

Schizophrenia

A psychotic Disorder



Schizophrenia

A TYPE OF PSYCHOSIS:

Psychosis: mental disorders characterized by major departures from reality

Schizophrenia: a psychosis marked by disturbances of thought, language, and behavior that are not due to a primary mood disorder or medical condition

Schizophrenia

Mr. James believes that people are constantly laughing at him and that FBI agents are trying to steal his life savings.

Mr. James is most clearly suffering from:

- A. compulsions.
- B. catatonia.
- C. delusions.
- D. hallucinations.

Positive and Negative Symptoms of Schizophrenia



Positive +
presence of
problematic
behaviors

- Hallucinations (illusory perceptions), especially auditory
- Delusions (illusory beliefs), especially persecutory
- Disorganized thought and nonsensical speech
- Bizarre behaviors

Negative -
absence of
healthy
behaviors

- Flat affect (no emotion showing in the face)
- Reduced social interaction
- Anhedonia (no feeling of enjoyment)
- Avolition (less motivation, initiative, focus on tasks)
- Alogia (speaking less)
- Catatonia (moving less)

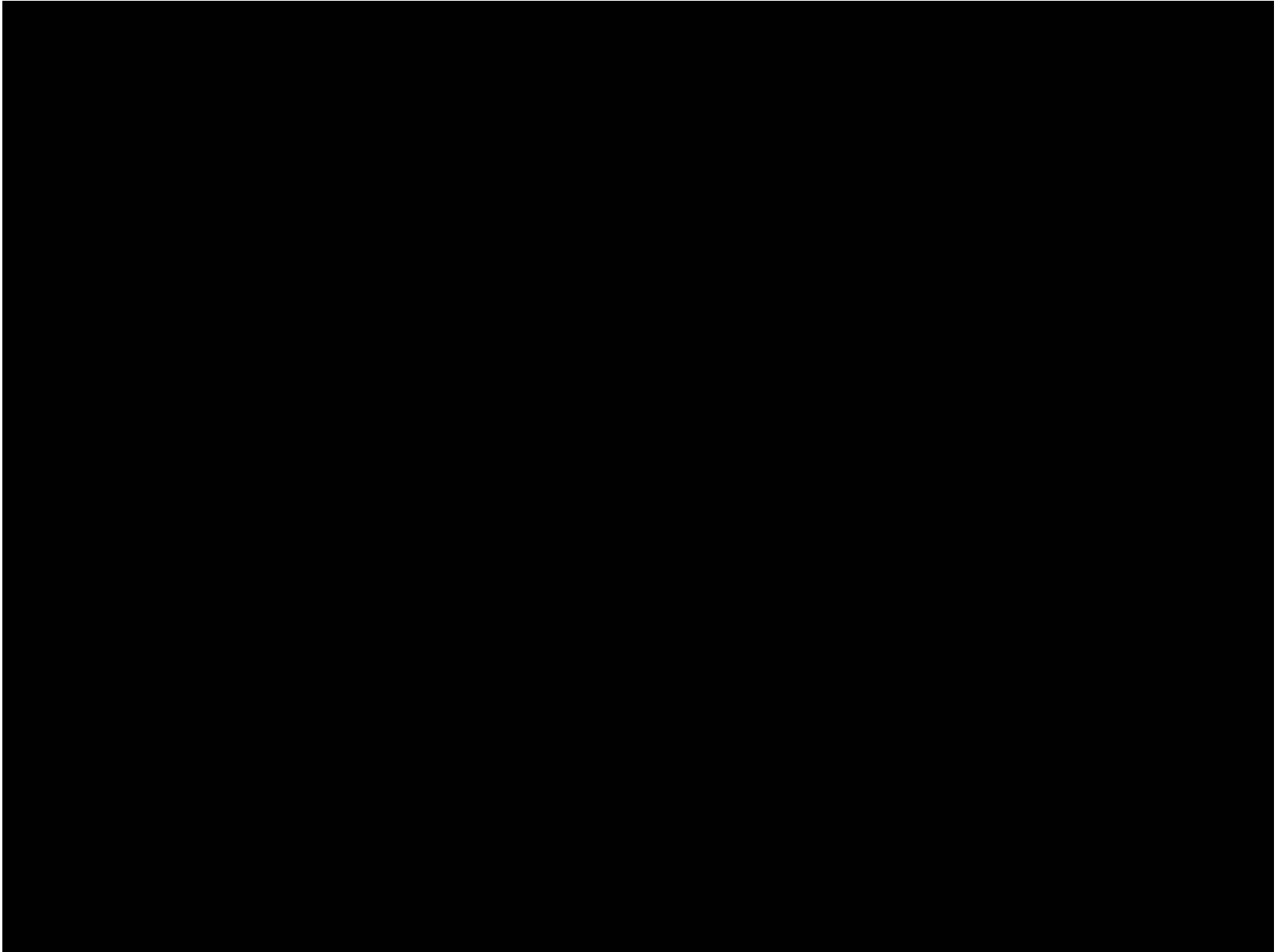
Positive Symptoms of Schizophrenia

Disorganized & Delusional Thinking

"This morning when I was at Hillside [Hospital], I was making a movie. I was surrounded by movie stars ... I'm Marry Poppins. Is this room painted blue to get me upset? My grandmother died four weeks after my eighteenth birthday." (Sheehan, 1982)

This monologue illustrates fragmented, bizarre thinking with distorted beliefs - example of delusions ("I'm Mary Poppins").

