or set of activities that interact to produce a result

**See Slide 17, includes *The Seven Deadly Sins of Psychology* book cover**

### **Bias in Science**

*The Seven Deadly Sins of Psychology: A Manifesto for Reforming the Culture of Scientific Practice*

Chris Chambers

- PhD in Experimental Psychology, Monash University
- Professor of Cognitive Neuroscience, Cardiff University
- Head of Brain Stimulation, CUBRIC

“Why Psychology is in peril as a scientific discipline—and how to save it.”

### See Slide 18

#### “The WEIRDest People in the World?”

“Behavioral scientists routinely publish broad claims about human psychology and behavior in the world's top journals based on samples drawn entirely from:

Western,  
Educated,  
Industrialized,  
Rich, and  
Democratic

(WEIRD) societies. Researchers – often implicitly – assume that either there is little variation across human populations, or that these ‘standard subjects’ are as representative of the species as any other population.”

Joseph Henrich, Steven J. Heine, and Ara Norenzayan, *Behavioral and Brain Sciences* 33 (2010): 61

### See Slide 19

#### Hype

- Exaggerated publicity
- An ingenious or questionable claim, method, etc. used in advertising, promotion, or publicity to intensify the effect

### See Slide 20, includes the *The Quick Fix* book cover

#### Hype in Psychology

*The Quick Fix: Why Fad Psychology Can't Cure Our Social Ills*

Jesse Singal

- MA in Public Affairs, Princeton University
- Brooklyn-based journalist

“An investigative journalist exposes the many holes in today’s bestselling behavioral science, and argues that the trendy, TED-Talk-friendly psychological interventions that are so in vogue at the moment will never be enough to truly address social injustice and inequality.”

### See Slide 21

#### Three Types of Hype in Press Releases for Health-Related Scientific Studies

Analyzed 462 press releases in the UK on biomedical and health related science issued by 20 leading UK universities in 2011, alongside their associated peer reviewed research papers and news stories

1. Unwarranted/Exaggerated advice
2. Exaggerated Causal Claims (Correlation is not causation)
3. Exaggerated Inference to Humans from Animal Research (Cross species leap)

Petroc Sumner, Solveiga Vivian-Griffiths, and Jacky Boivin, “The Association Between Exaggeration in Health Related Science News and Academic Press Releases: Retrospective Observational Study,” *British Medical Journal* 349 (2014): g7015

**See Slide 22, includes graph**

**Sumner et al., “Exaggeration in Health Related Science News and Academic Press Releases”**

**See Slide 23**

**Science 101: Correlation is NOT Causation!**

- “Most research findings in psychology are probabilistic rather than deterministic: conventional statistical tests talk to us in terms of probabilities rather than proofs.”  
(Chambers, Seven Sins, 12)

**See Slide 24, includes graph**

**See Slides 25 and 26, includes graphic**

**Neuroscience**

**What is Neuroscience?**

**See Slides 27 and 28**

**The Essential Principles of Neuroscience**

The nervous system controls and responds to body functions and directs behavior

- The brain is the body’s most complex organ
- Neurons communicate using both electrical and chemical signals

Nervous system structure and function are determined by both genes and environment throughout life

- Genetically determined circuits are the foundation of the nervous system
- Life experiences change the nervous system

Mohammad Khakshour, “Neuroscience Core Concepts: The Essential Principles of Neuroscience,  
”Society for Neuroscience (Sept 2015)

The brain is the foundation of the mind

- Intelligence arises as the brain reasons, plans, and solves problems
- The brain makes it possible to communicate knowledge through language

Greg Gifford, “Mind vs Brain,” Association of Certified Biblical Counselors Truth in Love podcast,  
April 25, 2022, <https://biblicalcounseling.com/resource-library/podcast-episodes/mind-vs-brain/>.

Research leads to understanding that is essential for development of therapies for nervous system disorders

- The human brain endows us with a natural curiosity to understand how the world works
- Fundamental discoveries promote healthy living and treatment of disease

Ibid.

### See Slide 29

#### "The Trouble With Brain Science"

"...scientists are not only far from a comprehensive explanation of how the brain works; we're also not even in agreement about the best way to study it, or what questions we should be asking.

