The Diagnosis of Mental Illness

Lecture 38
Psychopathology Defined

- Psych(o) - from Greek, *Psyche*, soul or mind
  - Mental Processes and Activities
    - Includes Behavior
      - Doctrine of Mentalism
- Pathology - from Greek, *pathos*, suffering
  - Deviations from Normal Structure, Function
- Medical Illnesses
  - Deviations from Normal Anatomical Structure
  - Deviations from Normal Physiological Function
Defining Psychological Normality
(A Prototype)
Bootzin et al. (1980)

• Accurate, Efficient Mental Function
  – Cognition, Emotion, Motivation, Behavior
• Self-Awareness
• Self-Control
• Self-Esteem
• Social Relations Based on Affection
• Productivity, Creativity
Defining Psychological Deviance
From (Presumed) Normality

Bootzin et. al. (1980)

• From Statistical Norms
  – Frequency Criterion
  – Positive Deviations?
    • IQ and Mental Retardation
  – All Negative Deviations?
    • Extraversion and Shyness
Defining Psychological Deviance From (Presumed) Normality

Bootzin et al. (1980)

• From Statistical Norms

• From Social Norms
  – Compliance Criterion
  – Variance Across Cultures
    • Political dissidents in Soviet Union, China
  – Variance Across Time within Cultures
    • Homosexuality
Defining Psychological Deviance From (Presumed) Normality

Bootzin et al. (1980)

• From Statistical Norms
• From Social Norms
• Personal Distress
  – Subjective Criterion
  – The Problem of Self-Perception
    • Schizophrenia, Personality Disorders
  – Ego-Syntonic vs. Ego-Dystonic Symptoms
Defining Psychological *Deviance*
From (Presumed) Normality
Bootzin et al. (1980)

- From Statistical Norms
- From Social Norms
- Personal Distress
- **Maladaptiveness**
  - Harmfulness Criterion
  - Criminal Behavior
    - The Insanity Defense
Psychological *Deviance* as Conceptual Prototype

- Presumptive Normality
  - Accurate, Efficient Mental Function
  - Self-Awareness
  - Self-Control
  - Self-Esteem
  - Social Relations Based on Affection
  - Productivity, Creativity

- Criteria for Deviance
  - Low Frequency
  - Noncompliance
  - Personal Distress
  - Maladaptiveness
Major Categories of Mental Illness

(Organization Differs from DSM-5)

1. Organic Brain Syndromes
2. Developmental Disorders
3. “Psychoses”
4. “Neuroses”
5. Psychophysiological (Psychosomatic) Disorders
6. Dissociative Disorders
7. Somatoform Disorders
8. Personality Disorders
9. Behavioral Disorders
10. “Problems in Living”
Organic Brain Syndromes

Insult, Injury, or Disease Affecting Brain

• Dementia
  – Alzheimer’s Disease
• Amnesic Syndrome
  – Korsakoff’s Syndrome
• Aphasia
  – Expressive (Broca’s)
  – Receptive (Wernicke’s)
Developmental Disorders

Abnormal Development Since Birth

• Mental Retardation
  – Goddard: Moron, Idiot, Imbecile
  – APA: Mild, Moderate, Severe, Profound
  – AAMR: Intermittent, Limited, Extensive, Pervasive Environmental Support

• Autism Spectrum Disorder
  – Autism
  – Asperger’s Syndrome

• Attention Deficit Hyperactivity Disorder
Psychoses

Gross Impairments in Reality Testing
“Organic” vs. “Functional”

- Schizophrenia
- Affective Disorder
  - Bipolar Disorder
    - Manic-Depressive Illness
  - Unipolar Disorder
    - Mania
    - Depression
Neuroses

Anxiety

- Phobic Disorders
- Anxiety Disorder
  - Panic Disorder
- Obsessive-Compulsive Disorder
- Post-Traumatic Stress Disorder
Psychophysiological Disorders

“Psychosomatic” Disorders

Organ Damage
Actual Damage to Internal Organs

• “Psychosomatic” Ulcers
• Coronary Heart Disease
  – “Type A” Behavior
Dissociative Disorders

Disruptions in Consciousness

Awareness and/or Control

• Affecting Memory / Identity
  – Functional/”Psychogenic” Amnesia
  – Fugue
  – Multiple Personality Disorder
    • Dissociative Identity Disorder

• Affecting Sensation / Perception / Action
  – “Hysteria” / Conversion Disorder
    • Functional Blindness, Deafness, Anesthesia
    • Functional Paralysis
Somatoform Disorders

Physical Complaints But No Organic Cause

• Hypochondriasis
• Somatization Disorder
  – Briquet’s Syndrome (“Hysteria”)
• Somatoform Pain Disorder
• Body Dysmorphic Disorder
Personality Disorders

Deeply Ingrained
Since Childhood or Adolescence

“Ego-Dystonic” vs. “Ego-Syntonic” Symptoms

• Antisocial Personality Disorder
  – Psychopathic Personality Disorder
  – Psychopathy, Sociopathy

• Borderline Personality Disorder
Behavioral Disorders

Specific Maladaptive Behaviors
No Other Signs of Mental Illness

- Alcoholism, Alcohol Abuse
- Drug Addiction, Substance Abuse
- Addictions to Sex, Gambling, etc.
“Problems in Living”
After Szasz, *the Myth of Mental Illness* (1960)

Not Necessarily Mental Illnesses
Treated by Mental Health Professionals

- Marital Stress
- Sexual Dysfunction
- Adjustment Problems
- Stress Reactions
- Vocational Quandaries
Mental Illness
Analogous to Physical Illness

• Abnormalities in *Mental* Structure, Function
  – Cognition
    • Alzheimer’s Disease, Dementia
    • Schizophrenia
  – Emotion
    • Anxiety Disorders
    • Affective Disorders (Mania, Depression)
  – Motivation
    • Psychopathy (Antisocial Personality Disorder)

• Results in Abnormal, Maladaptive Behavior
Medical Model of Psychopathology
Siegler & Osmond (1974); Kihlstrom (2002)

