NEUROSCIENCE AND SOCIETY
Curriculum for High School Teachers

Unit 6: Mental Illness

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Evaluation
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From sensing to moving to thinking to feeling, neuroscience explains how we perceive and interact with the world around us. This field provides a rich opportunity for high school students to explore fundamental science, framed within the context of everyday decisions and new challenges they will face as they enter adulthood.

Information about the intersection between neuroscience and society abounds online and in the media, yet many sources are unreliable. Meanwhile, there are few textbooks on neuroscience and its societal applications that are designed intentionally for high school students. This curriculum, therefore, is a curated collection of resources—reviewed by experts and tested by teachers—to help you bring this fascinating content into your classroom.

The curriculum is intentionally modular to provide flexibility. Each unit can stand alone, ready to be incorporated into an existing biology, psychology, or other course. Alternatively, multiple units can be linked together to create a semester-long elective course.

You can adapt the content to meet the readiness and capabilities of your class as needed. You can select certain topics and activities to match your students’ interest and skip others depending on time constraints.

The goal of the curriculum is to inspire excitement about and increase knowledge of neuroscience. The suggested activities include a variety of instructional approaches, and we encourage you to ask open-ended questions and guide conversations so students are interacting instead of being passive listeners. Students often find personal relevance in these topics, so feel free to extend activities and discussions.

If you feel you have reached the limit of your knowledge about a particular subject, don’t worry! Even scientists may not know the answer. Neuroscience is still a developing field and you can create opportunities for you and your students to think critically and learn together. Use the provided links and documents as a gateway to finding additional sources and evaluating their quality.

Your feedback is also welcomed, of course. Please contact the program administrator at neuroscience@fi.edu with comments and suggestions. Thank you for all your hard work!
Alignment with Next Generation Science Standards

The “Neuroscience and Society” curriculum supports Next Generation Science Standards in the following areas.

High School – Life Science

HS-LS1 From Molecules to Organisms: Structures and Processes

Disciplinary Core Ideas

LS1.A: Structure and Function
LS1.B: Growth and Development of Organisms

Science & Engineering Practices

Developing and Using Models

Crosscutting Concepts

Structure and Function
Stability and Change

HS-LS3 Heredity: Inheritance and Variation of Traits

Disciplinary Core Ideas

LS3.A: Inheritance of Traits
LS3.B: Variation of Traits

Science & Engineering Practices

Asking Questions and Defining Problems
Analyzing and Interpreting Data
Engaging in Argument from Evidence

Crosscutting Concepts

Cause and Effect
Systems and System Models
Science is a Human Endeavor
MENTAL ILLNESS

Most of us know a family member or friend or have been diagnosed ourselves with some kind of mental illness such ADHD, depression, or PTSD. These disorders are extremely complicated, since many of these arise from a mix of genetics, biology, environment, and behavior. How do we even conceptualize a mental illness? Is it a brain disease? A moral failure? These sections introduce the concept of a biological component to mental illness, discuss the neuroscience behind many common disorders, and raise some of the ethical and societal questions around mental illness.

LEARNING OBJECTIVES:

Students will be able to …

• List evidence for a brain component to mental disorders.
• Describe some of the symptoms and neural bases of the more common and the more serious mental disorders, including:
  • Depression (unipolar/bipolar)
  • Schizophrenia
  • PTSD
  • OCD
  • ADHD
  • Autism
  • Alzheimer’s
• Give examples of tricky social and ethical issues in psychiatry.

TABLE OF CONTENTS:

A. Terms and Definitions
B. Topics:
  1. Does mental disorder = brain disorder?
  2. Disorders
  3. Social and ethical issues in psychiatry
C. Annotated Resources by Topic (for further reading)
**TERMS AND DEFINITIONS**

**Trait** – A characteristic feature of a person. There are physical traits (e.g. eye or hair color) and behavioral traits (e.g. impulsivity). Another kind of trait is a predisposition to a medical condition (e.g. risk for heart disease).

**DNA** – The material found in the cell nucleus which holds instructions for making proteins in our body. This “blueprint” for our body is the source of heredity, because some of this information from each parent is passed on to the child.

**Genes** – A section of DNA that acts like a “recipe”: specific instructions to make proteins. It is thought that humans have around 20,000–25,000 genes.

**Chromosomes** – DNA is compactly stored in thread-like structures called chromosomes. Each human has 23 pairs of chromosomes in each cell.

