


Mind and Body

Fall 2014

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The *Real* Mind-Body Problem


Nagel, "What Is It Like To Be a Bat?" (1979)



"Consciousness is what makes the mind-body problem really intractable. Without consciousness, the mind-body problem would be much less interesting.

With consciousness, it seems hopeless."

2



Descartes's Doctrines

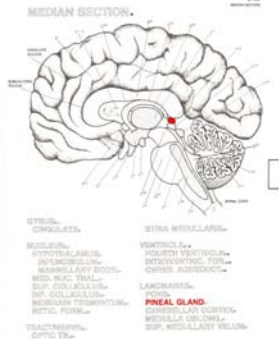
Meditations (1641)

- Strict Separation between Humans, Animals
 - Animals as Unconscious Reflex Machines
 - Consciousness Frees Humans from Reflex
- Substance Dualism
 - Body Characterized by Extension
 - Mind Characterized by Thought
- Interactive Dualism
 - Knowledge Through Sensory Organs
 - Thoughts Affect Bodily Actions

3

The Cartesian Impasse

- How Can a Material Substance Affect an Immaterial Substance?
- The Pineal Gland
 - Location
 - Singular
 - Uniquely Human



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The Persistence of Dualism

- Religious Doctrine
 - Soul Separates Man from Animals
 - Soul = Mind = Consciousness
- As "Folk Psychology"
 - We have Bodies and Minds
 - They are *Somehow* Different
 - Mind and Body Interact *Somehow*
- As Scientific Psychology
 - Doctrine of Mentalism
 - Psychology as the Science of Mental Life

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Escaping Descartes's Impasse: Varieties of Dualism

- Occasionalism
 - Nicholas Malebranche (1638-1715)
 - All Causality Resides with God
- Dual-Aspect Theory (Property Dualism)
 - Baruch Spinoza (1632-1677)
 - God Ordains Isomorphism between Mind and Body
- Psychophysical Parallelism
 - Gottfried Wilhelm Leibniz (1646-1716)
 - Correlation Established by God

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Escaping Descartes' Impasse: Varieties of Immaterialist Monism

- Mentalistic Monism (Idealism)
 - George Berkeley (1685-1753)
 - No Reality Other than the Mind
- Mind-Stuff Theory
 - Morton Prince (1854-1929)
 - All Matter Contains “Mind-Stuff”



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Escaping Descartes' Impasse: Varieties of Materialist Monism

- The Automaton Theory
 - Julien Offray de la Mettrie (1709-1751)
 - Pierre Jean George Cabanis (1757-1808)
 - Humans are Conscious Automata
- Epiphenomenalism
 - T.H. Huxley (1874)
 - Shadworth Holloway Hodgson (1870)
 - Consciousness Has No Causal Efficacy



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The Steamwhistle Analogy

T.H. Huxley (1868)

“The consciousness of brutes would appear to be related to the mechanism of their body simply as a collateral product of its working, and to be completely without any power of modifying that working as the steamwhistle which accompanies the work of a locomotive engine is without influence upon its machinery.” T.H. Huxley (1868)



“The Snapper”, built 1891 (Folsom & Western Railway, California)

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William James at Descartes' Impasse

Principles (1890)

- Rejected Mind-Stuff theory
- Materialism is Right, but...
 - Rejected Automaton Theory
 - Rejected Epiphenomenalism
- Mind has Causal Efficacy
- Psychophysical Parallelism
 - Secular Version



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The Behaviorist Revolution

Watson (1913, 1919)

- Humans are Behaving Organisms
 - Behavior, Conditions Under Which it Occurs, Can Be Objectively Described
- Mental States are Not Causally Efficacious
 - Behaving Organisms React to Environmental Stimuli
- Psychology a Natural Science
 - Predict Behavior to Advance Scientific Theory
 - Control Behavior to Promote Human welfare



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The Concept of Mind

Ryle (1949)

- Mind as “The Ghost in the Machine”
- Category Mistake
 - Identify Mind with Brain
 - Treat Mind as Separate Component of Body
 - In Addition to Physical Parts
- Mind as Behavior or Disposition
- Circumstances for Using Mental Terms



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“Mind” in Philosophical Behaviorism

- “Thinking”
 - Talking to Oneself
- “Believing”
 - Behaving *As If* Something Were True
- Mental Terms
 - Behavior
 - Circumstances Under Which It Takes Place

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Denying Consciousness

- Consciousness Does Not Really Exist
 - Illusory
- Positivist Stance (“Vienna Circle”)
 - Nothing Exists Which Cannot Be Publicly Verified
- Consciousness is Irrelevant to Function
 - Plays No Causal Role in Behavior
 - Mind as “Virtual Machine”
 - Processes Stimulus Inputs
 - Generates Response Outputs

