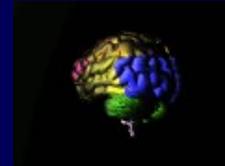


Medical Profession: Psychiatry

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Psychiatry: the meeting point of clinical profession, biology, social sciences, and human care



Simple questions, difficult answers

Have you ever

- felt depressed or anxious?
- had problems with attention and memory?
- felt that strange things happen to you?
- believed that ghosts and aliens exist?
- been frightened?
- had sleeping problems or nightmares?
- had problems with alcohol or drugs?

If so, do you have a psychiatric disorder?

Psychiatric disorder:

- severe and prolonged impairment of affect, cognition, and behavior leading to social dysfunction
- fulfill official diagnostic criteria

DSM-IV-TR: Diagnostic and Statistical Manual of Mental Disorders, Text revision (1994, 2000)

The Graeco-Roman period

Alcmaeon (ca. 500 B.C.):
mental processes are located in the brain

Plato (427?-347 B.C.):
tripartite soul of thought, desire, emotion; rational part in the brain

Aristotle (384-322 B.C.):
the task of the brain is to cool the blood

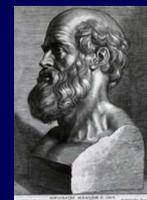


Raphael's Plato

Hippocrates (460-377 B.C.)

The body humor hypothesis:

- Black bile – melancholia
- Yellow bile – mania
- Hysteria – disease of uterus
- Paranoia
- Sacred disease - epilepsy



Rubens' Hippocrates

Galen (129-199 A.D.)

- Imagination, reason and memory
- Morositas – deadening of the emotional life
- Paraphrosune – paranoia
- Alienation – bizarre behavior



Mural painting depicting Galen and Hippocrates (Anagni)

The first ward for the mentally ill:
Hospital of Baghdad

Al-Razi (865-925): scholar of Greek medicine,
philosopher and alchemist



ابو بکر محمد بن زکریا الرازی



Textbook of Al-Razi

Psychiatric Asylums in Europe



Bethlem Hospital, London (1330)



Asylum of Budapest (1886)

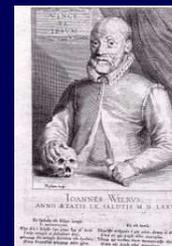


Salpêtrière, Paris (1675)

Paracelsus
(1493-1541)



- experimentation in learning about the human body
- sickness and health in the body relied on the harmony of man, the microcosm, and Nature, the macrocosm
- using this analogy not in the manner of soul-purification but that humans must have certain balances of minerals in their bodies
- illnesses of the body and soul had chemical remedies that could cure them – the **concept of medicine**



Johann Weier (1515-1588)

Psychiatric illness is not a consequence of transcendent factors

- *De Praestigijs Daemonum et Incantationibus ac Venificiis* (On the Illusions of the Demons and on Spells and Poisons), 1563
- *De Lamis Liber* (Book on Witches), 1577
- *Pseudomonarchia Daemonum* (The False Kingdom of the Demons), 1577



Thomas Willis (1621-1675)

- "*Cerebri anatomi*", 1664 (the term "neurology")
- "*Pathologicae cerebri, et nervosi generis specimen*", 1667
- "*Two Discourses concerning The Soul of Brutes, Which is that of the Vital and Sensitive of Man*", 1672 (the first English work on medical psychology)

Philippe Pinel (1745-1826): Humanization of the treatment of the mentally ill



Dr. Philippe Pinel at the Salpêtrière, 1795 by Robert Fleury.
Pinel removing the chains from patients at the Paris Asylum for insane women.