• Mental Illness Analogous to Medical Illness
  – Mental Patient, Mental Hospital, Mental Hygiene
    • Diagnosis, Treatment, Rehabilitation
    • Acute vs. Chronic
  – Symptoms Caused by Underlying Pathology
    • Signs Observed by Professional
  – Syndromes
    • Co-Occurring Symptoms
  – Diseases
    • Syndromes with Known Cause
Medical Model of Psychopathology
Siegler & Osmond (1974); Kihlstrom (2002)

• **No Assumption of Organic Cause**
  “Behind every twisted thought there lies a twisted molecule”

• **Mental Illness Has “Natural” Cause**
  – Discovered Through Scientific Method

• **Not Demonic Possession**
  – Supernatural Model

• **Not Willful Behavior**
  – Moral Model
Diagnosis as Categorization

• Diagnosis Classifies Patient
  – Symptoms are Features
  – Syndromes are Categories

• Diagnosis as Feature-Matching
  – Match Patient’s Symptoms to Syndrome

• *Diagnostic & Statistical Manual (DSM)*
  – American Psychiatric Association
  – “Official” List of Syndromes, Features
    • Used for Classifying Mental Illnesses
19th-Century Psychiatric Diagnosis

• Jean-Etienne Dominique Esquirol (1772-1840)
  – Insane
  – Mentally Deficient
  – Criminal

• Emil Kraepelin (1856-1926)
  – Dementia Praecox (Schizophrenia)
  – Manic-Depressive Illness (Affective Disorder)

• Pierre Janet (1859-1947)
  – Hysteria (Dissociative Disorders)
  – Psychasthenia (Anxiety, Depression)
Growth of the Psychiatric Nosology
American Psychiatric Association
Diagnostic and Statistical Manual of Mental Disorders

DSM-I  1952
DSM-II  1968
DSM-III  1980
DSM-III-R  1987
DSM-IV  1994
DSM-5  2013
Diagnoses as Proper Sets
Symptoms as Defining Features
Bleuler (1911)

The “4 As” of Schizophrenia
- Association Disturbance
- Anhedonia
- Ambivalence
- Autism

Schizophrenic Subtypes
- Simple
- Hebephrenic
- Catatonic
- Paranoid
Hierarchical Organization of Psychopathology

Mental Illness

Psychosis

Manic-Depressive Illness

Schizophrenia

Simple

Hebephrenic

Catatonic

Paranoid

Neurosis
Problems with Diagnoses as Proper Sets

• Partial Expression
  – Schizoid Personality Disorder
  – Schizotypal Personality Disorder
  – Paranoid Personality Disorder

• Combined Expression
  – Pseudoneurotic Schizophrenia
  – Pseudopsychopathic Schizophrenia
  – Schizoaffective Disorder
  – Borderline Personality Disorder
Diagnoses as Fuzzy Sets


- Characteristic Symptoms
  - Textbook Cases as Prototypes
- Heterogeneity within Category
  - Family Resemblance
- No Clear Boundaries
# Schizophrenia

**DSM-5 (2013)**

## 2 or More Symptoms
- Delusions
- Hallucinations
- Disorganized Speech
- Grossly Disorganized or Catatonic Behavior
- Negative Symptoms
  - Diminished Emotional Expression
  - Avolition

## Plus
- Postmorbid Decline
  - Occupational
  - Social
  - Self-Care
- Duration 6+ Months
- Subtypes?
  - Acute vs. Chronic
  - First vs. Multiple Episodes
  - Type I vs. Type II
  - Positive vs. Negative Symptoms
Major Depressive Disorder

*DSM-5 (2013)*

5+ Symptoms Over 2 Weeks

- Depressed Mood
  - and/or
- Diminished Interest
- Weight Loss
- Insomnia or Hypersomnia
- Psychomotor Agitation or Retardation
- Loss of Energy or Fatigue
- Worthlessness or Guilt
- Inability to Concentrate or Indecisiveness
- Thoughts of Death or Suicide
Psychiatric Diagnosis as Judgment Under Uncertainty
Cantor et al. (1980), Cantor & Genero (1986)

• Balance of Symptoms
  – Characteristic of Target Category
  – Characteristic of Alternative Categories

• Textbook Cases as Category Prototypes
Psychiatric Diagnosis
Beyond Symptoms and Signs
Kihlstrom (2002); Cuthbert & Insel (2010)

• Neural Structure and Function
  – Subtle Lesions in Brain Tissue
  – Abnormalities in Neurotransmitter Function
  – Dysregulation in Activity of Neural Circuitry

• Psychopathology
  – Deficits in Psychological Function
    • Basic Cognitive, Emotional, Motivational Processes
  – Beliefs, Expectations, Behaviors
    • Acquired Through Experience
Experimental Psychopathology

Lecture 39
The Symptoms Are Not the Disease

• Vocabulary of the Medical Model
  – Symptoms
    • Superficial Manifestations of Underlying Pathology
  – Syndromes
    • Clusters of Symptoms that Tend to Co-Occur
  – Disease
    • Syndrome Whose Underlying Pathology is Known

• Underlying Pathology
  – Revealed by Laboratory Research

Scientific Medicine
Treats Pathology, Not Symptoms
Beyond Symptoms to Underlying Pathology

**Medicine**
- Anatomical Lesions
- Physiological Malfunction
- Infection
  - Virus, Bacteria, Fungi

**Psychopathology**
- Psychological Deficits
  - Mental Structures
  - Mental Processes
  - Neural Substrates?
- Maladaptive Mental Contents
  - Thoughts, Beliefs, Expectations
  - Feelings, Desires
  - Product of Social Learning
Laboratory Studies of Psychological Deficit

• Emil Kraepelin in Wundt’s Laboratory
  – Donders’s Reaction-Time Technique

• Attentional Deficit in Schizophrenia
  – Breakdown in Selective Attention
    • Distractibility
    • Inability to Filter Out Irrelevant Ideas
  – Consequences
    • Language Disorder
    • Social Withdrawal
The Multi-Store Model of Memory

After Waugh & Norman (1965); Atkinson & Shiffrin (1968)
Iconic Memory in Schizophrenia