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Back at Descartes' Impasse

- James' Conundrum
 - Science Forces Us to Materialism
 - Experience Inclines Us to Dualism
- Responses
 - Give Up Folk Psychology
 - Non-Reductionist Materialism
 - Blend Materialism, Dualism
 - Embrace Dualism
 - Give Up Entirely



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Descartes' Impasse and the Explanatory Gap

Levine (1983)



- Physicalist Theories of Mind Cannot Explain *How* Physical Properties Give Rise to Experience
- Consider the Plausibility of the Following:
 - The Motion of Molecules Creates Heat
 - Electromagnetic Radiation at 700nm Creates Red

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Mysterianism

McGinn (1989, 2000)



We have been trying for a long time to solve the mind-body problem. It has stubbornly resisted our best efforts. The mystery persists. I think the time has come to admit candidly that we cannot resolve the mystery.

[W]e know that brains are the *de facto* causal basis for consciousness, [but] we are cut off by our very cognitive constitution from achieving a conception of... the psychophysical link.

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Searle's Biological Naturalism

The Rediscovery of the Mind (1992)

- Consciousness is a Causal Property of the Brain...
 - At Certain Levels of Anatomical Organization
 - Human, Primate Brain
 - Invertebrate Brains?
 - In Certain Types of Physiological States
 - General Anesthesia?
 - Concussion, Coma?



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Intertheoretic Reduction

Churchland & Churchland (1998)



“When the propositions and principles of a new theory mirror the propositions and principles of an old theory; and The new theory gives better explanations and predictions than the old one; then The new theory contains the correct description of reality and is to be preferred on that ground.”

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Folk Psychology and Neuroscience

Churchland & Churchland (1998)

- Folk Psychology Talks About Mental States
- Real Science Talks About Physical States
- Therefore “Psychology must be grounded in the real-world findings of neuroscience”
- The World of the Mind is the World of Ether and Phlogiston and Fairies

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What Pat Said to Paul...

Quoted in *The New Yorker*, February 12, 2007

“Paul, don’t speak to me, my serotonin levels have hit bottom, my brain is awash in glucosteroids, my blood vessels are full of adrenaline, and if it weren’t for my endogenous opiates I’d have driven the car into a tree on the way home. My dopamine levels need lifting. Pour me a Chardonnay, and I’ll be down in a minute.”



New Yorker 02/12/07

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Should Have What Pat ^ Said to Paul...



“Paul, *don’t speak to me*, my serotonin levels have hit bottom, my brain is awash in glucosteroids, my blood vessels are full of adrenaline, and if it weren’t for my endogenous opiates I’d have driven the car into a tree on the way home. My dopamine levels need lifting. *Pour me a Chardonnay*, and I’ll be down in a minute.”

Your Broca’s area should be releasing inhibitory neurotransmitters for a while, so that my mirror neurons don’t automatically emulate your articulatory gestures as you push air into your larynx, across your vocal cords, and into your mouth and nose.

Mix me a 12.7% solution of alcohol in water, along with some glycerol and a little reducing sugar, plus some tartaric, acetic, malic, and lactic acids, with a pH level of about 3.25.

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Touching a Nerve

Patricia Churchland, *Touching a Nerve* (2014)



“I began to learn neuroscience in the mid-1970s after having begun a career in philosophy. This transition was motivated by the realization that if mental processes are actually processes of the brain, then you cannot understand the mind without understanding how the brain works.”

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A Reductio ad Absurdum?

McGinn (2014)



Churchland’s reasoning is as unsound as the following bit of invented autobiography: “I began by studying biology, but then I realized that organisms are made of molecules, so I switched to chemistry—this being the only rational course of action.” That declaration can only seem remotely plausible if we assume a very strong form of reductionism, namely that psychology (or biology) can be *translated* into neurology (or chemistry). Indeed, anyone studying virtually any subject, following Churchland’s logic, should switch immediately to physics, since everything is ultimately made of elementary particles and depends on their activity. Historians should become physicists, as should students of literature, because people and books are made of elementary particles! Churchland herself should abandon neuroscience and take up basic physics, because she must realize that brains are made of matter and physics is the science of matter.

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But Why Not Ground *Neuroscience* “in the Real-World Findings of” *Psychology*?
Kihlstrom (2010)

- Examples
 - Color Vision
 - Structure of Memory
 - The Great Mental Imagery Debate

“Without neuroscience, psychology is still the science of mental life; without psychology, neuroscience is just the science of neurons.”