Johann Christian Reil (1759 -1813): the term Psychiatry in 1808 (psyche - soul latros – doctor)

The first psychiatric **university department**: 1865, Berlin

Károly Laufenauer, 1882, Budapest

America: **Benjamin Rush** (1745-1813), American Psychiatric Association (1844)

Emil Kraepelin (1856-1926): classification of mental disorders

Sigmund Freud (1856-1939): psychoanalysis



Kraepelin's view

Treated patients with severe mental disorders in asylums

Origin of illness: brain pathology

Freud's view

Treated less severe outpatients

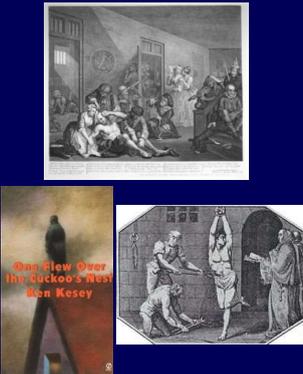
Origin of illness: repressed unconscious (sexual) desires, abnormal psychosexual development

Psychiatric disorders today: The heritage

Symptom	Ancient	XIX. century	Today
Acute disorder of consciousness, disorientation	Phrenitis Delirium	Infectious and toxic psychosis	Acute organic disorders Disorders due to general medical condition
Lack, decline or loss of mental functions	Dementia, amentia	Dementia paralytica (syphilis) Degenerative psychosis of old age	Dementia Psychiatric symptoms caused by neurological disorders
Low mood, loss of pleasure and motivation or the opposite	Melancholia Mania	Manic-depressive psychosis Melancholia	Bipolar disorder Unipolar depression
Hallucinations (hearing voices), bizarre beliefs and behavior	Mania	Dementia praecox (Bleuler's schizophrenia) Paranoia	Schizophrenia Delusiv disorder
Predatoriness, lack of compassion, empathy and foresight	-	Moral insanity	Antisocial personality disorder
Anxiety phobias, body symptoms with no objective origin	Hysteria	Neuroses	Anxiety disorders Somatoform disorders

The dark side of psychiatry

- Torture of patients in medieval ages
- Patients were closed in large institutions
- Political psychiatry (Soviet Union and Nazis)
- Lobotomy, insulin coma, electroconvulsive therapy in wake patients
- No scientific bases of mental illness
- Psychoanalysis is a myth and not science
- 1960: antipsychiatry (David Cooper, Thomas Szasz)



What happens if we reject and forget psychiatry?

- Attempts in Italy as an influence of antipsychiatry
- Patients on the street and behind the bars
- Patients as victims and criminal offenders
- Restriction of psychiatry services due to financial shortcuts (USA today)
 - US Dept. of Justice (1999): 16% of inmates in jails have severe mental illness
 - Human Right Watch Report (2003): on a given day 70000 psychotic patients are in prisons

Response and development

- Social psychiatry and assertive community treatment:**
closing asylums and helping patients find their way back to the community using modern psychotherapy
- Development of neuroscience:**
molecular genetics, brain imaging, and pharmacology

Psychotherapy

- Interaction and communication between 2 or more persons
- Aim: reduction of symptoms, increasing coping skills, better insight and personality development
- Non-specific factors: understanding, acceptance, empathy
- Specific factors: gaining insight into the unconscious, modifying abnormal thinking, correcting abnormal relationships

Modern psychotherapy

Instead of the interpretation of unconscious sexual fantasies and dreams:

1. Focusing on abnormal thinking (e.g. extreme pessimism and hopelessness in depression) – **COGNITIVE-BEHAVIOR THERAPY**
2. Focusing on human relationships (e.g. dispute, role changes, grief, communication skills) – **INTERPERSONAL PSYCHOTERAPY**

Modern social therapy

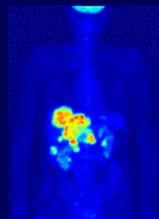
Instead of large institutions to “store” the patients:

1. Case manager that helps the patient in everyday activity
2. Sheltered houses
3. Supported employment
4. Daytime “hospitals” and clubs
5. Social skill training