- **Iconic Memory**
  - Very-Short-Term Sensory Store
  - Prelude to Storage in Short-Term or Working Memory
    - Available for Further Processing

- **Sperling Paradigm**
  - Decays < 1 Second
  - Displacement << 1 Second

- **Mask Displaces Iconic Trace**
  - Stimulus Onset Asynchrony
    - Between Onset of Target and Onset of Mask
Backward Masking

*Is there a “T”?*

Fixation Point

Target Array

- A A A
- A A T
- A A A

Stimulus Onset Asynchrony

Time (1000 msec)

Mask

- W W W
- W W W
- W W W
Retrieval from Iconic Memory

Saccuzzo & Schubert (1981)

![Bar chart showing the number of correct responses against Stimulus-Onset Asynchrony (Milliseconds) for Schizophrenic and Control groups.](chart.png)
Working Memory in Schizophrenia
Goldman-Rakic (1994); Barch (2003)

• Maintains Information in an Active State
  – Permits Further Information Processing
  – Critical for Selective Attention
    • Focusing on Task-Relevant Information
    • Inhibition of Task-Irrelevant Information

• Critical for “Higher” Cognitive Functions
  – Memory Encoding and Retrieval
  – Reasoning and Problem-solving
  – Language
Working Memory in Schizophrenia
Metzak et al. (2012)

- **Sternberg Paradigm**
  - Memorize Study Set
    - Varies from 2-8 Letters
  - Find Target
    - Accuracy, Response Latency

- **Schizophrenics vs. Normals**
  - Matched for Demographic Variables
  - Patients Taking Medication
Working Memory in Schizophrenia
Metzack et al. (2012)

% Correct
- Study Set Size
- Control
- Schizophrenic

Response Latency (msec)
- Study Set Size
- Control
- Schizophrenic
Working Memory in Schizophrenia
Goldman-Rakic (1994); Barch (2003)

• Components
  – Modality-Specific Buffers
    • Support Rehearsal
      – Hold Information in Active State
    • Inferior/Posterior Prefrontal Cortex
  – Central Executive
    • Guides Information-Processing
      – Manipulation/Transformation of Information
    • Dorsolateral Prefrontal Cortex
      – Supported by Dopamine System?

• Represent, Maintain Contextual Information
  – Relevant to Current Tasks
Eye-Tracking and Attention
Holzman et al. (1981)

• Follow swinging pendulum with eyes
  – Smooth Pursuit Eye Movements

• Eye-Tracking Dysfunctions
  – Interruptions of SPEMs
  – Saccadic Tracking
  – Saccadic Intrusions

• Eye-Tracking and Attention
  – Peripheral, Psychophysiological Index
Smooth Pursuit Eye Movements
Holzman et al. (1981)

Normal Subject
Direct
Derivative

A = Standard EOG; B = Infrared Reflection

Schizophrenics

A = Standard EOG; B = Infrared Reflection
Eye-Tracking in Psychosis
Holzman et al. (1981)

![Bar chart showing percentage of anomalous subjects in schizophrenia and affective disorder categories for patients and parents. The chart indicates a higher percentage of anomalous subjects in the schizophrenia category compared to affective disorder for both patients and parents.]
Components of Emotion in Schizophrenia
Kring & Neale (1998)

• Anhedonia
  – Flat/Blunted Affect
  – Inappropriate Affect

• Emotional Films
  – Positive, Negative, Neutral

• Components of Emotion
  – Subjective: Self-Rating
  – Overt Behavior: Facial Expressions
  – Covert Physiological: Skin Conductance
Facial Expressions of Emotion
Kring & Neale (1998)

<table>
<thead>
<tr>
<th></th>
<th>Schizophrenics</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facial Expression</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td>1.30</td>
<td>4.90</td>
</tr>
<tr>
<td>Intensity</td>
<td>0.50</td>
<td>0.92</td>
</tr>
<tr>
<td>Duration</td>
<td>5.65</td>
<td>27.74</td>
</tr>
<tr>
<td>Skin Conductance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>2.27</td>
<td>0.32</td>
</tr>
</tbody>
</table>
Self Reports of Emotional Experience
Kring & Neale (1998)

![Bar chart showing the self reports of emotional experience for schizophrenics and controls. The chart compares positive and negative emotions. The y-axis represents the emotional intensity, ranging from 0 to 4, and the x-axis represents the emotional category (Positive, Negative). The chart indicates that schizophrenics report higher levels of both positive and negative emotions compared to controls.](image-url)
Experimental Neurosis in Animals
Shenger-Kristovnikova (c. 1927); Pavlov (1941); Gantt (1944)
Mineka & Kihlstrom (1978)

• Discrimination Learning
  – Salivary Conditioning
    • CS+ (Circle/Ellipse)
    • CS- (Ellipse/Circle)
  – Test Stimulus: 9:8 Ratio

• Response to Difficult Discrimination
  – Agitation
  – Loss of Discriminative CR
  – Impaired Savings in Relearning
Conditioning Models of Phobias, Obsessions, and Compulsions

Wolpe (1952, 1958)

• Phobias as Conditioned Fear Responses
  – Observational Learning vs. Direct Experience
  – Preparedness

• Obsessions as Generalized Fear Responses
  – Similar Behavior During Conditioning Experience

• Compulsions as Avoidance Behaviors
  – Reduce Conditioned Fear
  – Resistance to Extinction
Laboratory Models as Theories of Psychopathology
Maser & Seligman (1977)

• Symptoms
  – Phobia as Conditioned Fear

• Causes
  – But Often No Conditioning Experience!
  – Observational/Vicarious Learning

• Cures
  – Systematic Desensitization as Extinction

• Prevention
  – Prevent Fearful Encounter/Social Learning

• Biological Substrates
  – Heart-Rate Acceleration as a Measure of Fear Response
Parallels Between Learned Helplessness and Depression
Seligman (1975)

• Symptoms
  – Passivity, Negative Expectations
  – Lack of Aggression
  – Loss of Appetite, Sexual Interest