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Four Problems of Body and Mind

- From Body to Mind
 - Neural Correlates of Consciousness
- From Mind to Body
 - Placebo and Other “Psychosomatic” Effects
- Mind Without Body
 - Spiritualism, Parapsychology
- Body Without Mind
 - Zombies and Other “Reflex Machines”

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The “Unbridgeable Gulf” Between the Body and the Mind

Wittgenstein (1953)
Philosophical Investigations, Part I, Section 412, p. 124e



“The feeling of an unbridgeable gulf between consciousness and brain-process.... When does this feeling occur in the present case? It is when I (for example) turn my attention in a particular way on to my own consciousness and, astonished, say to myself: THIS is supposed to be produced by a process in the brain! -- as it were clutching my forehead.”

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“The Hard Problem” of Consciousness

Chalmers (1996)



- How Do Brain-Processes Produce Consciousness?
 - What is the Mechanism?
- Why Do Brain-Processes Produce Consciousness?
 - Why Doesn't It All Just Go On In the Dark?

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The Neural Correlates of Consciousness

Koch (2004)



- Principle of Covariance
 - For Each and Every Conscious Event, There is a Corresponding Brain Event

Where in the Brain do These Events Occur?
What are “the Minimal Neuronal Mechanisms Jointly Sufficient for Any One Specific Conscious Percept”?

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Aspects of Consciousness

Searle (1992)

- Subjectivity
- Unity
- Intentionality
- Mood
- Gestalt Structure
- Attention
- Boundary Conditions
- Familiarity
- Overflow
- Pleasure/Unpleasure

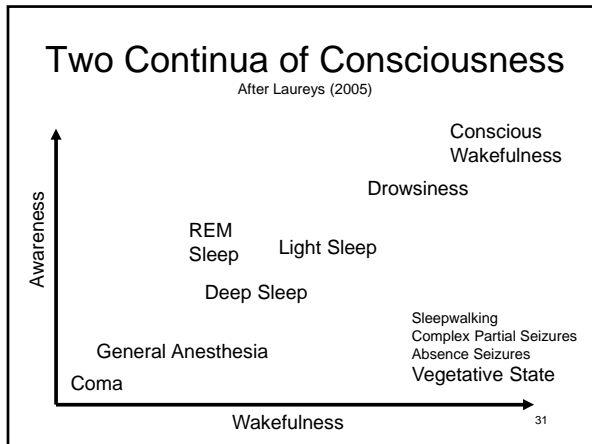


Rinder & Lakoff (1999)

- Awareness
- Attention
- Qualia
- Unity
- Memory
- 1st-Person Perspective
- Self-Awareness
- Conceptual Framing / Metaphor
- Empathy



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Coma

Jennett & Plum (1972)

- Loss of Consciousness
 - Eyes Closed
 - Unresponsive to Stimulation
 - Auditory, Visual
 - Somatosensory Reflexes
 - No Signs of Emotion
 - Spared Vegetative Function
 - No Sleep-Wake Cycle
- Posterior Brain Stem
 - Reticular Formation
 - Periaqueductal Gray
 - Parabrachial Nucleus

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Persistent Vegetative State

Jennett & Plum (1972)

- Follows Coma
 - Usually Within 1 Month
- Wakefulness Without Awareness
 - Sleep-Wake Cycle
 - Eyes Sometimes Open
 - No Communication
 - Partial Response to Stimulation
 - Auditory, Visual Startle
 - Sometimes Brief Orientation
 - Somatosensory Reflexes
 - Withdrawal from Noxious Stimulus
 - Few Signs of Emotion
 - Sometimes Reflexive Crying, Smiling
- Diencephalon (Bilateral)
 - Thalamus, Hypothalamus

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Minimally Conscious State

Giacino et al. (2002)

- Minimal but Definite Evidence of Awareness
 - Self, Environment
 - Inconsistent
- Cognitively Mediated Behavior
 - Follow Commands
 - Vocal/Gestural Yes/No
 - Intelligible Vocalization
 - Appropriate Response to Objects
 - Reaching
 - Touching, Holding
 - Eye Movements
 - Pursuit, Fixation

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“Locked-In” Syndrome

Plum & Posner (1966)

- Quadriplegia
 - Paralysis of Limbs
 - Anarthria
 - Loss of Articulate Speech
 - Aphonia
 - Loss of Vocalization
- Full Consciousness
 - Preserved Auditory, Visual Function
 - Startle, Orienting
 - Localization, Fixation, Pursuit
 - Preserved Communication
 - Blinking, Vertical Eye Movements
 - Preserved Emotional Response
- Anterior Brain Stem
 - Pons
 - Excludes Reticular Formation

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Consciousness as Attention

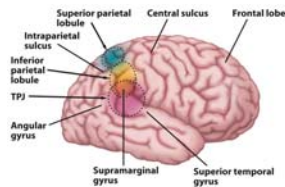
Fan et al. (2005), after Posner & Peterson (1990)