Gary Marcus, "The Trouble With Brain Science," New York Times (July 11, 2014),  
<http://www.nytimes.com/2014/07/12/opinion/the-trouble-with-brain-science.html>

### See Slide 30, includes graphic

#### Pentagon of Neuroscience: Who Studies the Mind?

### See Slide 31

#### Neuroimaging

THE USE OF VARIOUS TECHNIQUES TO EITHER DIRECTLY OR INDIRECTLY IMAGE THE STRUCTURE, FUNCTION, OR PHARMACOLOGY OF THE NERVOUS SYSTEM

### See Slide 32

#### Types of Neuroimaging

##### Structural

- ♦ CT/CAT (Computed axial tomography)
- ♦ MRI (Magnetic resonance imaging)

##### Functional

- ♦ EEG (Electroencephalogram)
- ♦ PET (Positron emission tomography)
- ♦ SPECT (Single photon emission computed tomography)
- ♦ fMRI (Functional MRI) – blood flow while carrying out a task

### See Slide 33, includes graphic

#### 2-Minute Neuroscience:

#### Functional Magnetic Resonance Imaging (fMRI)

<https://youtu.be/rjHjnzmvDI>

### See Slide 34

#### No, fMRI Brain Scans Are Not Reading Our Minds

1. fMRI imaging doesn't see brain activity directly.
2. The changes in blood flow do not occur simultaneously with the brain activity.
3. fMRI imaging produces rather fuzzy pictures of the brain

Furthermore, fMRI requires a lot of signal-processing, which means that researchers must make choices about which data points are important and which are noise. Such decisions inherently introduce bias into the research. The researchers' processing "smudges" the images, making interpretation considerably more difficult and unreliable.

Michael R. Egnor, "Why A ' Budding' Neuroscientist Is Skeptical of Brain Scans," Mind Matters News, April 5, 2021, <https://mindmatters.ai/2021/04/no-fmri-brain-scans-are-not-reading-our-minds/>

### See Slide 35

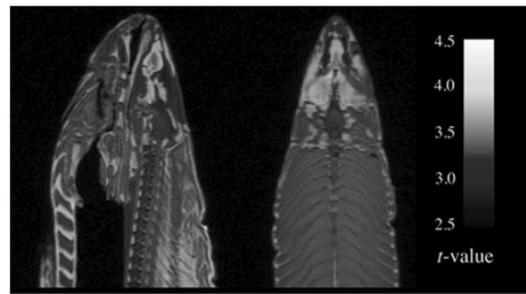
#### Measurement Error

- “a default setting in a software package commonly used to analyze imaging data had a statistical error leading to a vast number of accidental, uncorrected false-positive results, and could have compromised around 10% of all studies that had ever been published on the topic.” (Ritchie, *Science Fictions*, 33)

Anders Eklund, Thomas E. Nichols, and Hans Knutsson, “Cluster Failure: Why fMRI Inferences for Spatial Extent Have Inflated False-Positive Rates,” *Proceedings of the National Academy of Sciences* 113, no. 28 (July 12, 2016):7900-5.  
Anders Eklund, Thomas E. Nichols, and Hans Knutsson, “Cluster Failure Revisited: Impact of First Level Design and Physiological Noise on Cluster False Positive Rates,” *Human Brain Mapping* 40, no. 7 (May 2019): 2017-32.

### See Slide 36

#### Scanning Dead Salmon in fMRI Machine Highlights Risk of Red Herrings



Craig M. Bennett, Abigail A. Baird, Michael B. Miller, and George L. Wolford Neural Correlates of Interspecies Perspective Taking in The Post-Mortem Atlantic Salmon: An Argument for Multiple Comparisons Correction," (Poster presentation, Human Brain Mapping Conference, San Francisco, 2009)

### See Slide 37

#### In Contrast

- Martha J. Farah, “Brain Images, Babies, and Bathwater: Critiquing Critiques of Functional Neuroimaging,” *The Hastings Center Report* 44, no. s2 (2014): S19-S30.

### See Slide 38, includes picture

#### “Scientists Have Used fMRI to Study Brain Activity for Years. Now, Some Question The Results’ Reliability”

Image: Brain scans showing MRI mapping for 3 tasks across 2 different days. Warm colors show how the results hold up in groups. Cool colors show how results are less reliable person to person.