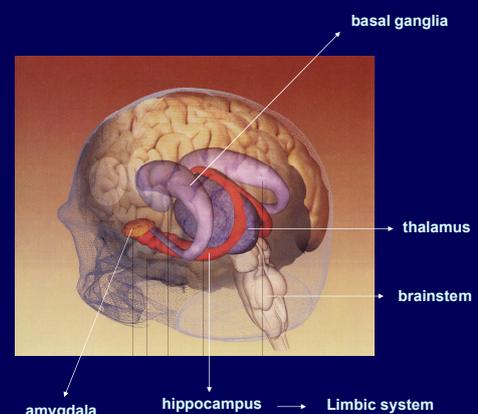
Is it true that psychiatric disorders lack scientific bases?

Modern neuroimaging methods allow the visualization of brain working during thinking, feeling, and deciding:

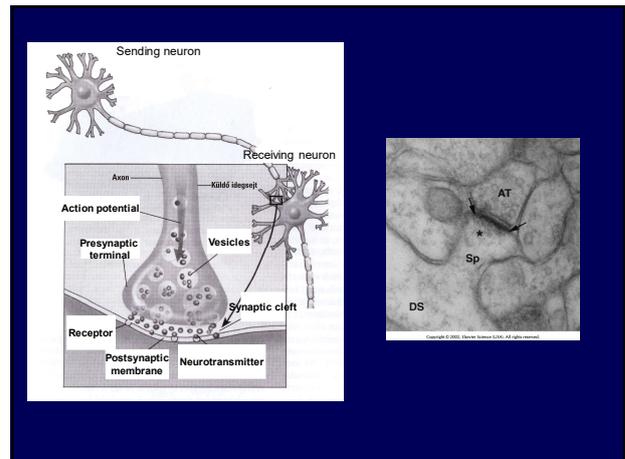
- Positron emission tomography (PET)
- Functional magnetic resonance imaging (fMRI)



Positron emitting radioligand in the body

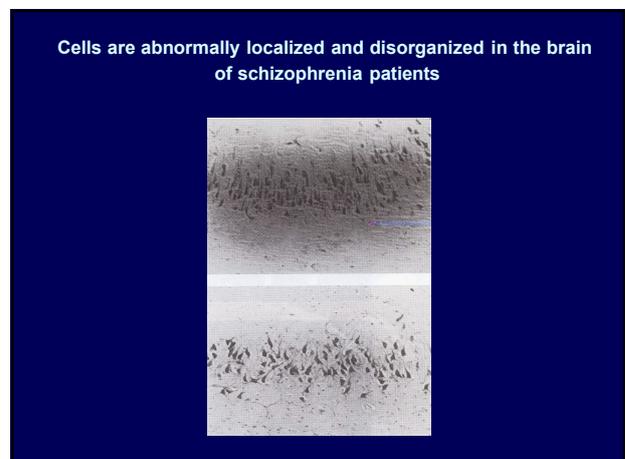
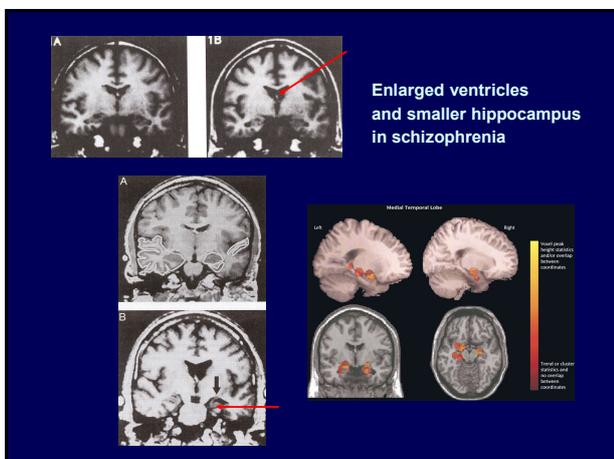
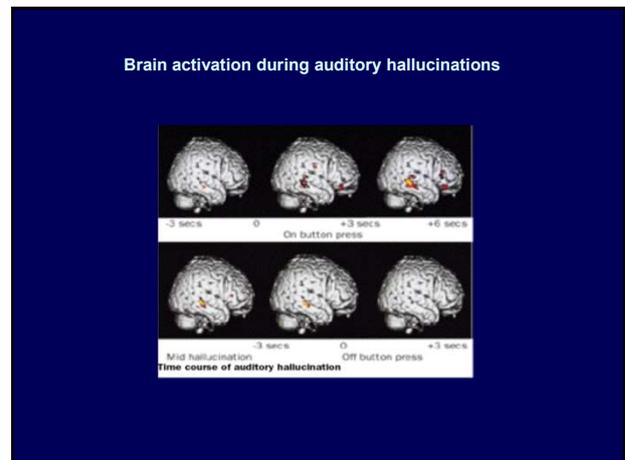