**Monozygotic vs. Dizygotic Twins** – Monozygotic twins (identical twins) result from the fertilization of one egg by one sperm and share the same chromosomes. Dizygotic twins (fraternal twins) result from the fertilization of two eggs by two sperm and are not genetically identical; they are like any other pair of siblings.

**(Frontal) Lobotomy** – A surgical procedure to either destroy or sever the frontal lobe.

**Electroconvulsive Therapy (ECT)** – Pads placed on the head are used to generate a brief seizure by sending electric currents through the brain.

**Deep Brain Stimulation (DBS)** – Electrical pulses are sent through electrodes that have been surgically implanted in specific areas of the brain.

**DOES MENTAL DISORDER = BRAIN DISORDER?**

**Key Points:**
- Genetic studies can tell us if a person’s specific DNA may increase his/her risk for a given psychiatric disorder, over and above those factors in our environment (parents, household, school, diet, etc.).
- The effectiveness of biological therapies on mental disorders can also give evidence for a biological component to these disorders.
- Biological therapies include medications, shock treatment, and brain stimulation (though brain changes can occur with talk therapy as well).

**Resources and Discussion Questions:**
**Genetics:**
The Learn.Genetics website from the University of Utah has a lot of great resources for teaching basic genetics:
• **Introduction to heredity**

  This is an introduction to traits that discusses the relationship between genes and environment on physical/behavioral traits, trait inheritance, and complex traits.

  This page gives a description of what it means to talk about genetic “risk” factors.

A primer on genetic testing from the NIMH, as a printable brochure.

If there is a genetic component to a disorder, then monozygotic twins (identical) will be more likely to share this disorder than dizygotic twins. This short primer from Psychology Today explains the basics of twin studies and heritability. This video from Learn. Genetics also explains the role of identical twins in understanding heritability.

**Specific risk:**

- This website has some helpful graphics on rates of schizophrenia among people with relatives with schizophrenia.
- This document from Emory University gives risk statistics for a variety of mood disorders, schizophrenia, and anxiety disorders.
- A New York Times article suggesting that 5 disorders may share some genetic commonalities.

**Biological Therapies**

The NIMH has a wonderful series of pages on medications used for mental illnesses. The pages describe the use of medications more generally, and then describe specific medications for schizophrenia, depression, bipolar, anxiety disorders, and ADHD.

The NIMH also has great descriptions of multiple kinds of “brain stimulation therapies,” including electroconvulsive therapy (ECT), repetitive transcranial direct stimulation (rTDCS), and deep brain stimulation (DBS).

A very clear description from the Mayo Clinic of Electroconvulsive Therapy (ECT) and Deep Brain Stimulation (DBS). The pages discuss what it is, why it is sometimes used, for what disorders, and the procedure.

Cognitive Behavioral Therapy (CBT), a type kind of talk therapy, can also change the brain. See this news article from Nature that asks how CBT works and how neuroscience is measuring its effects on the brain.

**Classroom Activities:**

**Activity #1 – Genetic Testing Discussion**

What are the positives and negatives of genetic testing for a non-curable disease? Schizophrenia and Alzheimer’s have clear genetic components, though neither of them is a pure genetic disorder. This means that a genetic test can only ever tell you the probability of acquiring the disorder, rather than a straight “yes” or “no.” Lead a discussion with the class about ethical considers regarding genetic testing.

- If someone in in your family had schizophrenia or Alzheimer’s, would you choose to get tested for the gene mutation? Why or why not? (Such a test truly exists for some types of Alzheimer’s but not schizophrenia.)
- Use excerpts from Still Alice, by Lisa Genova. These excerpts cover what it is like to have this kind of genetic testing done and how it might affect your choices to have children and make other life decisions.
• How do you think you would respond to finding out?
• Would your answer change if a cure were currently available?
• What if preventative treatment was available?
• Who do you think should have access to the results of genetic testing?
• For more information about testing for Alzheimer's, the REVEAL Study was a funded grant (ending in 2013) to study the emotional, behavioral, and health-related impact of disclosing genetic risk for Alzheimer's. (See this brief video about the project and results of the project, 7:04).

Assignment Ideas:
Assignment #1 – Treatment Report
When we think about treatment for mental illness, we typically think of talk therapy or medications. But what about other treatments, most of which use some kind of electrical or magnetic current to effect change in the brain? Have students look into the history of one of these treatments and for what disorders it is currently used. What are the rates of success?
Treatments:
• electroconvulsive therapy (ECT)
• repetitive transcranial direct current stimulation (tDCS)
• deep brain stimulation (DBS)

DISORDERS

Key Points:
• Students should have a familiarity with the symptoms and the known/hypothesized neural bases of the following disorders:
  • Depression (unipolar/bipolar)
  • Schizophrenia
  • PTSD
  • OCD
  • ADHD
  • Autism
• Students should also know the major types of treatment for each disorder, and the hypothesized neurotransmitter or brain region target.