“Brain scans from the same person doing the same thing can be different a week or a month later, which is unexpected.”

“But it does not mean that the new research invalidates all the years of work with fMRI.”

Alan Yu, March 19, 2021, <https://whyy.org/segments/scientists-used-fmri-to-study-brain-activity-for-years-now-some-question-the-results-reliability/>

### See Slide 39

#### Reliability – Meta-analysis

- Meta-analysis of 90 experiments (N = 1,008) on task-fMRI measures
- Poor overall reliability—mean intraclass correlation coefficient (ICC) = .397
- Test-retest reliabilities of activity in a priori regions of interest across 11 common fMRI tasks collected by the Human Connectome Project (N = 45) and the Dunedin Study (N = 20) were poor (ICCs = .067–.485).
- Collectively, these findings demonstrate that common task-fMRI measures are not currently suitable for brain biomarker discovery or for individual-differences research.

Elliott et al., "What Is the Test-Retest Reliability of Common Task-Functional MRI Measures? New Empirical Evidence and a Meta-Analysis," *Psychological Science* 31, no. 7, (2020): 792-806

### See Slides 40 – 41

#### Hype and Neuroscience

##### SANE:

##### The Seductive Allure of Neuroscience Explanations

The phenomenon that people show greater trust in studies with neuroscience language, graphs, and especially brain images

- The Effect of Brain Images on Metacomprehension Judgment of Neuroscience Research
- Empirical Neuroenchantment
- Superfluous Neuroscience Information Makes Explanations of Psychological Phenomena More Appealing

### See Slide 42

#### In contrast

- Cayce J. Hook and Martha J. Farah, "Look Again: Effects of Brain Images and Mind–Brain Dualism on Lay Evaluations of Research," *Journal of Cognitive Neuroscience* 25, no. 9 (2013):1397-1405.
- Robert B. Michael, Eryn J. Newman, Matti Vuorre, Geoff Cumming and Maryanne Garry, "On the (Non) Persuasive Power of a Brain Image," *Psychonomic Bulletin & Review* 20, no. 4 (Feb 2013): 720-725.
- Nick J. Schweitzer, Denise A. Baker, and Evan F. Risko, "Fooled by the Brain: Re-Examining the Influence of Neuroimages," *Cognition* 129, no. 3 (2013): 501-511.

### See Slide 43, includes graphic

#### Amen Clinics – Transforming the Way Mental Health Is Treated

### See Slide 44, includes graphic

“In my opinion, what [Amen is] doing is the modern equivalent of phrenology.” (Phrenology was a popular pseudoscience in the early 19th century that said the mind was determined by the shape of the skull, particularly its bumps.) “The claims [Amen] makes are not supported by reliable science, and one has to be skeptical about his motivation.”

Jeffrey Lieberman, MD.

Former American Psychiatric Association President, Chairman of Psychiatry at Columbia University College of Physicians and Surgeons.

Neely Tucker, “Daniel Amen Is the Most Popular Psychiatrist in America. To Most Researchers and Scientists, That’s a Very Bad Thing.,” Washington Post, August 9, 2012.

### See Slide 45

#### Academic Article

- Martha J. Farah and Seth J. Gillihan, “The Puzzle of Neuroimaging and Psychiatric Diagnosis: Technology and Nosology in an Evolving Discipline,” *AJOB Neuroscience* 3, no. 4 (October 1, 2012): 31–41, <https://doi.org/10.1080/21507740.2012.713072>.

#### Exposés

- Decca Muldowney, “Dr Daniel Amen Called a Snake Oil Salesman By Critics and Former Patients Over SPECT Brain Scans,” *Daily Beast*, January 9, 2023, <https://www.thedailybeast.com/dr-daniel-amen-called-a-snake-oil-salesman-by-critics-and-former-patients-over-spect-brain-scans>.
- Anna Medaris, “A Controversial Hollywood Psychiatrist Conducted Bella Hadid’s Brain Scans, Inspiring the Model to Stop Drinking,” *Business Insider*, accessed April 14, 2024, <https://www.businessinsider.com/bella-hadid-brain-doctor-daniel-amen-psychiatrist-to-celebs-2022-1>.