• Life history

• Treatment
  – Change Expectations
  – Antidepressant Drugs

• Prevention
  – Mastery Experiences

• Biological Substrates
  – Norepinephrine Depletion
Revising the Helplessness Theory of Depression
Abramson, Seligman, & Teasdale (1978); Abramson, Metalsky & Alloy (1989)

• Exposure to Uncontrollable Aversive Events
  – But Often Angry, Not Depressed

• Dimensions of Causal Attribution
  – Internal vs. External
  – Stable vs. Variable
  – Global vs. Specific
Hopelessness Theory of Depression
Abramson, Seligman, & Teasdale (1978); Abramson, Metalsky & Alloy (1989)

• Depression as Hopelessness
  – Uncontrollable Aversive Events
  – “Depressogenic” Causal Attributions
    • Internal, Stable, Global

• “Illusion of Control”
  – Depressive Realism

• “Hopelessness” Subtype of Depression
  – Attributional Style as Risk Factor
  – Other Subtypes Have Other Causes
Dopamine Hypothesis of Schizophrenia

• Excess Activity of Dopamine
  – Neurotransmitter
    • Active in Dorso-Lateral Prefrontal Cortex
  – Causes Attentional Deficit, Symptoms

• Phenothiazine Treatment of Schizophrenia
  – Blocks Neural Receptors for Dopamine
    • Impairs Uptake by Post-Synaptic Neurons

• Post-Mortem Data, Brain-Imaging
  – Increased Brain Dopamine?
  – Increased Dopamine Receptors?
Amphetamine Psychosis
A Laboratory Model of Schizophrenia?
Snyder (1972, 1976)

• Amphetamines
  – Benzedrine (Amphetamine)
  – Dexedrine (Dextroamphetamine)
  – Methedrine (Methamphetamine)

• Amphetamine Psychosis
  – Habitual, Heavy Use
  – Hallucinations
  – Thought Disorder
  – Paranoid Symptoms
Psychopathy: Linking Laboratory Models to Psychological Deficits

• Response to Aversive Stimulation
  – Failure of Avoidance Learning
  – No Response to Punishment

• Septal Lesions in Rats
  – Freezing When Punished
  – Passive Avoidance
  – Delay of Gratification

Failure to Suppress Habitual Responses in Order to Avoid Aversive Consequences
Hypnosis and “Hysteria”
Kihlstrom (1979)

• Suggested Alterations in Consciousness
  – Perception
    • Hypnotic Blindness, Deafness, Analgesia
      – Parallel Symptoms of Conversion Disorders
  – Memory
    • Posthypnotic Amnesia
      – Parallels Symptoms of Dissociative Disorders

• Dissociations in Hypnosis and “Hysteria”
  – Explicit and Implicit Perception, Memory
    • Parallel Findings in Dissociative, Conversion Disorders
Connecting the Clinic to the Lab
Maher (1966); Kihlstrom & McGlynn (1991)

• Beyond Symptoms to Pathology
  – Underlying Causes
  – Correlated Biological Processes
• New Ways of Formulating Theory
  – Working Laboratory Simulations
• New Diagnostic Tools
  – Laboratory Tests, Not Symptom Checklists
Diathesis and Stress

Lecture 40
Origins of Mental Illness

• Somatogenic
  – “Plagues and Tangles” in Alzheimer’s Disease
  – Dopamine Hypothesis of Schizophrenia
  – Monoamine Hypothesis of Depression
    • Norepinephrine, Serotonin

• Psychogenic
  – Post-Traumatic Stress Disorder
  – Phobias as Acquired Fear
  – Compulsions as Avoidance Learning
  – Learned Helplessness in Depression
The Nature of Psychopathology

**Psychological Deficits**
- Schizophrenia
- Childhood Autism
- Depression
- Attention-Deficit Disorder

**Maladaptive Social Learning**
- Phobias
- Obsessive-Compulsive Disorder
- Depression
- Psychophysiological Disorders
Diathesis-Stress Model of the Etiology of Mental Illness

Meehl (1962); Rosenthal (1963)
Monroe & Simons (1991); Belsky & Pleuss (2009)

• Diathesis
  – Predisposition
  – Vulnerability (“At Risk”)
  – Adaptation
    • “Good” vs. “Poor” Premorbid Adjustment

• Stress
  – Challenge to Current Level of Adaptation
  – Precipitates Acute Episode
    • But Only in Vulnerable Individuals
Diathesis-Stress Independence (Additive Model)

- Diathesis
- Stress
  - Low
  - High

Probability of Acute Episode ($p$) vs Diathesis (Low vs High) and Stress (Low vs High)
Diathesis-Stress Interaction
(Multiplicative Model)

$\Pr(\text{Acute Episode})$

Diathesis

Stress

Low

High

0

10

20

30

40

50

60

70

80

90

100
Patterns of Diathesis and Stress

• Substantial Diathesis: “High Risk”
  – Little Stress Required for Acute Episode
  – Poor Premorbid Personality

• Catastrophic Stress
  – Acute Episode Even in “Low-Risk” Individuals
  – Good Premorbid Personality

• Diathesis Within Normal Limits
  – Episode a Function of Stress

• Stress Within Normal Limits
  – Episode a Function of Diathesis

Diathesis is a Specific Predisposition
## Concordance Rates for Psychopathology

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>MZ</th>
<th>DZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizophrenia</td>
<td>38%</td>
<td>14%</td>
</tr>
<tr>
<td>Bipolar Affective Disorder</td>
<td>72%</td>
<td>28%</td>
</tr>
<tr>
<td>Unipolar Affective Disorder</td>
<td>40%</td>
<td>11%</td>
</tr>
</tbody>
</table>

Genetic Endowment = “At Risk”
But Not Decisive
The Genain Quadruplets
Rosenthal (1963)

• “Dire Birth”
  – Nora
  – Iris
  – Myra
  – Hester
Environmental Contributions to Schizophrenia

• Socioeconomic Status
  – *Social Drift*, not Sociogenesis

• Coping Failures
  – Loss, Frustration

• Family Maladjustment
  – Adoption of “At Risk” Probands
Finnish Adoptive Family Study of Schizophrenia
Wahlberg, Wynn, et al. (1997)