Heather



Positive Symptoms of Schizophrenia

Disorganized & Delusional Thinking

Many psychologists believe disorganized thoughts occur because of **selective attention** failure (fragmented and bizarre thoughts).

Irrelevant and minute stimuli easily distract them. (grooves of a brick or the inflection of a voice distracts their attention from a whole scene or from the speaker's meaning.)

Positive Symptoms of Schizophrenia

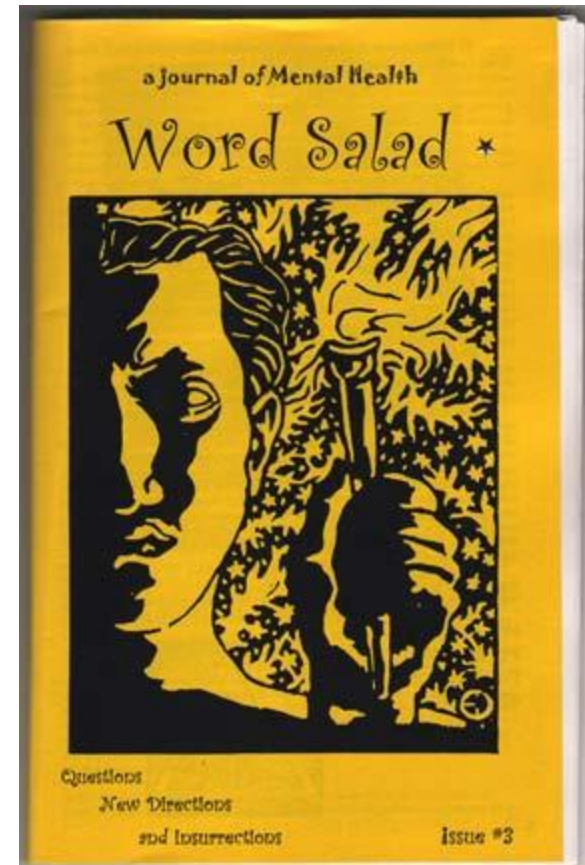
Disorganized & Delusional Thinking

- **Schizophasia** - commonly referred to as *word salad*, is characterized by an apparently confused usage of words with no apparent meaning or relationship attached to them.
- **Example:** Q: "Why do people believe in God?"
A: *"Because He makes a twirl in life, my box is broken help me blue elephant. Isn't lettuce brave? I like electrons, hello."*
- **DSM-V** - no specific code for this disorder although they include it as a symptom under the diagnosis of schizophrenia

Positive Symptoms of Schizophrenia

Word Salad

The lion will have to change from dogs into cats until I can meet my father and mother and we dispart some rats. I live on the front of Whitton's head. You have to work hard if you don't get into bed...It's all over for squab true tray and there ain't no squabs, there ain't no men, there ain't no music, there ain't no nothing besides my mother and father who stand alone upon the Island of Capri where is no ice. Well it's my suitcase sir.



Positive Symptoms of Schizophrenia

Disturbed Perceptions

- People with schizophrenia often experience **hallucinations**, that is, sensory experiences without sensory stimulation (not experienced by others.)
- The most common form of hallucination is hearing **voices** that no one else hears, often with upsetting (e.g. shaming) content.
- **Voices': offer a commentary** on the individual's behavior "he is eating his dinner." **make disparaging remarks** about him "he eats like a pig"; **give him commands** like "put the knife on the plate".



- 'Voices' may be a distortion of environmental noises (fridge or radiator noises interpreted as whispering.)

Positive Symptoms of Schizophrenia

Disturbed Perceptions

- Hallucinations can also be visual, olfactory/smells, tactile/touch, or gustatory/taste.
- Visual: The images can appear to be clear, distorted or strange to the patient, and can also be frightening.
- Somatic e.g. experience of electric shocks to the fingertips.



Jani – Tormented by hallucinations



Positive Symptoms of Schizophrenia

Delusions (false beliefs)

(Beliefs which individuals are firmly convinced are true, regardless of evidence to the contrary).

- **Delusions of Persecution**

The belief that individuals or groups are conspiring against him or her.



"someone is following me"

- **Delusions of Grandeur**

"I am a king"



The belief that the individual is someone important or powerful.

Positive Symptoms of Schizophrenia



Hallucinations and delusions often co-exist



Quite often the hallucinations coincide with delusions which the schizophrenic is also experiencing.

- For example, if a schizophrenic man has the delusion that aliens have invaded his home, he may hear voices which he believes are aliens talking to him or about him.
- He may believe he sees them moving about and having a dance party his home, or smell odd odors which he attributes to their presence.

Negative Symptoms of Schizophrenia

Inappropriate Emotions

- Absence of appropriate behaviors/responses.

Emotional Disturbance

- a) Blunting: apparent indifference to events which would normally provoke a strong emotional reaction.
- b) Inappropriate Affect: e.g. laughing when told bad news, reacting angrily if offered a gift.
- c) Flattened Affect: absence of emotional expression, speech is in monotone, no mobility of facial features, vacant gaze.



Inappropriate Actions/Behavior

The schizophrenic body exhibits symptoms such as:

- repetitive behaviors such as rocking and rubbing.
- **catatonia**, such as sitting motionless and unresponsive for hours.

Schizophrenia - Simulation

Onset and Development of Schizophrenia

- **Onset:** Typically, schizophrenic symptoms appear at the end of adolescence and in early adulthood, later for women than for men.
- **Prevalence:** Nearly 1 in 100 people develop schizophrenia, slightly more men than women.
- **Development:** The course of schizophrenia can be acute/reactive or chronic/process.