### See Slide 46

#### Clinical Applications of Neuroimaging in Psychiatric Disorders

- “except in the case of neurocognitive disorders, there are currently no brain imaging biomarkers that are clinically useful for any diagnostic category in psychiatry.”
  - Michael B. First et al., “Resource Document on Clinical Applications of Neuroimaging in Psychiatric Disorders,” *The American Journal of Psychiatry* 175, no. 9 (September 1, 2018):915–16, <https://doi.org/10.1176/appi.ajp.2018.1750701>

#### In contrast

- Theodore A. Henderson et al., “Functional Neuroimaging in Psychiatry—Aiding in Diagnosis and Guiding Treatment. What the American Psychiatric Association Does Not Know,” *Frontiers in Psychiatry* 11 (April 15, 2020), <https://doi.org/10.3389/fpsy.2020.00276>.

**See Slide 47, includes *Brainwashed* book cover**

### **Brainwashed: The Seductive Appeal of Mindless Neuroscience**

(New York: Basic Books, 2013)

#### **Sally Satel**

- ♦ MD, Psychiatry
- ♦ Lecturer at Yale University School of Medicine

#### **Scott Lilienfeld**

- ♦ PhD, Clinical Psychology
- ♦ Psychology Professor at Emory University

“brilliantly illuminates what contemporary neuroscience and brain imaging can and cannot tell us about ourselves ”

**See Slides 48 - 49**

#### **Neurocentrism**

“The brain is said to be the final scientific frontier, and rightly so, in our view. Yet in many quarters brain-based explanations appear to be granted a kind of inherent superiority over all other ways of accounting for human behavior. We call this assumption ‘neurocentrism’ – the view that human experience and behavior can be best explained from the predominant or even exclusive perspective of the brain. From this popular vantage point, the study of the brain is somehow more ‘scientific’ than the study of human motives, thoughts, feelings, and actions. By making the hidden visible, brain imaging has been a spectacular boon to neurocentrism.”

Satel and Lilienfeld, *Brainwashed*, xix

**See Slide 50**

#### **“Neuroscience Needs Behavior: Correcting a Reductionist Bias”**

Abstract | “There are ever more compelling tools available for neuroscience research, ranging from selective genetic targeting to optogenetic circuit control to mapping whole connectomes. These approaches are coupled with a deep-seated, often tacit, belief in the reductionist program for understanding the link between the brain and behavior. The aim of this program is causal explanation through neural manipulations that allow testing of necessity and sufficiency claims. We argue, however, that another equally important approach seeks an alternative form of understanding through careful theoretical and experimental decomposition of behavior. Specifically, the detailed analysis of tasks and of the behavior they elicit is best suited for discovering component processes and their underlying algorithms. In most cases, we argue that study of the neural implementation of behavior is best investigated after such behavioral work. Thus, we advocate a more pluralistic notion of neuroscience when it comes to the brain-behavior relationship: behavioral work provides understanding, whereas neural interventions test causality.”

John W. Krakauer et al., *Neuron* 93, no. 3 (Feb 2017): 480-490

### See Slide 51

#### **“The Lure of Causal Statements: Rampant Mis-Inference of Causality in Estimated Connectivity”**

“As neuroscientists we want to understand how causal interactions or mechanisms within the brain give rise to perception, cognition, and behavior. It is typical to estimate interaction effects from measured activity using statistical techniques such as functional connectivity, Granger Causality, or information flow, whose outcomes are often falsely treated as revealing mechanistic insight. Since these statistical techniques fit models to low-dimensional measurements from brains, they ignore the fact that brain activity is high-dimensional.”

David Marc Anton Mehler and Konrad Paul Kording, arXiv: Neurons and Cognition (Oct 23, 2020), <https://arxiv.org/abs/1812.03363>

### See Slide 52

#### **The Lure of Causal Statements: Rampant Mis-Inference of Causality in Estimated Connectivity” (cont.)**

“Here we focus on the obvious confound of common inputs: the countless unobserved variables likely have more influence than the few observed ones. Any given observed correlation can be explained by an infinite set of causal models that take into account the unobserved variables. Therefore, correlations within massively undersampled measurements tell us little about mechanisms. We argue that these mis- inferences of causality from correlation are augmented by an implicit redefinition of words that suggest mechanisms, such as connectivity, causality, and flow.”

