Brain Resource Creation Workshop:
Chapter 12 - Psychiatric Disorders

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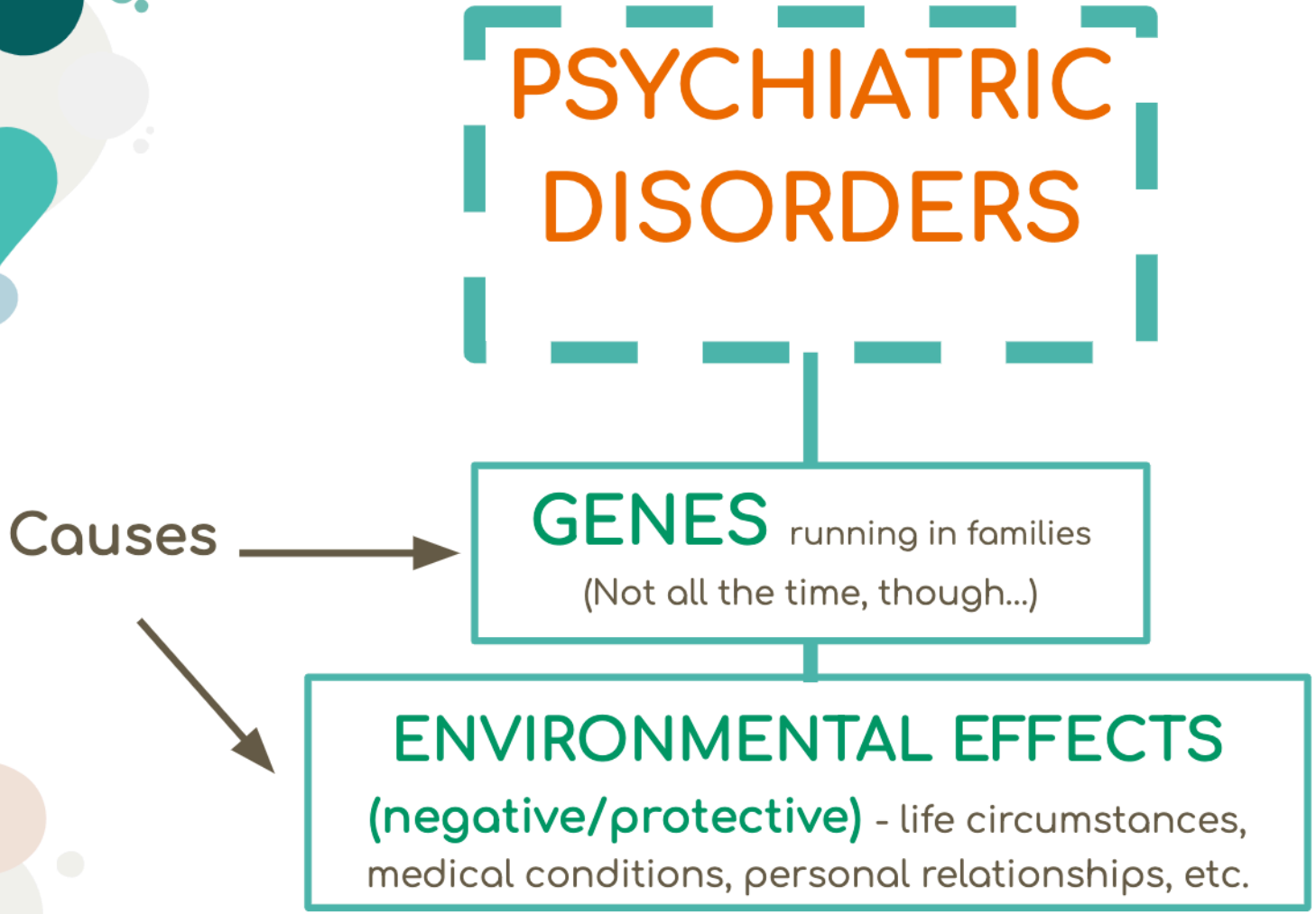
Simply Neuroscience