- Alerting and Interruption
 - Fronto-Parietal
 - Thalamus
- Orienting and Localizing
 - Superior Parietal
- Executive Control
 - Anterior Cingulate Gyrus
 - Frontal
 - Disengage
 - Move (Shift)
 - (Re-) Engage
 - Inhibit

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Unilateral Spatial Neglect

- Brain-Damaged Patients
- Fail to Acknowledge Objects/Events
 - Contralateral to Lesion

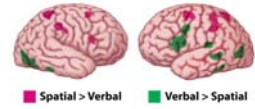


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Consciousness as Working Memory

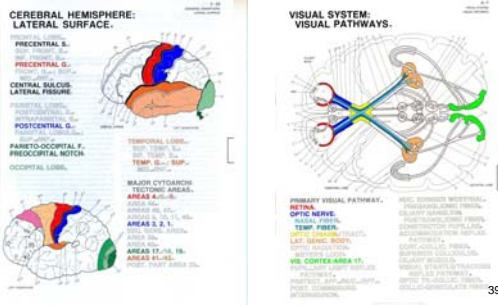
Passingham et al. (2011)

- Features
 - Temporary memory representations
 - Activated by Perception or Memory
 - Relevant to current tasks
 - Guide Thought and Action
- Location
 - Prefrontal Cortex
 - Anterior
 - Dorsolateral
 - Superior Parietal Sulcus
 - Inferior Frontal Gyrus



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Consciousness as Qualia Doctrine of Specific Nerve Energies Doctrine of Specific Fiber Energies



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Explicit vs. Implicit Memory in the Amnesic Syndrome

Schacter (1987)

- Damage to Hippocampus
 - Medial Temporal Lobe Memory System
- Anterograde Amnesia
 - Events Since Brain Damage
- Impairs Explicit Memory
 - Recall, Recognition
- Spares Implicit Memory
 - Priming
- Failure of Conscious Recollection

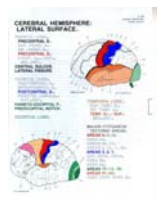


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Explicit vs. Implicit Perception in Blindsight

Weiskrantz (1986)

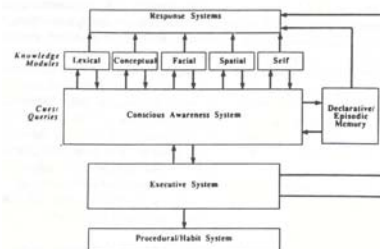
- Damage to Primary Visual Cortex
- Scotoma
 - Visual Field Defect
- Impairs Explicit Perception
 - No Visual Experience
- Spares Implicit Perception
 - “Guesses” About Visual Stimuli
- Failure of Conscious Vision
 - Cognates: Deafhearing, Numbsense



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A Consciousness Module?

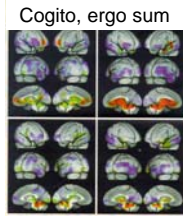
Schacter (1990)



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Consciousness as Intentionality

- What are the Neural Correlates of Particular Intentional States?
 - Thinking Particular Thoughts
 - Perceiving Particular Objects
 - Remembering Particular Events
 - Feeling Particular Emotions
 - Pleasure/Unpleasure
 - Having Particular Desires
 - Approach/Avoidance
- Back to the Identity Theory



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Identifying Natural Objects From Patterns of fMRI Activity

Kay, Naserlaris, Prenger, & Gallant (2008)



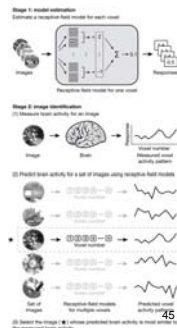
Topographical Organization of Visual System

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Identifying Natural Objects From Patterns of fMRI Activity

Kay, Naserlaris, Prenger, & Gallant (2008)

- Topographical Organization of Visual System
- Record Activity in V1-3 While Viewing 1,750 Images
- Create Receptive-Field Model for Each Voxel in fMRI Image
- Record Activity in V1-3 While Viewing 120 Novel Images
- Attempt to Identify Novel Images from Pattern of Brain Activity

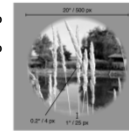
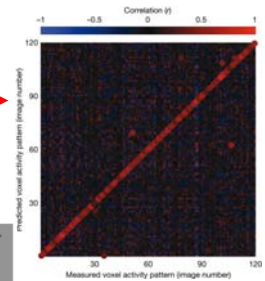


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Accuracy of Identification

Kay et al. (2008)