Resources and Discussion Questions:
Depression
The NIMH has an overview of depression here. The NIMH also has a Fact Sheet about depression in children and adolescents.

McGill has a great introduction to the neuroscience of depression here.

The National Alliance on Mental Illness (NAMI) has some good statistics on depression in general, and information about more specific groups of people and their risk for depression (e.g. veterans, men/women, children and adolescents).
This is an easy-to-understand article from Harvard Medical School on the neural bases of depression. The article talks about the main regions of the brain that play a significant role in depression, and it also discusses genetic research into both the causes and best treatment methods for depression.

**Bipolar disorder**
The NIMH has an overview of bipolar disorder [here](#). They also have a Fact Sheet on Bipolar Disorder in children and adolescents.

HealthLine has some nice [figures](#) on statistics and symptoms of bipolar disorder.

The Mayo Clinic has a good [overview](#) of bipolar disorder.

*The Unquiet Mind* (by Kay Redfield Jamison) is an autobiography of a well-known psychology researcher who has bipolar disorder.

There is a hypothesized link between bipolar disorder and creativity. (Note that this does not necessarily mean they are simultaneous—there is evidence that many creative people with bipolar disorder were most creative during periods of relative health.)

- See this [brief article](#) from PsychCentral.
- A book discussing this link: “*Touched with Fire: Manic-Depressive Illness and the Artistic Temperament*” (also by Kay Redfield Jamison)

**Schizophrenia**
A good description of schizophrenia from the Mayo Clinic (see [here](#)).

The NIMH has a very good overview of schizophrenia [here](#).

PsychCentral also has [information](#) on schizophrenia including pages on potential biological factors and myths about the disorder.

Is there a genetic test for schizophrenia? See this [article](#) that discusses research on a genetic test that may predict risk of schizophrenia.

TED Talk by Elyn Saks who suffers from schizophrenia: “A tale of mental illness—from the inside” (15 minutes).

*“I Never Promised You a Rose Garden*” by Joanne Greenburg. This is a classic novel written from the perspective of a young schizophrenic girl.

What is the role of glutamate in schizophrenia?

- 4-minute [video](#) about a woman named Susannah Cahalan who suffered from schizophrenic-like symptoms due to an immune disorder that attacked a certain type of glutamate receptor in her brain.

**Autism**
The NIMH [discusses](#) the symptoms, risks, and potential causes of autism.

This *New York Times* [article](#) discusses environmental versus genetic contributors to autism.
HowStuffWorks has a well-sourced article about autism.

Examples of children with autism:
- Great video about the story of Carly Fleischmann, a girl with severe autism who was unable to speak until, at the age of 10, she proved able to type out sentences using a laptop. She is now able to communicate via typing with her family and the online community (video, 10 minutes)
- Video of a boy with autism and his uncle explaining some of the symptoms and potential causes of autism (video, 6 minutes)

Savants: A minority of people with ASD demonstrate savant skills, i.e. an outstanding ability in a narrow area such as music, art, or math.
- Daniel Tammet is a highly functioning autistic savant who wrote the book “Born on a Blue Day”. (TED talk, 6 minutes; “The Boy With the Incredible Brain”, 47 minutes)
- Article describing the “10 most fascinating savants in the world”

Are certain vaccines responsible for an increased risk of autism?
- A 5-minute video titled “Vaccines and autism: why does the controversy persist?” that interviews Seth Mnookin, author of the book “The Panic Virus.” The video discusses the now infamous and retracted journal article published in The Lancet suggesting a link between the measles-mumps-rubella vaccine and autism, and the subsequent scientific evidence demonstrating no such connection.
- Article from NIMH, “Autism risk unrelated to total vaccine exposure in early childhood.”

Is there a relationship between “mirror neurons” and autism?
- TED talk by neuroscientist Vilayanur Ramachandran about mirror neurons.
- Website on Giacomo Rizzolatti, the researcher who discovered mirror neurons, that contains multiple videos describing his discovery of mirror neurons and the relationship between mirror neurons and autism. (Particularly relevant is “The Processing of Intentions in Autistic Children.”)
- This article discusses the debate over whether mirror neurons could really be responsible for higher-level processes like empathy.