simply neuroscience

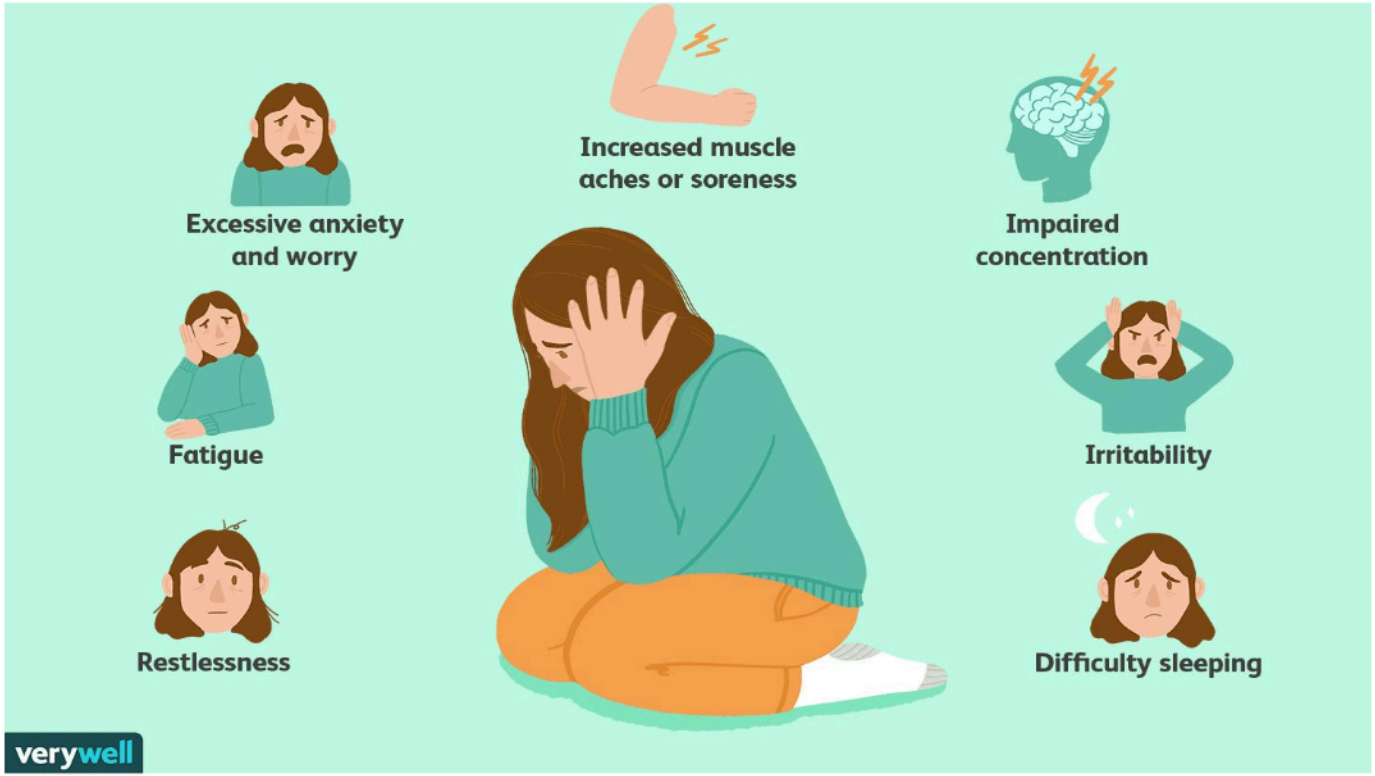

PSYCHIATRIC DISORDERS
Causes
GENES running in families
(Not all the time, though...)
ENVIRONMENTAL EFFECTS
(negative/protective) - life circumstances, medical conditions, personal relationships, etc.

ANXIETY DISORDERS and PTSD

- **Uncontrollable anxiety** = common link
  - Post-traumatic stress disorder (PTSD)
  - Obsessive-compulsive disorder (OCD)
  - Panic attacks

- Most common among American women: biological (**sex**) and psychosocial (**gender**) differences

- Medications alter neurotransmitter levels
  - SSRIs raise serotonin levels (deficient)
  - **Benzodiapezines** (risky - dependence)


Excessive anxiety and worry
Increased muscle aches or soreness
Impaired concentration
Fatigue
Irritability
Restlessness
Difficulty sleeping
verywell