Ibid.

### See Slide 53

- “When it comes to studies of such extraordinarily complex systems as the body or the brain, it's rare for scientists to find one factor that has a massive effect on another. Instead, most of the psychological, social and even medical phenomena we're interested in are made up of lots of small effects, each of them playing a small role.”

Ritchie, Science Fictions, 139

### **See Slide 54**

#### **“Messaging in Biological Psychiatry: Misrepresentations, Their Causes, and Potential Consequences”**

Abstract: Most experts in the field of psychiatry recognize that neuroscience advances have yet to be translated into clinical practice. The main message delivered to laypeople, however, is that mental disorders are brain diseases cured by scientifically designed medications. Here we describe how this misleading message is generated. We summarize the academic studies describing how biomedical observations are often misrepresented in the scientific literature through various forms of data embellishment, publication biases favoring initial and positive studies, improper interpretations, and exaggerated conclusions. These misrepresentations also affect biological psychiatry and are spread through mass media documents. Exacerbated competition, hyperspecialization, and the need to obtain funding for research projects might drive scientists to misrepresent their findings.

Dumas-Mallet, Estelle PhD; Gonon, Francois PhD, *Harvard Review of Psychiatry* 28(6):p 395-403, 11/12 2020.

### **See Slide 55**

Moreover, journalists are unaware that initial studies, even when positive and promising, are inherently uncertain. Journalists preferentially cover them and almost never inform the public when those studies are disconfirmed by subsequent research. This explains why reductionist theories about mental health often persist in mass media even though the scientific claims that have been put forward to support them have long been contradicted.

These misrepresentations affect the care of patients. Indeed, studies show that a neuro-essentialist conceptualization of mental disorders negatively affects several aspects of stigmatization, reduces the chances of patients' healing, and overshadows psychotherapeutic and social approaches that have been found effective in alleviating mental suffering. Public information about mental health should avoid these reporting biases and give equal consideration to the biological, psychological, and social aspects of mental health.

Ibid.

### **See Slide 56, includes graphics**

#### **Triune Brain Theory**

### **See Slide 57, includes graphics**

#### **The Myth of the Amygdala Hijack**

### See Slide 58

In 2020, most neuroscientists no longer support the notion that our lives are ruled by hard-wired instincts deployed automatically in response to particular triggers with certain emotions accompanied by a specific facial expression and physical sensation. This so-called 'classical view' of emotions is falling out of favour as we learn more about how the brain works, more about how humans learn and even more about consciousness.

Instead, evidence points towards a theory of 'constructed emotion'. This theory proposes that emotions are not pre-programmed into our brains. Instead, various 'ingredients' are processed by entire brain networks to 'construct' consciously experienced feelings in the moment.

Sarah McKay, "Rethinking the Reptilian Brain," June 24, 2020,  
<https://drsarahmckay.com/rethinking-the-reptilian-brain/>.

### See Slide 59

#### **"'Mental Illness Is Like Any Other Medical Illness': A Critical Examination of the Statement and Its Impact on Patient Care and Society"**

Advances in neurosciences have surely given us much better biological mechanistic explanations of many of the uniquely human cognitive, emotional and conative functions, such as memory, thinking, perception, mood and action. This knowledge has informed us that many mental illnesses derive their vulnerability from underlying biological variations.

However, we are far from being able to explain in neurobiological terms many of the behaviours and experiences that constitute the core presentations of mental disorders. Even if neurobiology one day were to provide better explanations of the workings of the brain, more elaborately explain the role of genes in increasing the risk for mental illness and the mechanisms behind complex human behaviour, one would still need to understand the experiences of patients with different forms of mental illness in psychological terms. By equating mental illness with any medical illness and, therefore, situating it in an organ within the human biology and not recognizing its unique nature in the way it affects the "self" cannot be justified on the basis of current state of knowledge nor may it serve our patients and society well...

Ashok Malla, Ridha Joobar, and Amparo Garcia," Journal of Psychiatry & Neuroscience 40, no. 3 (May 2015):148.