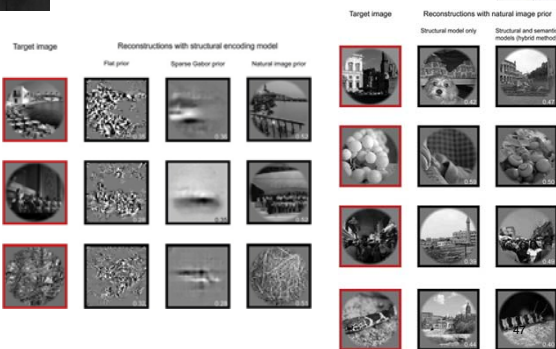
- Chance = $1/120 = 0.8\%$
- 13 Repeated Trials
 - Subject 1: 92%
 - 1000 Images: 82%
 - Chance = .001%
 - Subject 2: 72%
- Single-Trial Performance
 - Subject 1: 51%
 - Subject 2: 32%



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Reconstructing Natural Images

Naseleris, Prenger, Kay, Oliver, & Gallant (2009)



The "Unbridgeable Gulf" Between the Body and the Mind

Wittgenstein (1953)

Philosophical Investigations, Part I, Section 412, p. 124e


"The feeling of an unbridgeable gulf between consciousness and brain-process.... When does this feeling occur in the present case? It is when I (for example) turn my attention in a particular way on to my own consciousness and, astonished, say to myself: THIS is supposed to be produced by a process in the brain! -- as it were clutching my forehead."



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The "Puzzling Leap" from the Mind to the Body

Freud, *Introductory Lectures on Psycho-Analysis* (1916-1917), p. 258




[T]he leap from a mental process to a somatic innervation... can never be fully comprehensible to us."

Freud, *Notes Upon a Case of Obsessional Neurosis* ("The Rat Man"), 1909

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The Psychoanalytic Legacy

Selected from Alexander (1950)

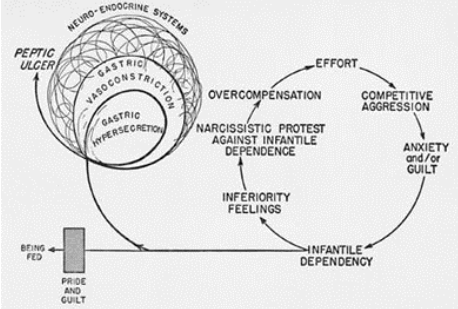


- Anorexia Nervosa
 - Envy, Jealousy
- Peptic Ulcers
 - Infantile Dependency vs. Ego Pride, Aspiration
- Bronchial Asthma
 - Excessive Unresolved Dependence on Mother
- Essential Hypertension
 - Chronic inhibited aggressive impulses
- Rheumatoid Arthritis
 - Rebellion against restrictive parental influences

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Etiology of Peptic Ulcer


Alexander (1950)



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Ulcers: A Modern Psychosomatic Formulation

- "Flight or Fight"
- Autonomic Nervous System
 - Sympathetic Branch
 - Parasympathetic Branch
- Prolonged Stress
- Secretion of Gastric Acid
 - Creates Ulcers



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The Stress-Disease Connection


Cohen et al. (2007)

- Exposure to Psychological Stress
 - Acute or Chronic
- Increased Risk of Disease
 - Depression
 - Cardiovascular Disease (<50% increase)
 - HIV Progression to AIDS (<50% increase)
 - Increased Risk of AIDS-Related Complications
 - Cancer (Virally Mediated?)
- Evidence from "Natural Experiments"
 - Onset, Progression, Recurrence, Complications

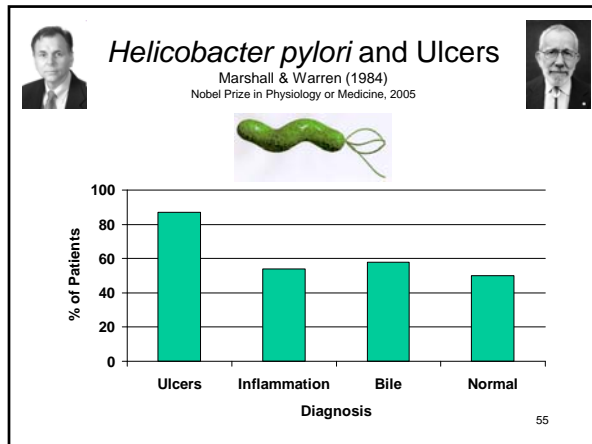
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Classic Definitions of Stress

- Implied: W.B. Cannon (1915)
 - Stimulus that Elicits "Flight or "Fight")
 - S. Taylor: also "Tend and Befriend"
- Explicit: Selye (1936, 1956)
 - Any Event Which Challenges the Organism's Current Level of Physiological or Psychological Adaptation
 - Distress (-) vs. Eustress (+)
- Cohen et al. (1999)
 - Perception that environmental demands tax or exceed adaptive capacity



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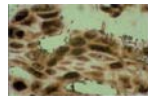

“Another One Bites the Dust”

Hyman (1994)