• 167 Women Hospitalized for Schizophrenia
  – 183 Probands Given Up for Adoption
• 202 Women Hospitalized for Other Illnesses
  – 204 Probands Given Up for Adoption
• Psychological Testing of Adoptive Families
  – “Communication Deviance”
• Psychological Testing of Adoptees
  – Index of Thought Disorder
Communication Disorder and Thought Disorder

Wahlberg, Wynne, et al. (1997)

Graph showing the relationship between Communication Disorder and Thought Disorder. The graph compares High Risk and Control groups. The x-axis represents Communication Deviance, while the y-axis represents Thought Disorder. The High Risk group shows an increase in Thought Disorder with an increase in Communication Deviance, whereas the Control group remains relatively stable.
Diathesis and Stress in Adolescent Conduct Disorder

Dunedin Multidisciplinary Health and Development Study
Caspi et al. (2002)

- Adolescent Conduct Disorder in Boys
  - Aggression, Antisocial Behavior

- Diathesis: MAOA Gene
  - Promotes Monoamine Oxidase - A
    - Located on X Chromosome
    - Metabolizes Many Neurotransmitters
    - Linked to Aggression in Mice, Humans

- Stress: History of Maltreatment
  - Initiates “Cycle of Violence”
MAO-A, Maltreatment, and Adolescent Conduct Disorder

Caspi et al. (2002)

Maltreatment
- None
- Probable
- Severe

% of Subjects

MAOA Activity

Low
High
Diathesis and Stress in Depression
Dunedin Multidisciplinary Health and Development Study
Caspi et al. (2003)

• Major Depressive Illness

• Diathesis: 5-HTT Gene
  – Located on Chromosome 17
    • 2 Alleles, “Short” and “Long”
      – 4 Genotypes: SS, SL or LS, and LL
  – Serotonin Transporter
    • Serotonin Linked to Depression in Humans
    • Efficacy of SSRIs like Prozac, Zoloft

• Stress: Stressful Life Events
  – Occurring Between Age 21-26
5-HTT, Life Stress, and Depression
Caspi et al. (2003)

% of Subjects

"Short"

"Long"

5-HTT Genotype

Stress Events

None

1

2

3

4+

5-HTT Genotype
• “Psychotic” Symptoms at Age 26
  – “Schizophreniform” Hallucinations/Delusions

• Diathesis: COMT Gene
  – Located on Chromosome 22
    • 2 Alleles, “MET” (Methionine) and “Val” (Valine)
      – 4 Genotypes: MetMet, MetVal or ValMet, ValVal
  – Involved in Metabolism of Dopamine
    • MetMet, Fastest Breakdown; ValVal, Slowest Breakdown
  – Linked to Schizophrenia

• Stress: Adolescent Marijuana Use
  – At Least Once Per Month Prior to Age 18
COMT, Marijuana Use, and Psychosis
Caspi et al. (2005)

% of Subjects

COMT Genotype

MetMet  Met/Val  ValVal

No Drug Use  Drug Use

14 12 10 8 6 4 2 0
5-HTT and Depression: Current Status
Caspi et al. (2010); Karg et al. (2011)

- Gene x Environment Interaction Controversial
  - Some Studies Failed to Replicate
  - Assessment of Stress

- 56 Published Studies \((N = 40,749)\)
  - Overall Confirmation of Interaction \((p = .00002)\)
    - Short Allele More Sensitive \((42/56)\)
    - Long Allele More Sensitive \((6/56)\)
    - No Difference \((8/56)\)

- Nature of Stress
  - Stressful Life Events
  - Childhood Maltreatment
  - Life-Threatening/Chronic Medical Conditions
Examples of Diathesis and Stress

• Schizophrenia and Unipolar Affective Disorder
  – Genetic Component
  – Nonshared Environment – Communication Deviance

• Adolescent Conduct Disorder
  – MAOA Activity
  – History of Maltreatment

• Depression
  – 5-HTT Allele (Short)
  – Stressful Events

• Pathological Shyness
  – 5-HTT Allele (Short)
  – Social Support
Diathesis and Stress in Psychosomatic Ulcers

Overmier & Murison (2000)


- **Diathesis**
  - Bacterial Infection
    - *helicobacter pylori*

- **Stress**
  - Prolonged Emotional Stress
    - Autonomic Nervous System activation

- **Laboratory Model in Rats**
  - *h. pylori* Infection
  - Unpredictable, Uncontrollable Shock
Diathesis and Stress in Phobias
Mineka & Zinbarg (2006)

• Stress
  – Fear Conditioning, But…
    • History Not Always Positive
    • Phobias are Not Arbitrary

• Laboratory Model in Monkeys
  – Observational Fear Conditioning
    • Exposure to Snakes but not to Flowers

• Preparedness Argument
  – Evolved Predisposition as Diathesis
    • Fear Dark, Heights, Open Spaces, Certain Animals
Diathesis often Biological, and Stress often Psychological, *but* Stress Can Be Biological

- Birth Complications in Schizophrenia
  - Prenatal
    - Exposure to Viruses
    - Malnutrition
    - Short Gestation, Low Birth Weight
  - Perinatal
    - Birth Complications

**But These Factors Do Not Inevitably Give Rise to Mental Illness**

Nor Are They Specific to Schizophrenia
Diathesis often Biological, and Stress often Psychological, but Diathesis Can Be Psychological

**Cognitive Theory of Depression**

Beck (1967)

- **Depressogenic Schemata**
  - Negative View of Self
  - Negative View of the World
  - Negative View of the Future

“I’m no good, the world is hostile, and the future is bleak.”
Diathesis often Biological, and Stress often Psychological, but Diathesis Can Be Psychological

Hopelessness Theory of Depression
Abramson & Alloy (1989)

- Learned Helplessness Theory of Depression
- Depressive Attributional Style
  - Stable vs. Variable
  - Internal vs. External
  - Global vs. Specific

“I’m always responsible for all the bad things that happen to me”
Diathesis and Stress in Depression