### See Slide 60

#### **"'Mental Illness Is Like Any Other Medical Illness': A Critical Examination of the Statement and Its Impact on Patient Care and Society" (cont.)**

So while we have more knowledge about the brain and nervous system, neuroscientists are cautioning us to attempt to understand the experiences of the person outside of neurobiology, not equate mental illness with medical illness, and not simply situate mental disorder in the brain because it is not helpful for patients or society.

## See Slides 61

### Neuroscience Applications

- Pre-surgical planning for neurosurgeons to map the language and motor regions of the brain to minimize damage to these functionally important areas while removing a tumor, blood clot, or epileptic tissue
- To ascertain stroke damage
- To follow the course of Alzheimer's disease and epilepsy
- To determine brain maturity
- Scientists hope that fMRI will improve the treatment of comatose patients by allowing doctors to directly measure levels of consciousness

Satel and Lilienfield, Brainwashed, 11

## See Slide 62

- Detect structural lesions causing psychosis<sup>1</sup>
- Differentiate depression from neurodegenerative disorders or brain tumors<sup>1</sup>
- Detect damage from Traumatic Brain Injury (TBI) in moderate to severe cases – CT scans<sup>2</sup>

1 Joseph C. Masdeu, "Neuroimaging in Psychiatric Disorders," *Neurotherapeutics: The Journal of the American Society for Experimental NeuroTherapeutics* 8, no. 1 (January 2011): 93–102, <https://doi.org/10.1007/s13311-010-0006-0>.

2 David B. Douglas et al., "Neuroimaging of Traumatic Brain Injury," *Medical Sciences* 7, no. 1 (December 20, 2018): 2, <https://doi.org/10.3390/medsci7010002>.

## See Slide 63

### To Assess Research

- "Top Ten List of Questions to Assess Research," in Stuart Richie,
- *Science Fictions*, 248-253.
- See corollaries in John P. A. Ioannidis, "Why Most Published Research Findings Are False," *PLOS Medicine* 2, no. 8 (2005): e124. <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1004085>
- Marc Zimmer, "6 Tips to Help You Detect Fake Science News," *Phys Org*, March 16, 2021, <https://phys.org/news/2021-03-fake-science-news.html>.
- Journal rankings: <https://oair.org/journals.php#>

## See Slide 64

### The Body

**See Slide 65, includes the Five Nested Circles**

**Physically-Embodied**

- Man is created “a unified person with body and soul living and acting together” (Grudem, 473).
- Heart influenced by body: Luke 4:1- 13; Matt 26:41; 1 Kings 17:4-6
- Body influenced by heart: Psalm38:2-8
- Not determinative on our hearts: 2 Cor 4:16
- “Physical and mental limitations may shape the form that our faith and obedience take, but they cannot prevent a response of faith.” – Winston Smith

**See Slide 66, *The Body Keeps the Score* book cover**

**See Slide 67, includes *Analysis of The Body Keeps the Score* book cover**

“Twenty three of the 42 claims have in common that van der Kolk supplied zero data supporting them. The other 19 claims were supported by either cross sectional studies [which cannot indicate causality], misrepresentations of studies, papers with no relation to the claim or commentaries that were basically sympathetic op-ed pieces.” (p. 53)

In summary, the scientific evidence does not support Van der Kolk’s claims.

**See Slide 68, includes *The Trouble with Trauma* book cover**

**The Trouble with Trauma is the story of how the idea of psychological trauma appeals to the human mind.**

Trauma impacts many people psychologically, but the evidence on the long-term physical effect is incomplete. Theories that psychological trauma can permanently damage your brain, cause physical disease, and change your essential character have become staples of human thought worldwide.

Dr. Scheeringa explains how those theories are widely believed whilst not being true, and at the heart of the story is an explanation of how humans choose to ignore scientific evidence and practice self-deception based on heuristics for survival. Heuristics is a rapid and efficient method to make judgments about threatening situations, which may be especially relevant during an epidemic and the spread of misinformation.