Course of Schizophrenia

Acute/Reactive Schizophrenia

In reaction to stress, some people develop positive symptoms such as hallucinations.

- Recovery is likely.

Chronic/Process Schizophrenia develops slowly, with more negative symptoms such as flat affect and social withdrawal.

- With treatment and support, there may be periods of a normal life, but not a cure.
- Without treatment, this type of schizophrenia often leads to poverty and social problems.

Gerald - A Case study in schizophrenia



Gerald was a young man in the seventies in Texas. In his early twenties, he was studying at the police academy to become a police officer.

Look for:

- Thought broadcasting

- Delusions

- Paranoia

- Hearing voices

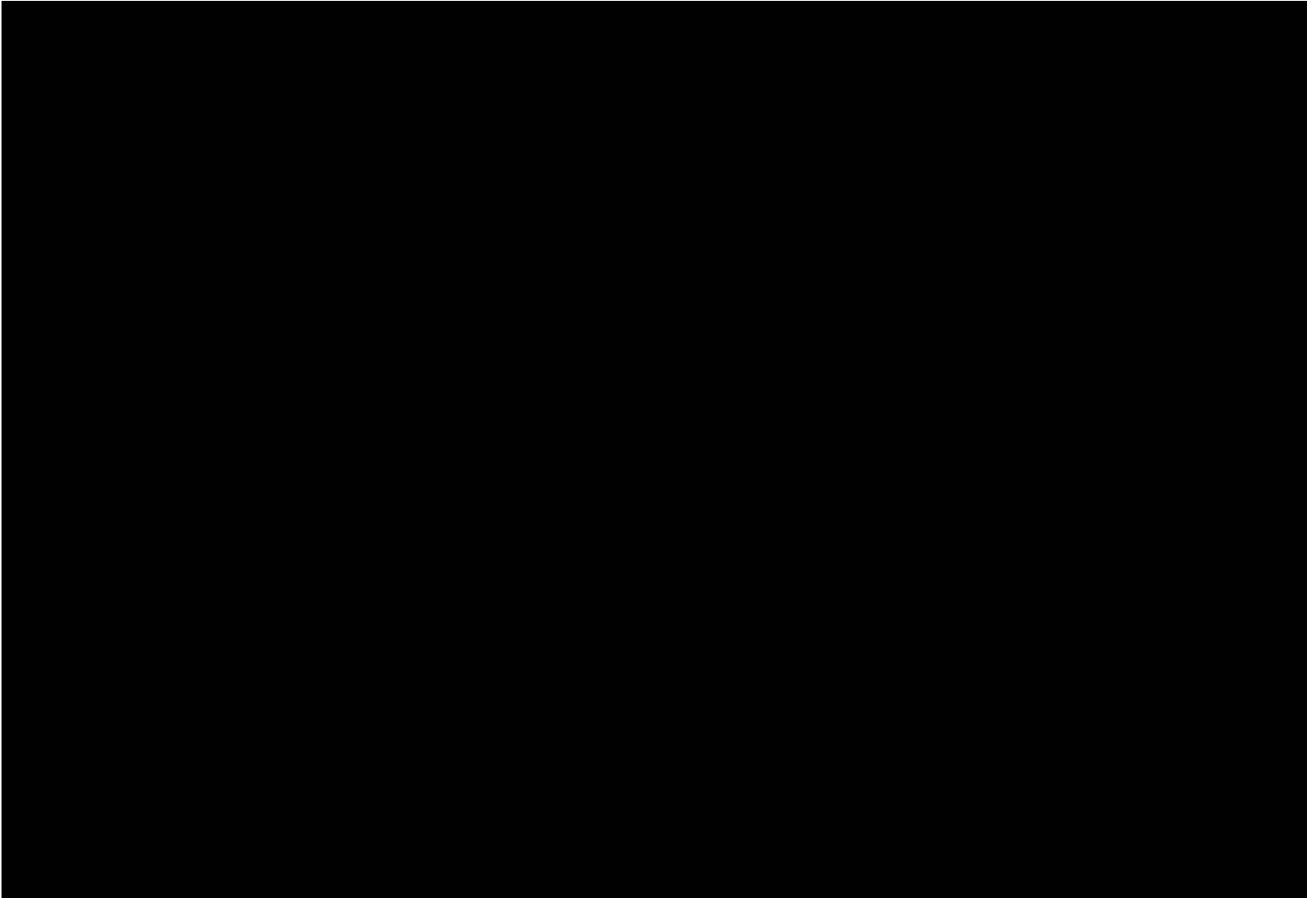
- Seeing visions

- Concrete, non-abstract language

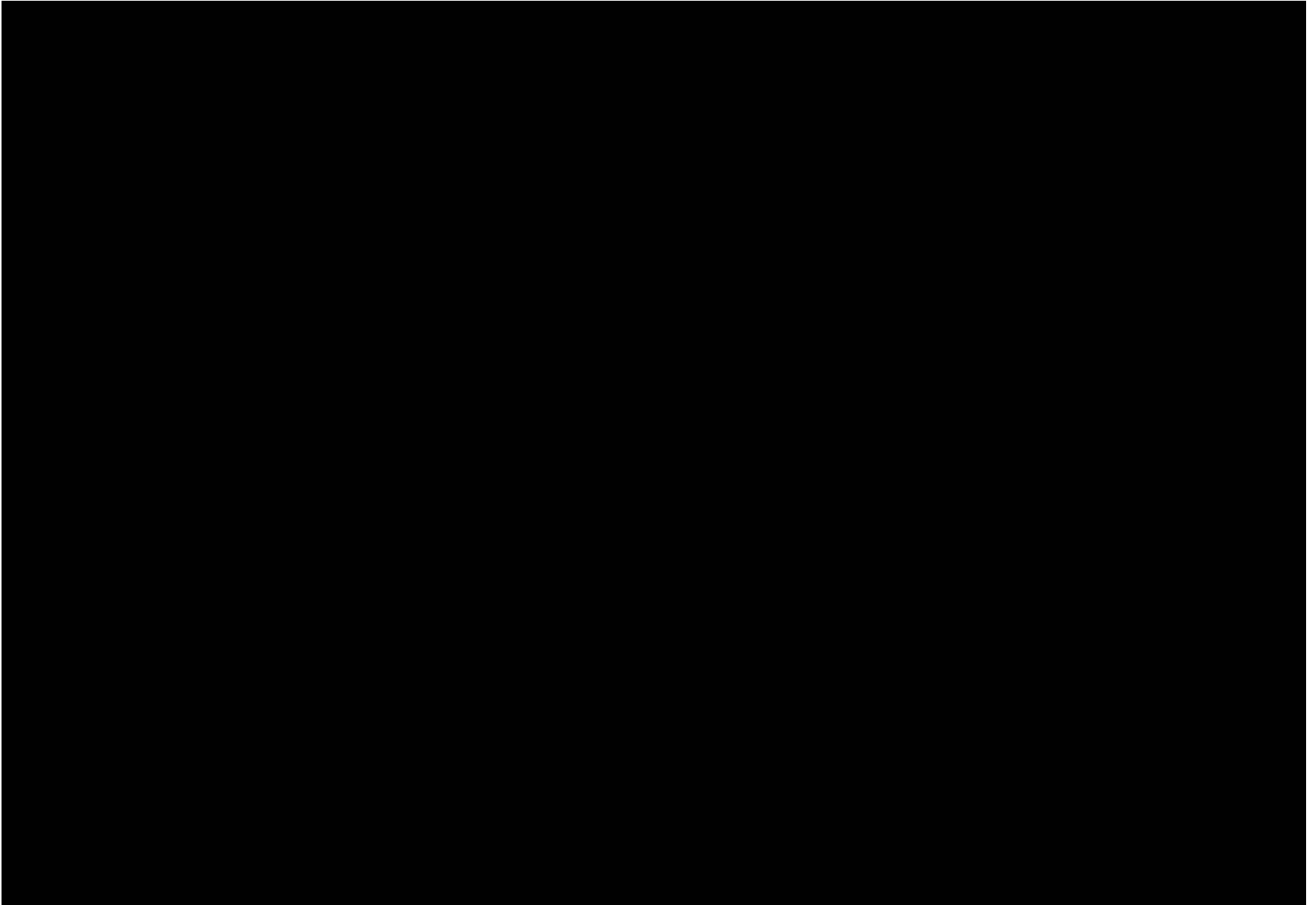
- Delusions of grandeur



Gerald – Part I



Gerald – Part 2



Schizoaffective Disorder

- combination of schizophrenia symptoms (hallucinations or delusions) and mood disorder symptoms (such as mania or depression.)
- Controversial
- Requires presence of delusions for 2 weeks in the absence of mood symptoms

Antipsychotic Drugs

Reduce
dopamine

1st Generation / Classical antipsychotics

(Thorazine) Removes a number of positive symptoms associated with schizophrenia such as agitation, delusions, and hallucinations.

- Dampens responsiveness to irrelevant stimuli
- Provides help to those with positive symptoms
- May worsen negative symptoms
- Can produce sluggishness, tremors and twitches.

Antipsychotic Drugs

New generation / Atypical antipsychotics

Can remove negative symptoms associated with schizophrenia such as apathy, jumbled thoughts, concentration difficulties, and difficulties in interacting with others.

- Also blocks serotonin
- Clozapine may help those with positive symptoms as well
- Has fewer side-effects than thorazine
- Increases the risk of obesity and diabetes
- Risperdal - Can lead to tardive dyskinesia - a neurotoxic effect which involves involuntary movement of facial muscles, tongue and limbs.