• Biological Stress
  – Sudden Changes in Hormonal Environment
    • e.g., Pregnancy, Parturition, Menopause
  – Behavioral Consequences
    • Altered Mood State
    • Reduction in Activity Levels

• Psychological Diathesis
  – Depressogenic Schemata, Attributional Style
    • Affect Interpretation of Changes in Mood, Activity
    Hormonal Changes, Interpretation of Effects
    Can Combine to Cause Episode of Depression
Diathesis and Stress as Person-Situation Interaction

• Diatheses are Internal, Personal Factors
  – Origins in Genetic Endowment
  – Origins in History of Social Learning

• Stressors are Features of the Environment
  – Biological in Nature
  – Psychosocial in Nature

Episodes of Mental Illness Emerge from the Interaction of the Person and the Environment
Treatment of Mental Illness

Lecture 41
Intervention in Psychopathology

• Diathesis-Stress Framework for Etiology

• Implications for Intervention
  – Eliminate/Reduce Diathesis
  – Eliminate/Reduce Stressors

• Complete Cures Eliminate *Pathology*
  – Not Enough to Suppress Symptoms
  – Address *Both* Diathesis and Stress

• In Absence of Cure
  – Amelioration of Symptoms
  – Enhance Coping with Chronic Condition
Passive Treatment of Mental Illness
Grob (1973, 1994)

- Custodial Care
  - “Warehousing” the Mentally Ill
    - Pennsylvania Hospital (1751)
    - New York Hospital (1771/1791)
    - Virginia Asylum (1769/1786)

- The “Rest Cure”
Active Treatment of Mental Illness
Grob (1973, 1994)

• Psychotherapy  (Breuer & Freud, 1893-1895)
  – Correct, Cope with Psychological Deficits
  – Alter Maladaptive Mental Functions, Contents
  – Change Maladaptive Behavior

• Biological Therapy
  – Correct Presumed Biological Disorder
    • Psychosurgery  (Moniz, 1935)
    • Electroconvulsive Therapy  (Meduna, 1934)

• Medications
  – Thorazine (Chlorpromazine, 1950)
  – Librium (Chlordiazepoxide, 1957)
Drug Treatments for Schizophrenia

• Major Tranquilizers
  – Phenothiazines
    • Thorazine, Stelazine, Prolixin, Mellaril
    • Decrease dopamine levels
  – Butyrophenones
    • Haldol
  – Thioxanthenes
    • Navane

• “Atypical” Antipsychotics
  • Clozaril, Risperidal, Zyprexa, Abilify
Drug Treatments for Depression
Also Used for Anxiety Disorder

• Tricyclic Antidepressants
  – Tofranil, Elavil, Sinequan
  – Increase Norepinephrine, Serotonin

• MAO Inhibitors
  – Nardil, Parnate
  – MAO deactivates Norepinephrine, Serotonin

• Selective Serotonin Reuptake Inhibitors
  – Prozac, Zoloft, Paxil, Celexa
  – Increase Serotonin Levels at Synapse
Drug Treatments for Anxiety Disorder
Also Used for Phobias, Panic Disorder, Depression

• Barbiturates
  – Nembutal, Seconal

• Propanediols
  – Miltown, Equanil

• Benzodiazepines
  – Librium, Valium, Xanax

• “Atypical” Anxiolytics
  – Buspar
A “Pharmaceutical Revolution” in Mental Health?

• Effectiveness
  – Symptom Relief
  – De-Institutionalization

• Theoretical Relevance
  – Supports roles for neurotransmitters
    • Phenothiazines, Schizophrenia, Dopamine
    • Tricyclics, Depression, Monoamines
    • Benzodiazepines, Anxiety, GABA
  – Attack Biological Bases of Psychological Deficits
    • (At least in theory)
“Empirical” Drug Treatments
Poolsup et al. (2000); Smith & Farah (2011)

• Lithium Carbonate for Bipolar Disorder

• Paradoxical Effect of Ritalin for ADHD
  – Paradoxical Effect of Amphetamine
  – “Smart Pills”: Cognitive Enhancers for Everyone?
Problems with Pharmacotherapy

• Side Effects
  – “Parkinsonism”, Tardive Diskinesia
  – “Dry Mouth”, Other Annoyances

• Lack of Specificity
  – SSRIs, Depression and Anxiety
  – Placebo Effects

• Do Not Cure the Illness
  – Relapse if Medication Discontinued
  – Help Manage Chronic Illness
    • Analogy to Insulin for Diabetes?
Psychotherapy
Breuer & Freud (1893-1895); Freud (1915-1917, 1933)

• “The Talking Cure”
  – Essentially Educational in Nature
    • Acquire New Beliefs, Behaviors
    • Through Learning, Reflection

• Change Person’s Mental States
  • Beliefs, Feelings, Desires

• Change Behavior

“Hysterics Suffer from Reminiscences”
Breuer & Freud, *Studies on Hysteria* (1893-1895)
Pharmacotherapy and Psychotherapy Compared

• Pharmacotherapy
  – Attempts to Alter the Mind *Indirectly*
    • By Altering the Chemistry of the Brain

• Psychotherapy
  – Attempts to Alter the Mind *Directly*
    • Through Learning, Thinking
Classical Psychoanalysis
A. Freud (1936); Horney (1945); Sullivan (1953)

- Unconscious Conflicts
  - Primitive Sexual and Aggressive Impulses
  - Conflict with Reality, Morality
- Defenses Against Anxiety
  - Repression
- “Return of the Repressed”
  - Symptoms of Neurosis
- Insight Into Unconscious Motives
Psychodynamic Psychotherapy
A. Freud (1936); Horney (1945); Sullivan (1953)

• “Neo-Freudian” Psychoanalysis
• Insight-Oriented
  – Unconscious Conflicts
    • In “Real World”
  – Defenses Against Anxiety
    • Based in Reality Not Fantasy
  – Relationships with Parents

• Interpersonal Therapy
Cognitive-Behavioral Psychotherapy
Wolpe (1958); Ellis (1962); Beck (1967)

• Behavior Therapy
  – Behavior Modification
  – Focus on Symptom Modification
    • “The Symptoms Are the Disease”
  – Symptoms as Learned Behaviors