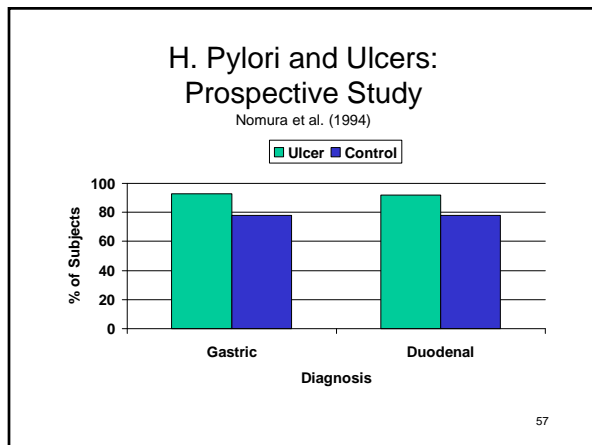
“The time-honored attribution of symptomatic ulcers to stress alone may result from a theory-driven retrospective falsification – that is, when an ulcer occurs, prior stressors are sought and blamed. Stress and the perception of stress are notoriously difficult to define with any precision, contributing to the lack of convincing prospective evidence that stress plays a significant role in peptic ulcer disease.”

Mental Illness as “Real” Illness

Biological Basis, Biological Diagnosis, Biological Cures



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Diathesis-Stress Model for Ulcers

Overmier & Murison (1997, 2001)

- Stress
 - Secretion of Gastric Acid into Stomach
- Gastric Acid Erodes Stomach Lining
 - Sufficient to Cause Ulceration
- *H. pylori* Increases Vulnerability
- Treatments
 - Antibiotic (e.g., Rantidine)
 - Stress-Reduction





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The Placebo and the Placebo Effect

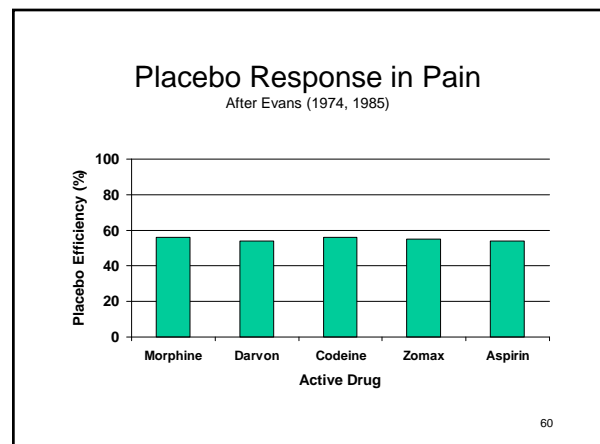
Shapiro & Shapiro (1997)

- Placebo
 - Any treatment... used for its ameliorative effect on a symptom or disease but... [which] is not specifically effective for the condition being treated.
- Placebo Effect
 - The nonspecific psychological or psychophysiological effect produced by a placebo



The “Jewel in the Crown” of Psychosomatics

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“Pharmacological” Properties of Placebo

Evans (1974)

- Severity
- Dose-Response Curve
- Time-Effect Curve
- Additive Effects
 - Drug Effects in Placebo Responders
- Patient Beliefs
 - Double Blind, Drug Effectiveness
- Physician Practices
 - Frequent Resort to Medications

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“Cosmetic” Properties of Placebo

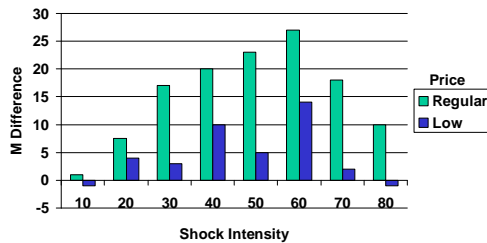
Evans (1974)

- Size
- Color
- Taste
- Delivery
- Cost

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Placebo Effect on Pain Ratings

Waber et al. (2007)



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Effects of Suggestion

- Hypnosis
- Symptom Provocation
 - Asthma
 - Allergies
- Hidden vs. Open Treatments

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Effect of Hypnotic Suggestion on Mantoux Reaction

Black (1963)

- Diagnostic Skin Test for Tuberculosis
 - Inject Purified Protein Derivative Tuberculin
 - Positive: Size of Induration
 - Raised, Hardened, Red Blister
- 4 Mantoux-Positive Patients
 - All Highly Hypnotizable
- “You will no longer react to the injection as you did before...no redness, no swelling, no heat, no itching, no pain...”