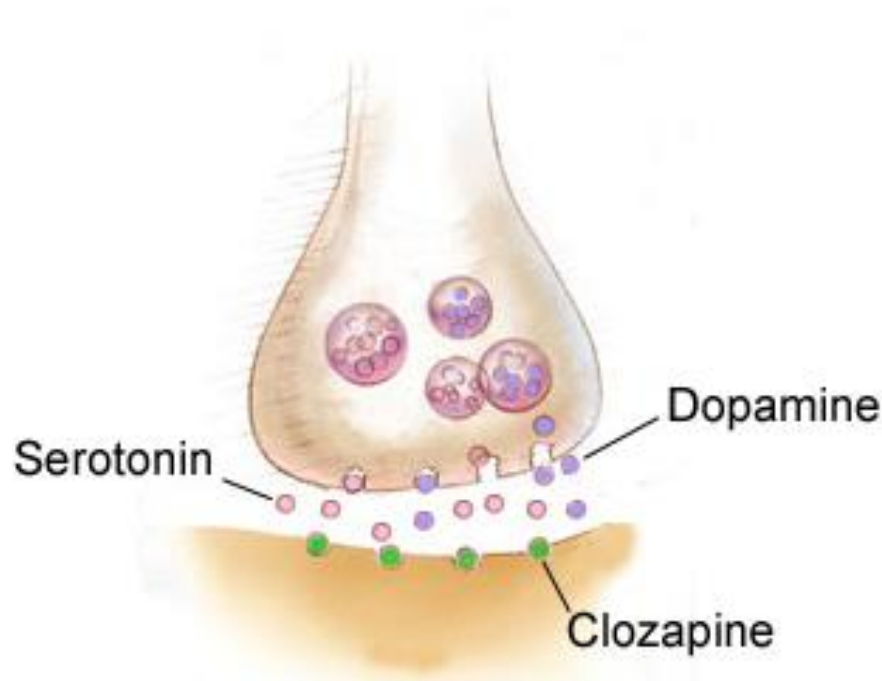
Tardive Dyskinesia



Antipsychotic - how they work

Clozapine (Clozaril) blocks receptors for dopamine and serotonin to remove the negative symptoms of schizophrenia.

There is a potential for overdose with drugs used to treat schizophrenia



Alternative treatments



Understanding Schizophrenia

Biochemical Factors - The Dopamine Hypothesis



- This theory claims that excessive amounts of dopamine or an oversensitivity of the brain to dopamine is the cause of schizophrenia
- There are 3 pieces of evidence to support this:
 1. Drugs which block dopamine (Phenothiazines) reduce the symptoms of schizophrenia.

Understanding Schizophrenia

The Dopamine Hypothesis -

- 2. L-Dopa (a drug for Parkinson's disease that increases dopamine,) can produce symptoms of schizophrenia.
- 3. Post mortems of schizophrenics, show an increase of dopamine in parts of the brain.

Understanding Schizophrenia

- The **glutamate hypothesis of schizophrenia** suggests the problem relates partially to deficient activity at glutamate receptors.
 - Especially in prefrontal cortex.
- In many brain areas, dopamine inhibits glutamate release or glutamate stimulates neurons that inhibit dopamine release.
- Increased dopamine thus produces the same effects as decreased glutamate.
- Schizophrenia involves multiple genes and abnormalities in dopamine, glutamate, serotonin and GABA.

THE BRAIN IN SCHIZOPHRENIA

MANY BRAIN REGIONS and systems operate abnormally in schizophrenia, including those highlighted below. Imbalances in the neurotransmitter dopamine were once thought to be the prime cause of schizophrenia. But new findings suggest that

impoverished signaling by the more pervasive neurotransmitter glutamate—or, more specifically, by one of glutamate's key targets on neurons [the NMDA receptor]—better explains the wide range of symptoms in this disorder.

BASAL GANGLIA

Involved in movement and emotions and in integrating sensory information. Abnormal functioning in schizophrenia is thought to contribute to paranoia and hallucinations. [Excessive blockade of dopamine receptors in the basal ganglia by traditional antipsychotic medicines leads to motor side effects.]

FRONTAL LOBE

Critical to problem solving, insight and other high-level reasoning. Perturbations in schizophrenia lead to difficulty in planning actions and organizing thoughts.

LIMBIC SYSTEM

Involved in emotion. Disturbances are thought to contribute to the agitation frequently seen in schizophrenia.

AUDITORY SYSTEM

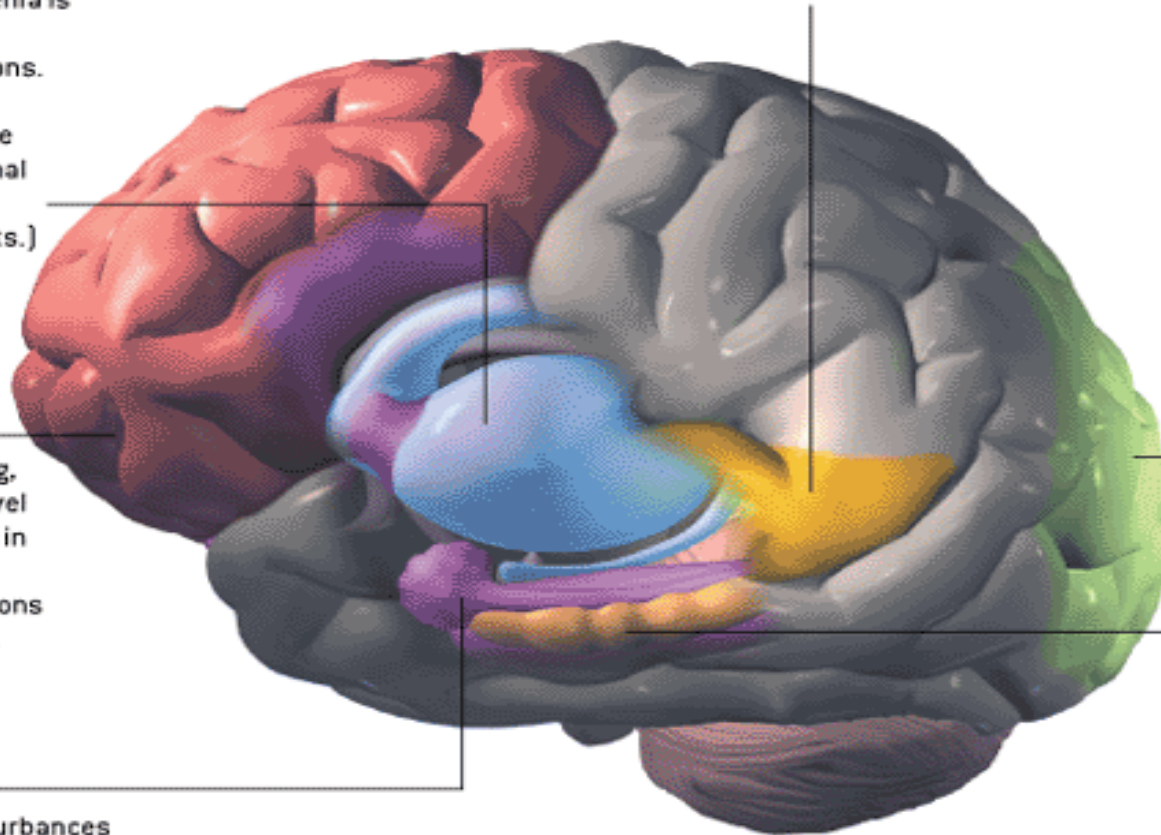
Enables humans to hear and understand speech. In schizophrenia, overactivity of the speech area [called Wernicke's area] can create auditory hallucinations—the illusion that internally generated thoughts are real voices coming from the outside.