• Cognitive Therapy
  – Change Maladaptive Thoughts, Beliefs

  Focus on “Here and Now”
  vs. “There and Then”
“Humanistic” Psychotherapy
Rogers (1951); Frankl (1959)

• Existential Therapy (Logotherapy)
  – Meaning in Life

• Client-Centered Therapy
  – Non-Directive
  – Unconditional Positive Regard
  – Self-Actualization (Maslow)

“Patient” as “Client”
Exposure Therapies
Wolpe (1958); Stampfl (1967)

• Systematic Desensitization
  – Graded Exposure to Feared Object

• Implosion Therapy (Flooding)
  – Highest Level of Exposure
  – Prevent Normal Coping Responses

• Alleviation of Anxiety
  – Extinction
  – Acquisition of Adaptive Coping Behaviors
Cognitive Restructuring
Ellis (1962); Beck (1967)

• Alter Depressogenic Schemata
  – Negative Beliefs About Self, World, Future
    • Arbitrary Inference
    • Selective Abstraction
    • Overgeneralization, Magnification, Minimization
  – Persuasion; Arrange Success Experiences

• Alter Depressogenic Attributional Style
  – Lead to Helplessness, Hopelessness
  – More Realistic Causal Attributions
Relaxation Therapies
Benson (1975)

If You Can’t Remove the Stressor…
Change the Response!

• Relaxation Training
  – Modify Autonomic Responses to Stress
• Meditation ("Transcendental" or "Mindful")
• Biofeedback
  – Electromyogram
  – Electrocardiogram

Iowa State University
Social Skills Training
Salter (1961); Argyle (1974); Kaplan (1975); Dodge (1983)

- Social Competence
- Assertiveness Training
  - Assertiveness Problems
  - Public-Speaking Anxiety
- Sex Therapy
  - Maintaining Arousal
  - Achieving Orgasm
But Does Psychotherapy Work?

- The “Woody Allen Bugaboo”
- Eysenck’s 1952 Review
  - Psychoanalysis
  - Other Psychodynamic Approaches
- Pharmacotherapy
Evidence-Based Practice
Institute of Medicine (2001); McFall (1991); Chambless & Ollendick (2001)

• Modeled on Evidence-Based Medicine
  – Stimulated by “Managed Care”
    • Test Traditional Beliefs, Practices
    • Evaluate Innovative Treatments
  – Randomized Clinical Trials for Drugs
    – Comparison with Placebo, “Standard of Care”

• Objective, Quantitative Assessment

• Comparison Group
  – No Treatment, Placebo
  – Traditional Practice, “Standard of Care”
Effectiveness of Psychotherapy
(Compared to Untreated Controls)
Smith & Glass (1977); Smith et al. (1980)

<table>
<thead>
<tr>
<th>Treatment Type</th>
<th>%ile</th>
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<tbody>
<tr>
<td>Psychodynamic</td>
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<tr>
<td>Gestalt</td>
<td>72</td>
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<tr>
<td>Client-Centered</td>
<td>71</td>
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<tr>
<td>Transactional Analysis</td>
<td>74</td>
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<tr>
<td>Systematic Desensitization</td>
<td>85</td>
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<tr>
<td>Behavior Modification</td>
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<tr>
<td>Cognitive-Behavioral</td>
<td>88</td>
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Effectiveness of Psychotherapy: Is a “Dodo Bird” Verdict Warranted?
Luborsky et al. (1975)

Alice’s Adventures in Wonderland
(Lewis Carroll, 1865)
Caucus-Race

“Everyone has won and all must have prizes”
Comparisons of “Effect Size”
Cohen (1977)

• Difference between mean outcomes
  – Expressed in Standard Deviation (SD) Units
    • An Effect Size of 1.0 means that the average subject in the experimental group scored 1 SD higher than the average subject in the control group

• Classification of Effect Sizes
  – Small \(d = .20\)
  – Medium \(d = .50\)
  – Large \(d = .80\)
Psychotherapy Comparison Revisited
Smith & Glass (1977); Smith et al. (1980)

<table>
<thead>
<tr>
<th>Therapy Type</th>
<th>Effect Size</th>
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<tbody>
<tr>
<td>Humanistic</td>
<td>0.63</td>
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<td>Psychodynamic</td>
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<tr>
<td>Behavioral</td>
<td>0.91</td>
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<tr>
<td>Cognitive-Behavioral</td>
<td>1.24</td>
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<tr>
<td>Cognitive</td>
<td>1.31</td>
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## Psychotherapy Comparison Revisited

Weiss & Weisz (1995), Children and Adolescents

<table>
<thead>
<tr>
<th>Therapy Type</th>
<th>Effect Size</th>
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<tr>
<td>Non-Behavioral</td>
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<tr>
<td>Behavioral</td>
<td>.85</td>
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All Psychotherapies Are Not Created Equal

• Specificity
  – “Treatment of Choice” for Particular Syndromes

• Efficiency
  – Cost-Benefit Analysis

• Cognitive-Behavioral Therapy
  – The Standard of Care
Psychotherapy and Pharmacotherapy for Depression

Keller et al. (2000)

Treatment Condition

% Positive Response

Remission
Satisfactory

Serzone
CBT
Serzone + CBT
Why Combinations Might Work Best

• Drug Effects
  – Rapid Symptom Relief
  – Correct Underlying Biological Substrates

• Psychotherapy Effects
  – Coping Skills
    • Deal with Illness
    • Adjust to Life Post-Recovery
  – Learning Lasts Longer than Drugs

*Give a man a fish.... Teach a man to fish....*
The Social Context of Mental Illness

Lecture 42
Social Influence in Mental Illness

• Social Learning
  – Phobias, Obsessions, Compulsions

• Social Environment
  – Unpredictable ➔ Anxiety
  – Uncontrollable ➔ Depression

• Vulnerability
  – Depressogenic Schemata
  – Depressogenic Attributional Style

• Relapse and Recovery in Schizophrenia
  – Expressed Emotion
  – Developed vs. Developing Societies

No man is an island,
Entire of itself,
Every man is a piece of the continent,
A part of the main.
If a clod be washed away by the sea,
Europe is the less.
As well as if a promontory were.
As well as if a manor of thy friend's
Or of thine own were:
Any man's death diminishes me,
Because I am involved in mankind,
And therefore never send to know for whom the bell tolls;
It tolls for thee.