But *The Trouble with Trauma* is more than a critique of social policy. This is a book for anyone who wants a better understanding on how groupthink and herd mentality works and improves our ability to understand scientific fact. Dr. Scheeringa sheds light on why we choose to ignore scientific evidence while engaging the reader in a lively conversation on how we come to believe.

**See Slide 69, includes graphic and youtube link info**

### **The Neuroscience of Trauma:**

Lisa Feldman Barnett

<https://www.youtube.com/watch?v=G1qAGEhUkCI>

**See Slide 70**

Biblical Critiques of van Der Kolk

- Francine Tan, "A Critical Evaluation of Bessel van Der Kolk's The Body Keeps the Score," *The Journal of Biblical Soul Care* 7, no. 2 (2023), [https://acbcdigitalresources.s3.us-west-2.amazonaws.com/resources/JBSC/Fall+2023/JBSC+Fall+2023\\_Tan.pdf](https://acbcdigitalresources.s3.us-west-2.amazonaws.com/resources/JBSC/Fall+2023/JBSC+Fall+2023_Tan.pdf).
- Julia Yost, "By Our Wounds We Are Healed," *First Things*, October 1, 2021, <https://www.firstthings.com/article/2021/10/by-our-wounds-we-are-healed>.

**See Slide 71, includes *The End of Trauma* book cover**

### **The End of Trauma**

After 9/11, mental health professionals flocked to New York to handle what everyone assumed would be a flood of trauma cases. Oddly, the flood never came.

In *The End of Trauma*, pioneering psychologist George A. Bonanno argues that we failed to predict the psychological response to 9/11 because most of what we understand about trauma is wrong. For starters, it's not nearly as common as we think. In fact, people are overwhelmingly resilient to adversity. What we often interpret as PTSD are signs of a natural process of learning how to deal with a specific situation.

**See Slide 72**

**EMDR**

**EYE MOVEMENT DESENSITIZATION AND REPROCESSING**

**See Slide 73**

**Summary of Recommendations of the APA**

**Guideline Development Panel for the Treatment of PTSD – Psychotherapy for adults**

<b>Psychotherapy</b>	<b>Strength of Recommendation</b>
<ul style="list-style-type: none"><li>•Cognitive Behavioral Therapy (CBT)</li><li>•Cognitive Processing Therapy (CPT)</li><li>•Cognitive Therapy (CT)</li><li>•Prolonged Exposure Therapy (PE)</li></ul>	Strongly recommend
<ul style="list-style-type: none"><li>•Brief Eclectic Psychotherapy (BEP)</li><li>•Eye Movement Desensitization And Reprocessing Therapy (EMDR)</li><li>•Narrative Exposure Therapy (NET)</li></ul>	Conditional recommendation
<ul style="list-style-type: none"><li>•Relaxation (RX)</li><li>•Seeking Safety (SS)</li></ul>	Insufficient evidence to recommend

**See Slide 74**

**EMDR: Empirical Review**

**See Slide 75, includes graphic**

**Purple hat therapy**

a hypothetical medical practice in which an established form of therapy is mixed with an unlikely new addition(such as wearing a purple hat) and then is claimed to be effective because of the new addition, when in fact the effectiveness is due to the established component

## See Slide 76

### **“The Demise of Pseudoscience”**

Although I share Herbert et al.’s (2000) concerns about the marketing of eye movements and other amusing exotica of the EMDR movement (McNally, 1999a, 1999b), I believe the accusation of pseudoscience misses the mark. After clearing away all the neurological mumbo-jumbo, one can see that EMDR theory is eminently falsifiable (McNally, 2001a), and if Shapiro’s (1989) hypothesis about the curative powers of eye movement is not a Popperian “bold conjecture,” then nothing is. Indeed, not only is EMDR theory falsifiable, it has already been repeatedly falsified, as a recent meta-analysis has shown (Davidson & Parker, 2001). Despite many attempts, researchers have been unable to demonstrate that eye movements possess therapeutic powers. In response to these disappointing findings, EMDR theorists have cheerfully reconceptualized placebo control manipulations (e.g., rhythmic tapping) as variant forms of EMDR, and it is this ad hoc maneuver that Herbert et al. find especially problematic.

Richard J. McNally, *The Scientific Review of Mental Health Practice* 2, no. 2 (Fall/Winter 2003), <https://www.srmhp.org/0202/pseudoscience.html>.