OCCIPITAL LOBE

Processes information about the visual world. People with schizophrenia rarely have full-blown visual hallucinations, but disturbances in this area contribute to such difficulties as interpreting complex images, recognizing motion, and reading emotions on others' faces.

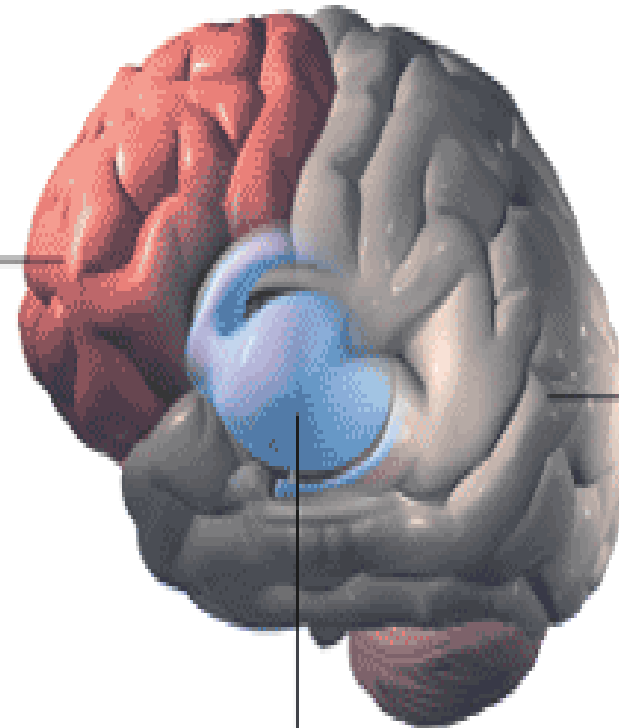
HIPPOCAMPUS

Mediates learning and memory formation, intertwined functions that are impaired in schizophrenia.



DIFFERENT NEUROTRANSMITTERS, SAME RESULTS

SOME SCIENTISTS have proposed that too much dopamine leads to symptoms emanating from the basal ganglia and that too little dopamine leads to symptoms associated with the frontal cortex. Insufficient glutamate signaling could produce those same symptoms, however.



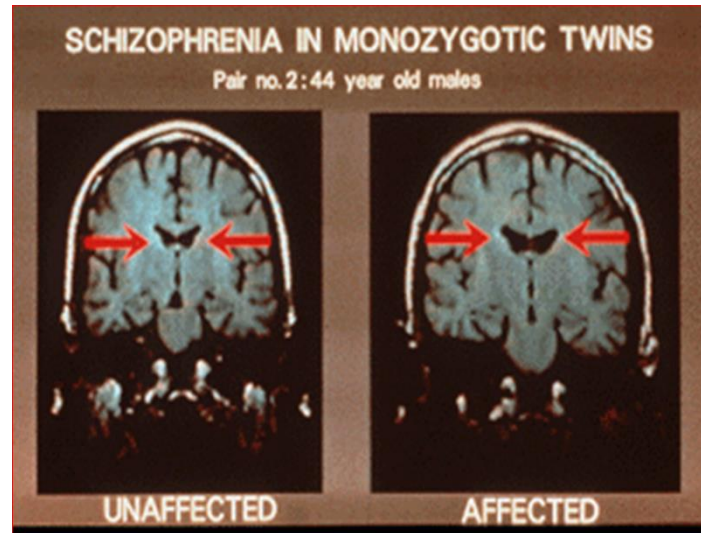
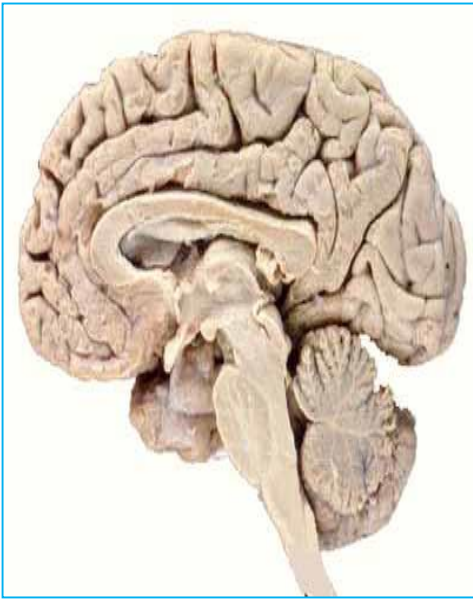
IN THE FRONTAL CORTEX, where dopamine promotes cell firing (by acting on D1 receptors), glutamate's stimulatory signals amplify those of dopamine; hence, a shortage of glutamate would decrease neural activity, just as if too little dopamine were present.