- Frontal lobe:**
 - Higher cognition (lateral part)
 - Emotional and social functions (bottom part)
 - **Schizophrenia**
- Basal ganglia:**
 - Movement regulation
 - Skill and habit learning (feedback and reward)
 - **Parkinson's disease**
- Amygdala:**
 - Emotion, fear, anxiety
 - **Depression**
- Hippocampus:**
 - Remembering facts and events (explicit memory)
 - **Alzheimer's disease**



A story of a famous mathematician, John Nash, who lives with **SCHIZOPHRENIA**:

- **Hallucinations** (e.g. voices in your head giving you messages)
- **Delusions** (e.g. false beliefs of persecution or special power)



PET shows increased release of the neurotransmitter DOPAMINE in schizophrenia

Antipsychotic drugs, such as haloperidol, block dopamine in the brain and reduce hallucinations and delusions

DEPRESSION: abnormal sadness, loss of joy and motivation, decreased energy, desperation, and suicide

Van Gogh Hemingway

Depression = the level of serotonin is too low in your brain?

No, but depressed patients (C) have fewer transporter molecules pumping back serotonin from the synaptic cleft to the neuron

Antidepressants, such as Prozac, act on these molecules

Oquendo et al., 2007

The genetics of the serotonin transporter affects your vulnerability to stress:

Serotonin transporter short (s) and long (l) versions

Number of stressful life events	l/l	s/l	s/s
0	~0.05	~0.05	~0.05
1	~0.08	~0.10	~0.12
2	~0.12	~0.15	~0.18
3	~0.15	~0.20	~0.25
4	~0.18	~0.25	~0.35

Hariri et al., 2002; Caspi et al., 2003

The effect of antidepressants (venlafaxine) and interpersonal psychotherapy on brain activation (fMRI)

Martin et al., 2001

Genes and brain networks for schizophrenia and depression: a new era in psychiatry

Gene	Location	Associated Phenotype
DISC1	1p34	Schizophrenia
DRG1	1p34	Schizophrenia
ANKK1	11q23	Schizophrenia
NRXN1	1p34	Schizophrenia
DISC2	12p12	Schizophrenia
DISC3	12p12	Schizophrenia
DISC4	12p12	Schizophrenia
DISC5	12p12	Schizophrenia
DISC6	12p12	Schizophrenia
DISC7	12p12	Schizophrenia
DISC8	12p12	Schizophrenia
DISC9	12p12	Schizophrenia
DISC10	12p12	Schizophrenia
DISC11	12p12	Schizophrenia
DISC12	12p12	Schizophrenia
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DISC98	12p12	Schizophrenia
DISC99	12p12	Schizophrenia
DISC100	12p12	Schizophrenia

Concluding remarks I.

- The roots of psychiatry: religion, alchemy, philosophy, psychology, and neuroscience
- From black bile and demons to “mindreading” techniques of fMRI/PET and genes
- From torture and misery to humanity and empathy

Concluding remarks II.

- Psychiatry is the
- most colorful
 - most difficult
 - most challenging
 - most exhausting
 - most prospective discipline of medicine.