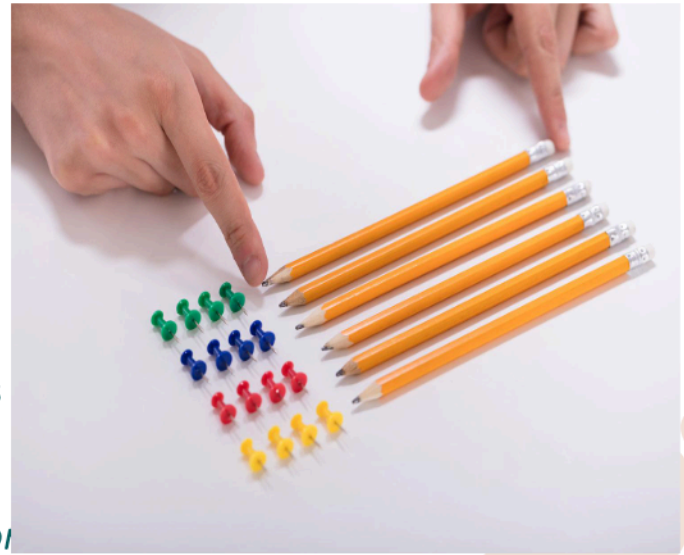
Obsessive-Compulsive Disorder

- Uncontrollable, recurring thoughts (**obsessions**)
  - Vary *(perfectionism, worrying about being sick from contaminated obj.)*
- Repeated, ritualistic (**compulsions**)
  - Counteract obsessions *(ex. Excessive hand washing, checking for mistakes/problems)*
- **Hoarding** = fear of losing/forgetting important info after discarding something
- Victims' compulsive behaviors provide them *relief*, not *pleasure*.

Obsessive-Compulsive Disorder

- Disrupted signaling between **basal ganglia** (habits, movement, thought, reward systems*) and **brain cortex** ⇒ ritualistic behaviors

- Medications:
  - Antidepressants & tranquilizing drugs
  - **Cognitive behavioral therapy** (counseling)
  - Deep brain stimulation - electrode pulses reset abnormal neuronal firing; also used in Parkinson's disease & other movement disorders



**Dysfunctional in people with psychiatric disorders and/or addiction.*

1 in every 200 children has OCD

1-3% of the U.S population has OCD

Obsessive Compulsive Disorder

Obsessions:

- Contamination
- Losing control
- Harming someone
- Losing important items

Compulsions:

- Washing and cleaning
- Orderliness
- Double checking
- Following a strict routine

1 2 3 4 5 6

Stats from nydailynews.com, mayoclinic.org, and healthyplace.com

Post-Traumatic Stress Disorder (PTSD)

- **Caused by harrowing, traumatic events** *(military combat, natural disaster, terrorist attack, serious accident, physical/sexual assault, etc.)*

- Symptoms can emerge after months/years & interfere with relationships/work
  - Flashbacks
  - Intrusive memories
  - Nightmares
  - **Hyperarousal** (on edge/angry)
  - Memory loss
  - Guilt
  - Lack of interest in activities

Post-Traumatic Stress Disorder (PTSD)

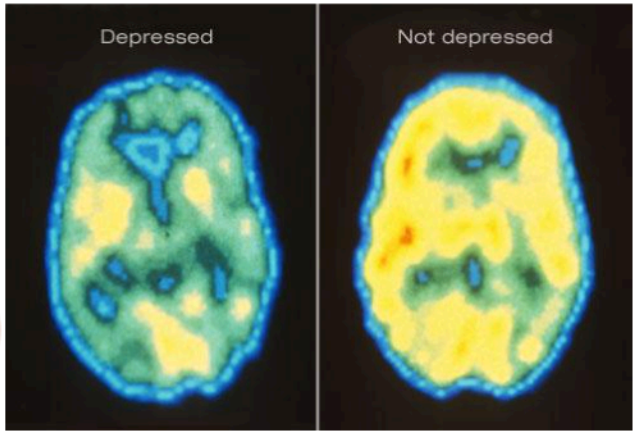
- **Physiological changes** related to PTSD:
  - Increased heart rate
  - Heightened electrical sensitivity (skin & face)
  - Shallow sleep, REM ⇒ sleep deprivation
  - Fight-or-flight responses to danger/fear
  - Altered hormone levels