Post-Traumatic Stress Disorder (PTSD)
The National Center for PTSD has a booklet with a general overview of the disorder and some statistics about the occurrence of PTSD in men and women.

The NIMH has good information about potential risk factors and the neural basis of PTSD.

An overview of PTSD from the Mayo Clinic, including causes and treatments.

BrainFacts.org has an overview of research on PTSD and the brain.

Cases of PTSD:
- Two stories of PTSD from PsychCentral
- An article from SFGate about a soldier who suffered from PTSD after his deployments. The story also has some statistics of PTSD among veterans.
- More statistics from the National Center for PTSD.
Obsessive-Compulsive Disorder (OCD)
An overview of OCD from the Mayo Clinic.

The NIMH website talks about OCD symptoms, risks, diagnosis, and treatments.

The International OCD Foundation has a basic fact sheet on OCD in children and adolescents.

A great article from Discover magazine about a major OCD researcher at UCLA and his use of mindfulness techniques as treatment.

YouTube videos on OCD:
- This a long film from Canada, but it has smaller sections that portray a variety of real people with OCD. (1:10:00)
- A short video of one man describing his compulsions, with a few clips of a therapist talking about her treatment approach. (8:10)

Attention Deficit Hyperactivity Disorder (ADHD)
This NIMH website has a lot of good information on ADHD. It also has a Fact Sheet about ADHD in children and adolescents.

An article from PsychCentral with some information about the potential neurobiological origins of ADHD.

The Centers for Disease Control & Prevention have good statistics about the prevalence of ADHD in America.

Alzheimer's Disease
Alzheimer's Disease is often thought of more as a neurological disorder than a mental illness, but it is included here as an example of a brain disease with significant behavioral symptoms that occurs later in life to a significant percent of the population.

This website visualizes a progression of anatomical changes in a healthy brain from infancy through old age.

A website from the NIH about Alzheimer's disease.

The Mayo Clinic has a lot of good resources on risk factors, tests and diagnoses, and treatment.

This video reviews the cognitive changes in healthy aging vs. Alzheimer's disease and current research on the causes and risk factors of AD.

Alzheimer's seems to arise from a combination of genetic and environmental factors.

Genetics:
- See this website from the NIH on the genetic links to Alzheimer's and the questions that still need to be answered.
- The Mayo Clinic has clear but detailed information about some of the known genes related to Alzheimer's here.
Environment:

- There is an association between serious head injuries and Alzheimer's in professional athletes and combat soldiers. (See an article from *Time* here)
- Another recent study shows that football players have higher incidence of dementia and AD. (See news articles here and here.)
- Note that Alzheimer's disease is different from chronic traumatic encephalopathy (CTE), which has also been widely studied in athletes.

Classroom Activities:

Activity #1 - Mental Illness on TV
Have the students find video clips from movies or TV shows that portrays some form of mental illness. Show these videos to the class and lead a discussion:

- Is this illness accurately portrayed?
- Are other characters sympathetic or unsympathetic towards the character with mental illness?
- Is the disorder presented a good thing (e.g. superpower), a bad thing, or a complex mix?
- See this link for a huge list of disorders on TV, books, and movies.

Activity #2 – Case Studies
As an introduction to some of these disorders, read a number of case studies to class and have them guess what disorder might be described.

- This link has cases for depression, PTSD, and schizophrenia

Assignment Ideas:

Assignment #1 – Pharmaceutical Ads
Often, biological causes of a disorder are oversimplified. This may be helpful, as we still have much to learn about the neuroscience of mental illness, but sometimes it may do more harm than good, if these simplified explanations lead to false inferences or conclusions about causes and treatments. Have students look up medication ads for a given disorder (e.g. pharmaceutical ads for depression medications). Have them present these in class and discuss the following questions:

- Is the ad simplified or inaccurate?
- What do we know of the neuroscience behind this disorder?
- How would you change the ad to better reflect an accurate understanding of the disorder?

Assignment #2 - Science in the Classroom Annotated Article on Alzheimer's Disease
Science in the Classroom (SitC) is a collection of annotated research papers and accompanying teaching materials designed to help students understand the structure and workings of professional scientific research. This annotated paper, “Amyloid and tau: Both may be needed for developing Alzheimer’s disease“ investigates how two of the major hallmarks of the disease may work together to cause the symptoms that we see in patients.