## See Slide 77

### **“Threats to Evidence-Based Treatment of Trauma: Professional Issues and Implications,”**

The use of trauma interventions without adequate empirical support for victims of crime has become increasingly problematic over the last decade. It is proposed that pseudoscience in mental health trauma practice reflects a widening rift between research and practice. It may also be a by-product of the commercialization of the mental health profession. This article presents a discussion of the ethical and professional implications of pseudoscience and junk science in trauma practice. We argue that it is the professional and ethical responsibility of mental health practitioners to recognize scientific evidence and to conduct evidence-based trauma practice. With such knowledge, practitioners and service providers may be better equipped in the identification and avoidance of treatments with little or no scientific merit.

Jeffrey Lohr, Bunmi Olatunji, and Grant Devilly, *International Review of Victimology* 15 (September 1, 2008), <https://doi.org/10.1177/026975800801500204>.

## See Slide 78

### Biblical perspectives on EMDR

- Dale Johnson, “How Should Biblical Counselors Assess EMDR Therapy?,” Truth in Love Podcast - Association of Certified Biblical Counselors (blog), August 24, 2020, <https://biblicalcounseling.com/resource-library/podcast-episodes/how-should-biblical-counselors-assess-emdr-therapy/>.
- Rhenn Cherry, A Biblical Critique of EMDR Therapy, 2023 ACBC Annual Conference, <https://biblicalcounseling.com/product/rhenn-cherry-a-biblic-critique-of-emdr-therapy/>.
- Biblical Counseling Coalition, “BCC Statement on EMDR,” December 16, 2021, <https://www.biblicalcounselingcoalition.org/2021/12/16/bcc-statement-on-emdr/>; <https://www.biblicalcounselingcoalition.org/wp-content/uploads/2021/12/Statement-on-EMDR-by-the-BCC.pdf>.

## See Slides 79 – 80

### McGill Office for Science and Society Separating Sense from Nonsense

#### “Mindfulness Meditation Often Fails the Scientific Test”

- Mindfulness meditation is a practice which teaches you to focus on the present moment and redirect your attention to it without judgement when you get distracted
- When studied in randomized clinical trials for a variety of issues like anxiety, depression, and stress, mindfulness meditation often shows a small benefit over not doing anything, but that benefit commonly disappears when it is compared to doing something other than meditation
- Mindfulness meditation appears to be safe for most people, although reports of complications like traumatic flashbacks and psychosis have led to calls for scientists to better report side effects in studies of this form of meditation

Jonathan Jarry, January 19, 2024, <https://www.mcgill.ca/oss/article/critical-thinking-health-and-nutrition/mindfulness-meditation-often-fails-scientific-test>.

• Erik Everhart, Dale Johnson, and Ernie Baker, “Biblical Discernment, Neuroscience and Trauma,” Association of Certified Biblical Counselors, Truth in Love podcast, May 15, 2023, <https://biblicalcounseling.com/resource-library/podcast-episodes/biblical-discernment-neuroscience-and-trauma/>.

### **See Slide 81**

#### **Brain Problems Can Expose Heart Problems**

“A dysfunctional brain can make it very difficult to understand what is going on, but it can’t create sin. It can only reveal things that were previously hidden in the heart. And the reason these things were hidden was that the circumstances were never intense enough to expose them, or the person had the mental self- control just to think something but not actually say it.”  
Ed Welch, Blame It On the Brain, p. 58

### **See Slide 82**

#### **Sinful Hearts Can Negatively Impact the Body**

- Stress alters the body’s susceptibility to disease
- Sinful choices, unwise living, and guilt can lead to sickness
  
- Deuteronomy 7:12, 15
- 2 Chronicles 21:18-19
- Psalm 38:3-5 (cf. Psa. 32)

### **See Slide 83, with graphic**

#### **Stress and the Body**

### **See Slide 84**

#### **Upright Hearts Can Positively Affect Health**

- Righteousness and the peace and joy of biblical living can lead to health
- Proverbs 3:7-8

Be not wise in your own eyes; fear the LORD, and turn away from evil.  
It will be healing to your flesh and refreshment to your bones.