- **Genes** affect risks of PTSD, major depression, general anxiety disorder, panic disorder

MOOD DISORDERS

= longer lasting mood changes

MAJOR DEPRESSION

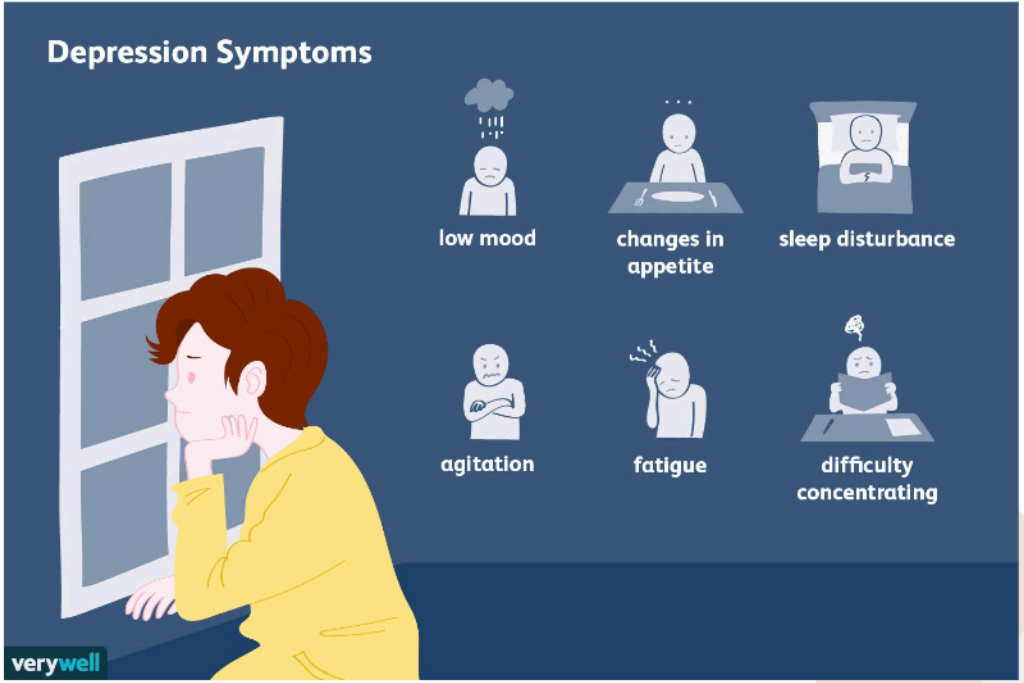


BIPOLAR DISORDER

MAJOR DEPRESSION

- The “big five” criteria

1) Emptiness/sadness
2) Loss of appetite
3) Irritability
4) Problems with sleep
5) Changes in appetite /weight



MAJOR DEPRESSION

- Contributes to disability and death; accompanied by medical (diabetes, cancer, etc.) and psychiatric (addiction) conditions; can be chronic

- Factors:
  - Genes
  - Biological risk factors
  - Environmental triggers
  - Psychological influences

- Usually developed in response to stress of difficult life experience/disabling medical problem (i.e. cancer)
  = disrupts **hypothalamus** (stress control) & monoamine neurotransmitter systems (dopamine, serotonin)

MAJOR DEPRESSION

- Leads to smaller **hippocampus** and **prefrontal cortex** (stress managers)

- **Medications**:
  - Antidepressants → raise serotonin, dopamine
  - SSRIs → block serotonin reuptake, reshape synapse
  - **Cognitive behavioral therapy** → change thought patterns
  - Deep brain simulations (DBS)

BIPOLAR DISORDER (aka MANIC-DEPRESSIVE ILLNESS)

- *Very* intense mood changes
- Extreme **highs** (manic episodes) → boundless energy, racing thoughts, insomnia, substance abuse, risky sex, unsafe activities
  - Anti-epileptics, antipsychotic drugs
- Severe **lows** (depressive episodes) → sad, hopelessness, worried, suicidal
  - Antidepressants, cognitive behavioral therapy
- **HYPOMANIC** -- highly productive, feel great, function better than normal
- Hard to diagnose and treat (1/3 of bipolar patients unaffected)

BIPOLAR DISORDER SYMPTOMS

BIPOLAR DISORDER INCLUDES MANIC EPISODES:

FEELING OVERLY HAPPY FOR LONG PERIODS OF TIME

TALKING VERY FAST WITH RACING THOUGHTS

BECOMING EASILY DISTRACTED

HAVING OVERCONFIDENCE IN ABILITIES

ENGAGING IN RISKY BEHAVIOR (E.G. GAMBLING)

BIPOLAR DISORDER INCLUDES DEPRESSION EPISODES:

FEELING SAD OR HOPELESS FOR LONG PERIOD OF TIME

SIGNIFICANT CHANGE IN APPETITE

THINKING ABOUT OR ATTEMPTING SUICIDE

FEELING FATIGUE OR LACK OF ENERGY

PROBLEMS WITH MEMORY AND CONCENTRATION

Diseases of Cognition: SCHIZOPHRENIA

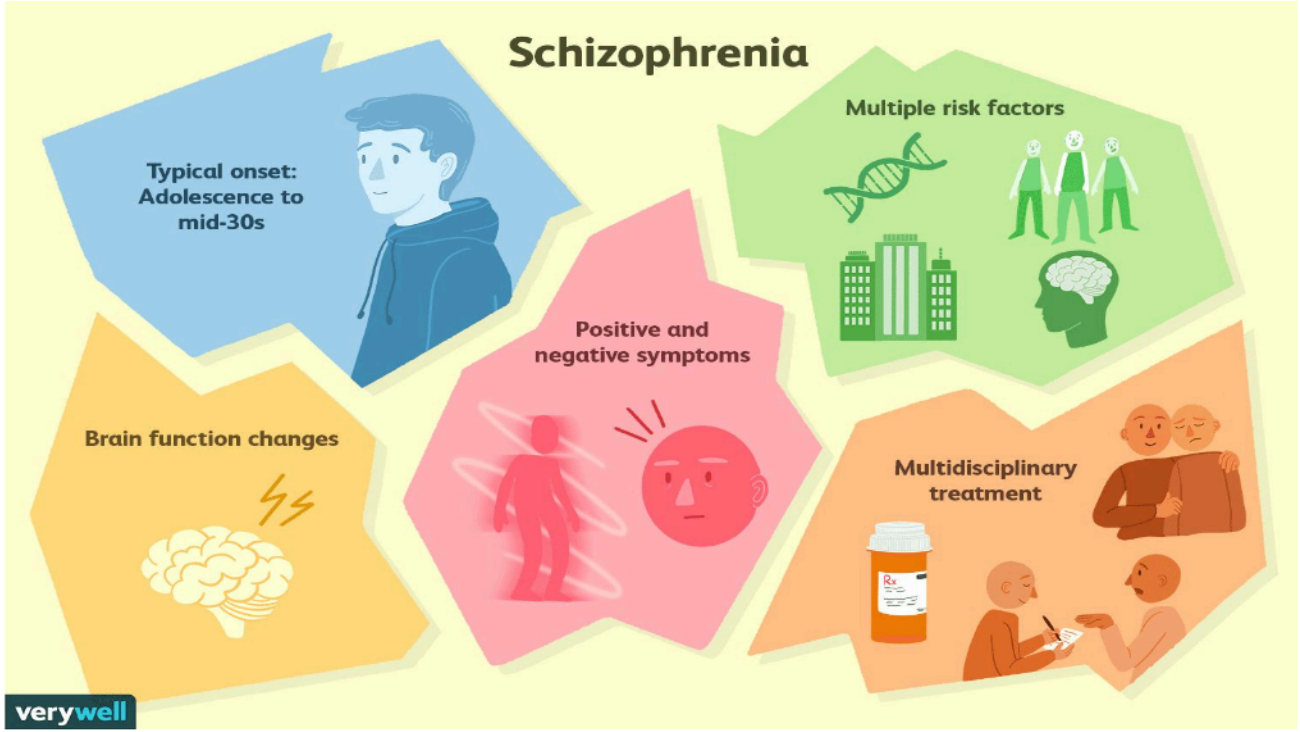
- Lifelong; seriously disturbs thinking, emotion, and behavior - losing touch with reality