- Assign small sections of the article to student groups to read and discuss during class (or in a computer lab, as the interactive article is web-based).
- Then have each group present or use a jigsaw method to teach the entire class what is in their part of the article.
- See the Teacher Resource guide that accompanies the article.
**Social and Ethical Issues in Psychiatry**

The questions in this section could be used for in-class discussion, debate (pro/con), or a report format.

**Key Points:**

- What is normal? Our notions of mental health and what is normal/abnormal are embedded within a specific culture at a specific period in time.
- To what extent do we weigh medication versus personal responsibility when we consider treatment of a disorder?
- Desperate patients try desperate treatments. Should we regulate this, and how?

**Resources and Discussion Questions:**

**What is Normal?**

The Mayo Clinic has a brief article on “What’s normal, what’s not?” as a way to introduce the Diagnostic and Statistical Manual of Mental Disorders (DSM), which is the manual published by the American Psychological Association (APA) for mental illness diagnoses.

A longer article from Psychology Today about “what is normal?”

Diane Rehm Show interview (50 minutes) with Dr. Allen Frances, chair of the task force that created the DSM-4 and author of the book “Saving Normal: An Insider’s Revolt Against Out-Of-Control Psychiatric Diagnosis, DSM-5, Big Pharma, And The Medicalization Of Ordinary Life.”

**Medication versus Personal Responsibility**

Questions for discussions:

- *Is it lazy to take a pill rather than tough it out through depression or ADHD when it gets in the way of school and job performance?*
- *Do you feel this is truer for psychiatric illnesses than, for example, Type 2 diabetes, which can be improved by diet and strenuous exercise? Given that depression saps your motivation and makes you pessimistic, does it make sense to expect people to solve their problems on their own?*

For this particular topic, there are a multitude of blog posts and brief articles from all over the spectrum. Some argue for a greater recognition of biological factors in disorders and treatment, some argue that these factors are “excuses” for what often still comes down to a person’s own choice in behavior. Use search terms such as “personal responsibility and medication” and “personal responsibility and mental illness.”

**Desperate Patients Try Desperate Treatments**

HowStuffWorks has a long but interesting description of the history and controversial nature of frontal lobotomies, a procedure done often in the 1940s and 50s that essentially severed the connections between the frontal lobes and the rest of the brain.

A short history of the frontal lobotomy from PsychCentral.

Shock therapy is also seen as an extreme therapy, though it is still used in some cases. Fortunately, it is safer than it once was. The Mayo Clinic has a good overview of modern-day shock therapy (also linked above), though this website gives an overview of some of its darker history.
Electroconvulsive shock therapy has been portrayed in One Flew Over the Cuckoo’s Nest (video clip) and in the book The Bell Jar by Sylvia Plath.

**Classroom Activities:**

**Activity #1 - Mental Health Equality**

Should mental health costs be covered by insurance the same way that physical illnesses are covered? Have students use the following resources and others to prepare a “pro” or “con” argument to this question:

- Mental health parity and addiction equity act: An ABC News article discussing the Mental Health Parity Bill passed in 2008 stating that those insurance companies that offer mental health coverage must offer coverage for mental illness comparable to what they provide for physical illness.
- A New York Times article on the bill.
- More information from SAMHSA (Substance Abuse and Mental Health Services Administration) on the Mental Health Parity and Addiction Equity Act.
- PBS NewsHour has a discussion of mental health parity in light of the shooting at Sandy Hook Elementary School.

**Assignment Ideas:**

**Assignment #1 – Awareness Poster**

There is still a lack of awareness about many disorders, though some more known than others. Have students break into teams to create an awareness poster (or video) about a particular mental disorder. Make sure that the poster includes:

- Symptoms of the disorder
- Groups at risk (women, veterans, etc.)
- Treatment options
- Local support (have the students look up real clinics/supports in their local area)
- Look at this document from NIH for one example of how this activity could be presented to students and incorporated into the classroom.

**Annotated Resources**

Note: Articles published by the Dana Foundation are written specifically for a wide readership and therefore the easiest to read among the below list.

**General**

**The Age Gauge: Older Fathers Having Children**

Dana Foundation/Brian M. D’Onofrio and Paul Lichtenstein

This is a relatively long article that describes several studies in detail and also hypothesizes why this link exists, for instance degradation of sperm over time or trait differences in fathers who have children earlier rather than later.