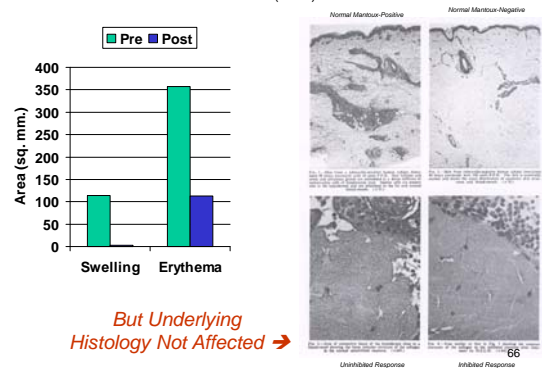


Essentials of Clinical Immunology

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Biopsy of Response Area

Black (1963)



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Psychosomatic Effects

- Stress and Disease
- Effects of Suggestion, Belief, Expectation
 - Hypnotic Analgesia
 - Psychosomatic Effects of Suggestion
- Effects of **Belief**
 - Platonov, *The Word as a Physiological and Therapeutic Factor* (1955)

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Three Kinds of Psychosomatic Effects

- On Mental State
- On Central Nervous System
- Outside Central Nervous System

- Integumentary System
- Skeletal System
- Muscular System
- Endocrine System
 - Psycho(neuro)endocrinology
- Cardiovascular System
- Lymphatic System
- Respiratory System
- Digestive System
- Urinary System
- Reproductive System
- Immune System
 - Psycho(neuro)immunology

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Is There Mind Without Body?

- 19th-Century Spiritualism
- Parapsychology
- Transpersonal Psychology

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19th-Century Spiritualism

Braude (2001); Weisberg (2005)

- Emanuel Swedenborg (1688-1772)
- Andrew Jackson Davis (1826-1910)
 - “The Poughkeepsie Seer”
- Spirits as “Disincarnate” Humans
- Fox Sisters (March 31, 1848)
 - Margaret, Kate, Leah
 - “Mr. Splitfoot”
 - “Charles B. Rousma”
 - Careers as Mediums



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Spiritualistic Practices

- Mediums (Clairvoyants)
 - Seances
 - Ouija Board, Chevreul Pendulum
 - Automatic Writing
 - Table-Rapping, Table-Turning
- Society for Psychical Research (1882, 1884)
- Seybert Commission (1887)
- Margaret's Confession (1888)
 - Recanted (1889), Died (1893)

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Parapsychology

- Study of “Psi” Phenomena
- Anomalous Processes of Information or Energy Transfer
 - Currently Unexplained in Terms of Known Physical or Biological Mechanisms
- Two Versions
 - Soft
 - Hard

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Typical “Psi” Phenomena

Tart, *The End of Materialism* (2009)

- Extrasensory Perception
 - Telepathy
 - Clairvoyance (Remote Viewing)
 - Precognition
 - Postcognition
- Psychokinesis (Telekinesis)
- Spiritual Healing (“Energy Medicine”)
 - Distant Healing
 - Contact Healing (Therapeutic Touch)

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Early Studies of Telepathy

J.B. Rhine, *New Frontiers of the Mind* (1937)

- Zener Cards



- Sender



- Receiver

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Problems of Parapsychology

National Research Council (1988)

- Outright Fraud
- Experimenter Bias
- Loose Controls
- Sensory Leakage
- Failures of Randomization
- Capitalization on Chance

“[A]dmitting even one instance of paranormal causation would overthrow virtually all the established laws and principles of science....”

APA Dictionary of Psychology, 2007

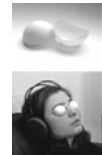
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“Ganzfeld” Procedure

Honorton (1974, 1977, 1985)



- Noise Reduction Model
 - ESP Entails a “Weak Signal”
 - Masked by Internal, External “Noise”
- Sender Concentrates on 1 Photo
- Receiver Guesses 1 of 4 Test Items
 - 25% Chance Hit Rate
- Restricted Sensory Environment
 - Reclining Chair
 - Homogeneous Visual Field
 - White Noise



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Analysis of 11 “Autoganzfeld” Studies

Bern & Honorton (1994)



Mean Effect Size = .162

Table 1
Outcome by Study

Study	Study/subject description	N subjects	N trials	N hits	% hits	Effect size η^2	z
1	Pilot	19	22	8	36	.62	0.99
2	Pilot	4	9	3	33	.60	0.25
3	Pilot	24	35	10	29	.55	0.32
101	Novice	50	50	12	24	.47	−0.30
102	Novice	50	50	18	36	.63	1.60
103	Novice	50	50	15	30	.55	0.67
104/105(a)	Novice	36	36	12	33	.60	0.97
104/105(b)	Juilliard sample	20	20	10	50	.75	2.20
201	Experienced	3	7	3	43	.69	0.69
301	Experienced	25	50	15	30	.56	0.67
302	Experienced	25	25	16	54*	.78*	3.04*
Overall (Studies 1–301)		240	329	106	32	.59	2.89

Note. All z scores are based on the exact binomial probability, with $p = .25$ and $q = .75$.
* Adjusted for response bias; the hit rate actually observed was 64%.