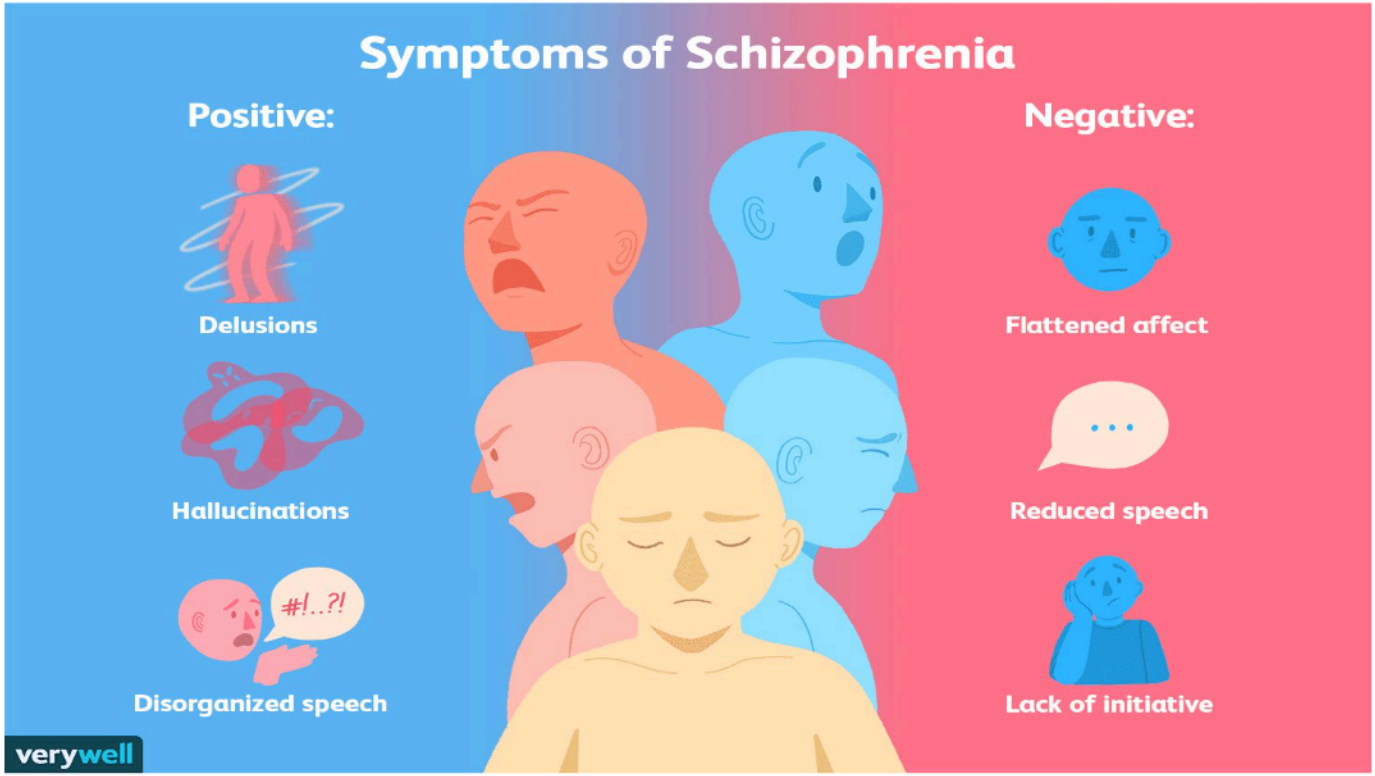
- **Positive** symptoms: hallucinations, delusions, confused thinking
  Negative symptoms: inability to experience pleasure, lack of motivation

- **Appears in ages 15 to 25** ←→ development of brain prefrontal cortex

- **Antipsychotic** drugs can be used to calm patients, but with **movement side-effects** (i.e. tremors)

- Research: 90% of schizophrenia patients are cigarette smokers (relief) = **nicotine** could potentially treat schizophrenia!


Schizophrenia
Typical onset: Adolescence to mid-30s
Multiple risk factors
Positive and negative symptoms
Brain function changes
Multidisciplinary treatment
verywell


Symptoms of Schizophrenia
Positive:
Delusions
Hallucinations
#!..?!
Disorganized speech
Negative:
Flattened affect
Reduced speech
Lack of initiative
verywell

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We hope you enjoyed the workshop!

Any questions?

You can email us at

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