**Pediatric Screening and the Public Good**

Dana Foundation/Jennifer Kwon and Richard H. Dees

This a good, short article on the ethics of screening children for diseases.
A Road Paved by Reason
Dana Foundation/Elizabeth Norton Lasley
This article is a very good and clear overview of cognitive therapy and some of the neuroscience research that compares this kind of “talk therapy” treatment with medication.

Nothing Tastes as Good as Skinny Feels: The Neurobiology of Anorexia Nervosa
Trends in Neurosciences/Walter H Kaye and others
This is a fascinating description of AN, including research in both psychology and neuroscience. Some of the neuroscience sections can get a bit technical, but much of the article is readable.

Add Neurons, Subtract Anxiety
Scientific American/Mazen A. Kheirbek and Rene Hen
This article describes the concept of neurogenesis, the creation of new neurons, and how this process may aid our ability to distinguish between similar memories. People who have a harder time making these distinctions may more easily suffer from disorders such as PTSD.

Understanding Mental Disorders as Circuit Disorders
Dana Foundation/Thomas R. Insel
A very brief reflection on how mental disorders have been redefined as brain disorders, and how the field is now narrowing even more specifically on faulty connections between brain regions.

Specific Illnesses
ADHD: Ten Years Later
Dana Foundation/Philip Shaw
This is a great, substantial overview of neuroscience research related to ADHD.

Do Cytokines Really Sing the Blues?
Dana Foundation/Charles L. Raison and Andrew H. Miller
This article gives a fascinating look at the relationship between inflammation and depression. The first few sections are also great for learning about the importance of thinking carefully about inferences are made from research.

Interpersonal Therapy
Dana Foundation/Elizabeth Norton Lasley
A short description of another type of therapy and some research showing its usefulness.

Using Deep Brain Stimulation on the Mind: Handle with Care
Dana Foundation/Mahlon R. DeLong
A great overview of deep brain stimulation and its initial foray into the treatment of psychiatric illness.

Deep Brain Stimulation Offers Hope in Depression
Dana Foundation/Jamie Talan
This article focuses on the history and actual technique of DBS. It also contains compelling stories of a couple of the first patients with depression to be treated with DBS.

Suicide and the United States Army
Dana Foundation/Elspeth Cameron Ritchie
This is a very good, informative article on stress, risk factors, and strategies for suicide reduction.
Cognitive Therapy vs. Medications for Depression

*Nature Reviews Neuroscience/Robert J. DeRubeis, Greg J. Siegle and Steven D. Hollon*

A detailed and helpful review of the similarities and differences of how cognitive therapy and medication treat depression.

Cognition in Schizophrenia: Core Psychological and Neural Mechanisms

*Trends in Cognitive Science/Deanna M. Barch and Alan Ceaser*

This article is a bit theoretically complex for someone not familiar with cognitive psychology, but reading the introduction and conclusion can provide some good information about a particular cognitive deficit in schizophrenia and its underlying neuroscience.

Long-term Memories: The Good, the Bad, and the Ugly

*Dana Foundation/Cristina M. Alberini*

A good overview of long-term memory and potential PTSD treatment options related to re-consolidation.

Unshackling the Slaves of Obsession and Compulsion: A Brain Science Success Story

*Dana Foundation/Judith L Rapoport*

This article is a very good overview of the symptoms, neuroscience, and treatment options for OCD.

Solving the Puzzle of Autism

*Dana Foundation/Alan Packer*

A helpful overview of factors potentially involved in the development of autism.

The Social Motivation Theory of Autism

*Trends in Cognitive Science/C. Chevallier and others*

This article clearly describes an interesting theory regarding the core deficit in ASD.

When and How Does Autism Begin?

*Trends in Cognitive Science/Jennifer M.D. Yoon and Athena Vouloumanos*

This short article summarizes an important new finding related to early diagnosis of ASD and discusses two potential theories to explain the finding.

Heterogeneity Within Autism Spectrum Disorders: What Have We Learned from Neuroimaging Studies?

*Frontiers in Human Neuroscience/Rhoshel K. Lenroot and Pui Ka Yeung*

This is quite a long and detailed review, but could be used as a reference for sub-topics of interest.

Social and Ethical Issues

The Meaning of Psychological Abnormality

*Dana Foundation/Jerome Kagan*

Resource:

This article is ripe for discussion and debate about the role of social and cultural influences on mental illness diagnoses.

Cross-Cultural Barriers to Mental Health Services in the United States

*Dana Foundation/Frederick T. L. Leong*

This is a good discussion of a range of types of barriers for ethnic and racial minority groups, and it proposes some recommendations for change.