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The “Old Ganzfeld Database”

Storms & Ertel (2001)

- 28 Studies Reviewed by Honorton (1985)
- 11 Additional Studies Published 1982-1986
 - Missed by Honorton (1985, 1990)
 - Identified by Storms & Ertel (2001)
- Mean Effect Size = .227
 - Statistically Significant
 - Cohen’s (1988) Standards:
 - .00 - .10 “Trivial”
 - .11 - .35 “Small”
 - .35 - .65 “Medium”
 - .66 - 1.00 “Large”

Re-analysis of the Autoganzfeld Studies

Hyman (1994)



- Hyman-Honorton Guidelines (1986)
- Methodological Problems
 - Not Truly Independent
 - Failure to Replicate Earlier Effects
 - Obtained with Standard Ganzfeld Paradigm
 - Inadequate Randomization
 - Experimenter Prompting
- Effects on Hit Rate
 - Problematic Trials: HR = .471
 - Least Problematic Conditions: HR = .178

*Best Estimate of
Unbiased Hit Rate
= .275*

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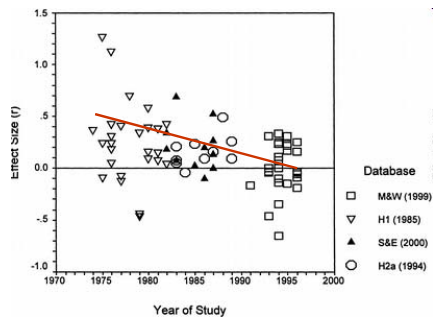
Further Ganzfeld Meta-Analyses

- Milton & Wiseman (1994)
 - 30 New Studies Since 1987
 - Presumably Following H-H Guidelines
 - Overall Effect Size = 0.013
- Storm & Ertel (2001)
 - Complete Database of 79 Studies
 - Ganzfeld & Autoganzfeld
 - Overall Effect Size = .138
 - 39 Studies in "Old Ganzfeld Database" = .227
 - 40 Studies in "New Ganzfeld Database" = .05
 - Caveats (Milton & Wiseman, 2001)
 - Include Studies Prior to Hyman-Honorton Guidelines
 - Usual Statistical Problems
 - Includes "Bidirectional" Psi

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A Secular Trend in Ganzfeld Research

Storm & Ertel (2001)



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"Survival of Consciousness"

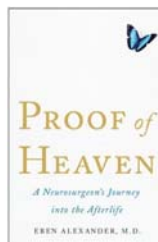
Schwartz (2002, 2005)

- Out-of-Body Experience (Tyrell, 1943)
 - Astral Projection
 - Dissociative Disorders
 - Derealization
 - Depersonalization
- Near-Death Experience (Moody, 1975)
 - OBE
 - Passage Through Tunnel
 - "Entering the Light"
 - Life Review

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NDEs in Popular Culture

Todd Burpo (2010); Neal (2012); Eben Alexander (2012)



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Prospective Study of NDEs

Von Lommel et al. (2001)

- 344 Patients
 - Clinically Dead
 - No Brainstem Electrical Activity
 - Resuscitated Following Cardiac Arrest
- 18% Experienced NDE
 - OBE, Tunnel, Light
- Radio Analogy
 - Brain Acts as a "Receiver" of Consciousness
 - Consciousness Independent of Receiver

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Is There Behavior Without Mind?

- Innate Behaviors
 - Reflexes
 - Spinal, Cranial
 - Taxes
 - Invertebrates
 - Instincts (Fixed Action Patterns)
 - Ethology
- Conditioning
 - Classical
 - Instrumental

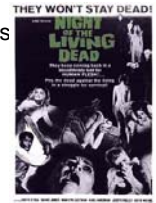


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Zombies

Campbell (1970); Kirk (1974); Chalmers (1996)

- Philosopher's Zombie
 - Physiologically Identical to Humans
 - Lack Conscious Experiences
 - Dennett's Zimboes
 - Zombie that Believes It Is Conscious
- Hollywood Zombies
 - Simply Lack Consciousness
 - Though They Might Evolve It?
 - Inspired by Haitian Zombies
 - "Undead", Lack Soul, Free Will



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Mind in Body, Body Without Mind

Neural Correlates of Consciousness
What Is the Difference that Makes Consciousness?

The Automaton Question
What is the Difference that Consciousness Makes?

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The Unbearable Automaticity of Being

Bargh & Chartrand (1999)

"[M]ost of a person's everyday life is determined not by their conscious intentions and deliberate choices but by mental processes that are put into motion by features of the environment and that operate outside of conscious awareness and guidance."

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Are We Automatons After All?



The Jaquet-Droz Automata:
The Draftsman, The Musician, and the Writer
1768-1774
Musée d'Art et d'Histoire, Neuchâtel, Switzerland

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