IN THE BASAL GANGLIA: where dopamine normally inhibits cell firing (by acting on D2 receptors on nerve cells), glutamate's stimulatory signals oppose those of dopamine; hence, a shortage of glutamate would increase inhibition, just as if too much dopamine were present.

IN THE REST OF THE CORTEX, glutamate is prevalent, but dopamine is largely absent.

ALFRED T. KAMAJIAN

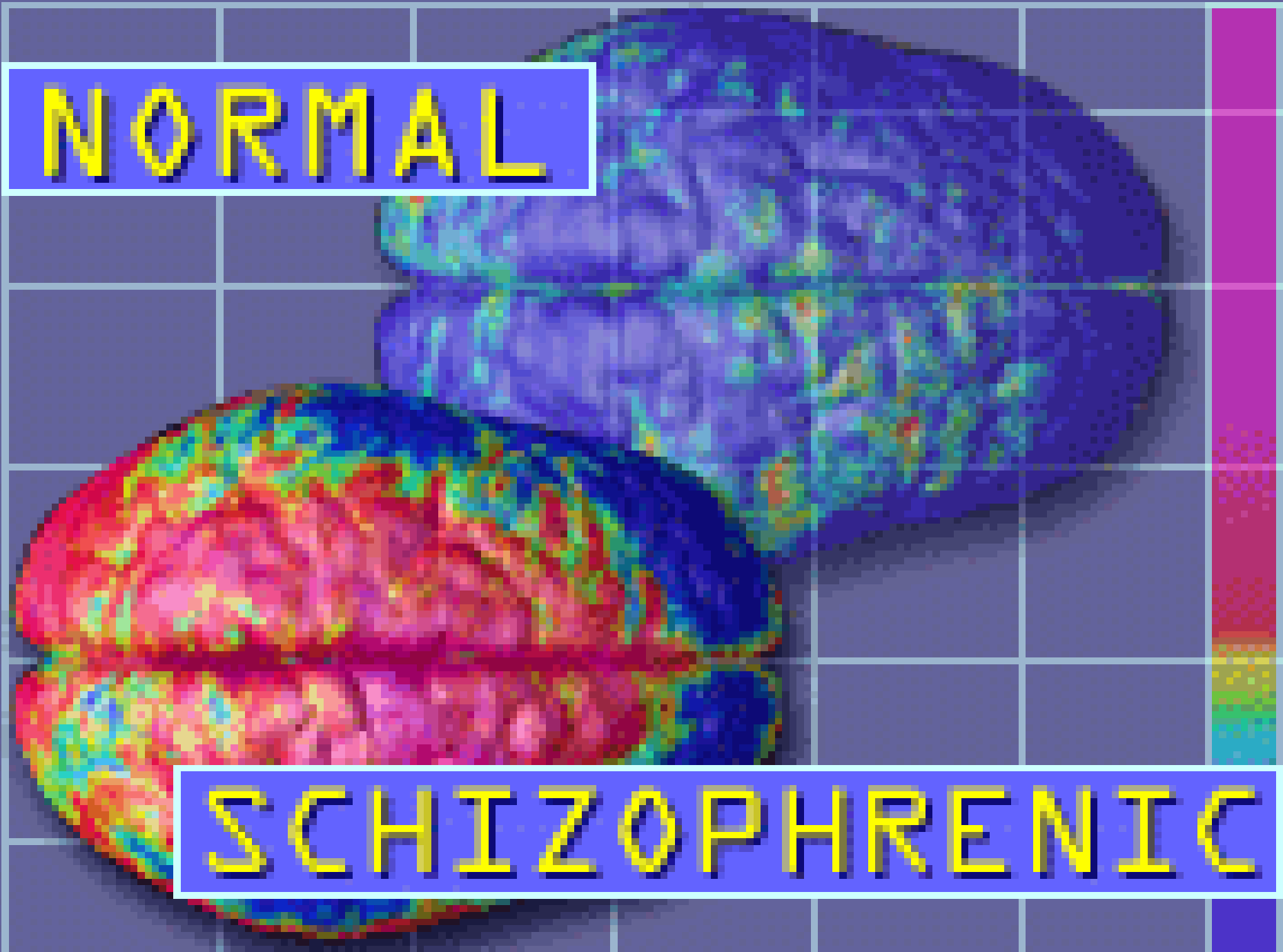
Brain Structure



- People with schizophrenia have abnormally large ventricles in the brain.
- (Ventricles are fluid filled cavities.)
- This means that the brains of schizophrenics are lighter than normal.
- CAT scan study and found significant enlargement of the ventricles in schizophrenics compared to controls.

NORMAL

SCHIZOPHRENIC



Adolescent Abnormalities in Brain Development

- Normal pruning of excessive synapses in the brain occurs during adolescence.
- In schizophrenics, a greater number of synapses are pruned away.
 - May explain why first episode occurs in adolescence or early adulthood.

Understanding Schizophrenia

Are there biological risk factors affecting early development?