John Donne
Meditation XVII
Group Therapy

- Economic Advantage – Efficiency
- Modeling
- Social Support
- Social Context
- “Safe Place” for Practice
Family Therapy for Eating Disorders
Minuchin et al. (1974)

• Open Systems Model
  – Family Organization Triggers Child’s Symptoms
  – Child’s Symptoms Maintain Family Organization

• Family Transactional Characteristics
  – Enmeshment
  – Overprotectiveness
  – Rigidity
  – Lack of Conflict Resolution

• Mobilize Entire Family for Treatment
Where Cure is Impossible

• Irreversible Brain Damage
  – Organic Brain Syndromes
  – Mental Retardation

• Chronic-Disease Management
  – Schizophrenia
  – Affective Disorder

• Rehabilitation Programs
  – Cope with chronic disability
  – Make optimal social adjustment
“Bedlam”

William Hogarth
“Bedlam” Scene from *A Rake’s Progress*, 1735

Robert Fleury
“Dr. Philippe Pinel at the Salpêtrière” (1795)
Mental Hospital Reform

The Institute of Pennsylvania Hospital, Founded in 1841 by Benjamin Rush

Bethlem Royal Hospital in the 1860s
State Mental Hospitals

Binghamton State Hospital, New York

Napa State Hospital, California

Oregon State Insane Asylum, Salem
The “Pseudopatient” Study
Rosenhan (1973), after Nellie Bly’s *Ten Days in a Mad-House* (1887)

• Confederates Sought Treatment
  – Auditory Hallucinations
  – Ceased Simulation Upon Admission

• Diagnosis of Schizophrenia

• Largely Ignored by Staff
  – Custodial Care
  – Medication ($M = 14$ caps/day)

• Discharge after $M = 19$ days
  – “Schizophrenia in Remission”
The Movement for De-Institutionalization

• Sources
  – Pharmaceutical Revolution
  – “Anti-Psychiatry” Movement
    • Thomas Szasz
    • T.J. Scheff
    • R.D. Laing
  – Disability Rights
  – Economics

• Phases
  – Mental Illness
  – Mental Retardation
Failure of De-Institutionalization

• Premature Discharge
• Lack of Financing
• Lack of Community Support
  – “Not in My Back Yard”
Token Economies

- Based on Instrumental Conditioning
- Tokens as Secondary Reinforcers
- Motivate Adaptive Social Behaviors
The Stigma of Mental Illness
Goffman (1963)

• “Attribute that is Deeply Discrediting”
  – “Whole Person” ➔ “Tainted, Discounted One”

• Discrediting
  – Undesirable, Rejected

• Discreditable
  – Vulnerable to Discrediting

• “Passing”
Dimensions of Social Stigma
Jones et al. (1984)

- Concealable (Passing)
- Course of the Mark
- Disruptiveness
- Aesthetics
- Origin
- Peril
Components of the Stigma of Mental Illness
Link & Phelan (2001)

• Social Selection
  – Identifies, Labels Differences
• Stereotyping
• “Us” vs. “Them”
• Discrimination, Loss of Status
  – Direct
  – Structural
  – Self-concept
• Exercise of Power
Construals of Deviance

• Statistical, Social Standards for Abnormality
  – Unusual, Nonconforming Behavior as “Sick”
  – Inappropriate Diagnoses

• Moral vs. Medical Model
  – Mentally Ill as Socially Undesirable
  – Mentally Ill Responsible for Own Afflictions
  – Emphasize “Criminal” Role
    • Emphasize Restraint, Confinement
Stigma and the Self-Fulfilling Prophecy

• Stereotyping and Stigma
  – Dominance of First Impressions
  – Diagnoses as labels
    • Tend to “Stick”

• Expectancy Confirmation Effects
  – Diagnosis as Expectancy
  – Behavioral Confirmation
  – Perceptual Confirmation
  – Effects on Self-Construal
Mental Health Policy
White House Conference on Mental Health (1999)

• “Mental Health is Fundamental to Health”
• “Mental Health Disorders are Real Health Conditions”
• “The Efficacy of Mental Health Treatments is Well Documented”
• “A Range of Treatments Exists for Most Mental Disorders”
The Burden of Mental Illness
Murray & Lopez (1996)

Disability-Adjusted Life-Years Lost

Cardiovascular Condition

DALYs

- Cardiovascular
- Mental Health
- Malignant
- Respiratory
- Alcohol
- Infectious
- Drug
Mental Health Parity
Mental Health Parity Act (1996)

• Annual/Lifetime Dollar Limits
  – Medical/Surgical
  – Mental Health
• Deductibles, Co-Payments
• Exemptions
  – Substance Abuse, Chemical Dependency
Evidence-Based Practices
Chambless & Ollendieck (2001)

• Scientific Revolution in Medicine
  – Louis Pasteur (Rabies)
  – Robert Koch (Tuberculosis)

• Scientific Revolution in Mental Health
  – Empirically Supported Treatments
    • Evidence-Based Treatments
  – Extensions
    • Assessment, Diagnosis
    • Prevention
Clinical Trials

• Comparison with Control Condition
  – No Treatment (Waiting List)

• Random Assignment of Patients

• Objective Evaluation of Outcomes
  – Blind to Condition

• Statistical Significance

• Multiple Independent Studies
Lines of Improvement

• Comparison Condition
  – Placebo Condition
  – “Standard of Care”

• Clinical vs. Statistical Significance
  – “File-Drawer Problem”

• Mechanism of Action
  – “Dismantling” Studies
The Debate Over Empirically Supported Treatments

- Efficacy (Effectiveness)
- Clinical Judgment
- Patient Values

Clinical Psychology Owes Its Autonomy from Psychiatry, and Its Eligibility for Insurance Payments, to the Assumption that Its Practices Rest on a Firm Scientific Foundation