Biological Risk Factors

Schizophrenia is somewhat more likely to develop when one or more of these factors is present:

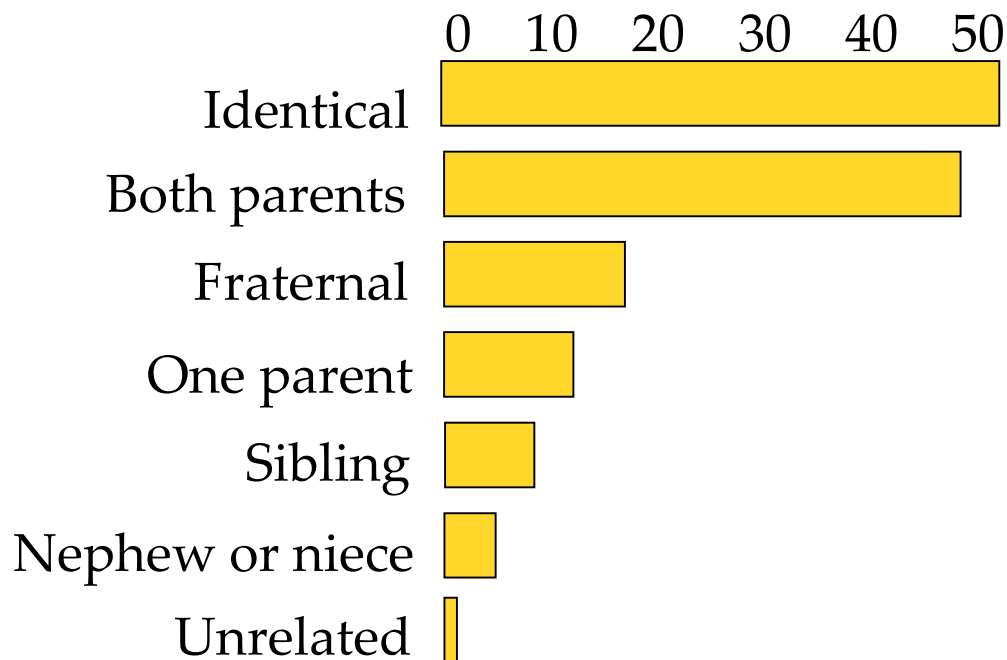
- low birth weight
- maternal diabetes
- Maternal obesity, 2nd trimester infection
- older paternal age
- famine
- oxygen deprivation during delivery
- maternal virus during mid-pregnancy impairing brain development

Schizophrenia is more likely to develop in babies born:

- during and after flu epidemics.
- in densely populated areas.
- a few months after flu season.
- after mothers had the flu during the second trimester, or had antibodies showing viral infection.
- The lesson is to: **get flu shots with early fall pregnancies.**

Understanding Schizophrenia

- The likelihood of an individual suffering from schizophrenia is 50% if their identical twin has the disease.
- Key: *Studies find schizophrenia runs in families.*



Note: If identical twins did not share a placenta, the likelihood that one will have schizophrenia if the other does drops to 1/10.

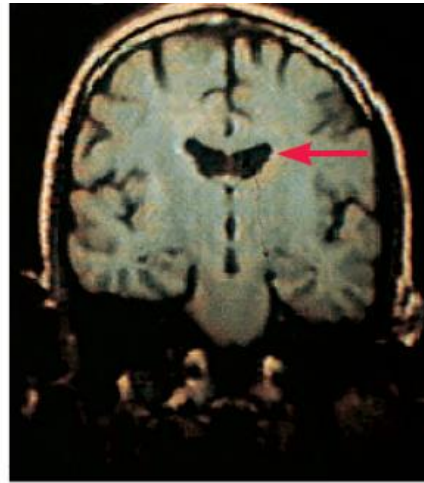
Understanding Schizophrenia

Genetic and Prenatal Causes

- Even in identical twins, genetics do not fully predict schizophrenia.
- This could be because of environmental differences.
- First difference: twins in separate placentas.



No schizophrenia



Schizophrenia

Only one of two twins has the enlarged ventricles seen in schizophrenia.

- Even if maternal flu during the second trimester doubles the risk of schizophrenia, this means only 2 percent of these babies develop the disorder.
- Genetics may differentiate these 2 percent.
- Research shows many genes linked to schizophrenia, but it may take environmental factors to turn on these genes.

Understanding Schizophrenia

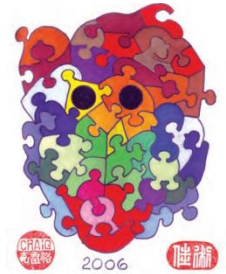
The Diathesis - Stress Model

- Genetic abnormalities create a predisposition for the development of the disorder, but the disorder only develops in response to stress.
- The more stressors accumulate, the greater the risk a susceptible person has of developing schizophrenia.

Understanding Schizophrenia

The Diathesis-Stress Model

- A person with a predisposition to develop schizophrenia has limited cognitive resources due to biological factors such as high dopamine, larger ventricles and poor hippocampus development.
- However, as long as life is relatively stress-free they are able to compensate for this and their behavior appears normal.



Predicting Schizophrenia: Early Warning Signs

Social/psychological factors which tend to appear before the onset of schizophrenia:

- early separation from parents
- short attention span
- disruptive OR withdrawn behavior
- emotional unpredictability
- poor peer relations and/or solitary play

Biological factors which tend to appear before the onset of schizophrenia:

- having a mother with severe chronic schizophrenia
- birth complications, including oxygen deprivation and low birth weight
- poor muscle coordination