



*Society for the Teaching of Psychology*  
Division 2 of the **American Psychological Association**

Authentic Assessments for Biopsychology: Encouraging Learning and Retention by  
Applying Biopsychological Knowledge in Real-World Contexts

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**Introduction**

This package contains fifteen teaching resources created for an Introduction to Biopsychology course. My institution offers the course at the 200-level, but the resources are appropriate for any undergraduate introductory course in the Biological Bases of Behavior, Neuroscience, or Physiological Psychology. Developed for the online classroom, each activity includes suggestions for modifications to use if teaching face-to-face (F2F).

**Background**

I taught this course online and F2F for many years, but faced a crisis with my class activities. Most of my pedagogy relied on assignments borrowed directly from textbook teaching resources, and included passive learning activities like fill-in-the-blank or crossword puzzles. These kinds of activities are great for learning the ample terms and definitions required for the course. However, these activities did not engage metacognition, real-world application, or even interest among students. Worse, these passive activities were highly susceptible to plagiarism. I desperately needed a change.

With this in mind, I joined a Faculty Learning Community (FLC) on Authentic Assessments in Online Learning at my institution. My project was to revise the activities in my online Biopsychology course, using principles of authentic assessment (Mueller, 2005; Wiggins, 1990; 1999) and constructivist learning (Dunn, Halonen, & Smith, 2008; Mayo, 2010). Authentic assessment asks students to apply knowledge in real-world contexts (Mueller, 2005). Constructivist learning acknowledges the benefit of creating knowledge by assimilating new information with what is already known (cognitive constructivism), in conjunction with the value of creating more sophisticated knowledge through the interaction with peers and skilled teachers (social

constructivism). To facilitate these two aspects of constructivist learning, students should be encouraged to both personalize new information (assimilate knowledge with what is already known), and socially construct knowledge (gain knowledge by participating in discussion with peers and teachers). Authentic assessment should increase the intrinsic value of learning for students, by personalizing the learning in some way (Ambrose, Bridges, DiPietro, Levitt, and Norman, 2010; Dunn et al., 2008).

### **Empirically-Supported Teaching Strategies Utilized in this Resource**

The activities developed in this resource focus on personalizing knowledge (cognitive constructivism) and exchanging ideas with others (social constructivism). There is ample evidence demonstrating the benefits of personalized learning and communicating with others on student motivation and success (e.g., Ambrose et al., 2010; Lang, 2016; Mayo, 2008). For example, Ambrose and colleagues (2010) suggest that experts have greater connections between information than novices. Personalizing activities and exchanging ideas with others can increase connections in information, which can lead to expertise.

### **Summary of Activities**

Some activities in this resource are designated assignments, some are application activities, and some are discussions, but most could be adapted for any purpose. Assignments and application activities are completed independently and shared privately with the professor for feedback through the course LMS. Assignments ask students to explain in their own words information from the book or other sources. Application activities ask students to apply information to create a product to educate others on a topic, for example, create a lecture, a brochure, or an infographic. Discussions are questions asked and answered with others on the online discussion board, or in

small groups in class. In my class, assignments and application activities are verified for originality using TurnItIn. Our LMS does not have an option to verify discussions with TurnItIn, so many of the discussion activities ask students to create a product or to debate a topic, activities I suspect may decrease the tendency to copy from others (assessment of this is currently in progress).

Each activity has been verified as aligning with the principles of authentic assessment using a Rubric for Evaluating an Authentic Assessment (see Appendix A), developed using Jon Mueller's (2016) work on authentic assessments (<http://jfmuller.faculty.noctrl.edu/toolbox/index.htm>), and including a final review of the rubric by Muller (J. Mueller, personal communication). A sample of five assessments were additionally subject to peer review by three individual faculty: one who currently teaches an introductory course in biopsychology, one who has not yet taught such a course but will likely in the future, and one who likely would never teach such a course but who has expertise in the scholarship of teaching and learning.

In addition to focusing on authentic assessment, each activity in this resource has been prepared to align with some of the five goals of the undergraduate psychology degree established by the American Psychological Association (APA, 2008; 2013; 2016). Table 1 includes a list of activities and their associated grading rubrics.

**Table 1. List of Activities.**

Topic	Activity	Grading Rubric
1. <a href="#">Ethical Use of Animals in Neuroscience Research</a>	Online Discussion: Ethical Use of Animals in Neuroscience Research	<a href="#">Ethical Use of Animals in Neuroscience Research Grading Rubric</a>
2. <a href="#">Consciousness and the Brain</a>	Online Assignment: Consciousness and the Brain	<a href="#">Consciousness Activity Grading Rubric</a>
3. <a href="#">Neurotransmission</a>	Online Application Activity: Mini-Lecture on Neurotransmission	<a href="#">Neurotransmission Activity Grading Rubric</a>
4. <a href="#">Nervous System</a>	Online Application Activity: Infograph of the Nervous System	<a href="#">The Nervous System Activity Grading Rubric</a>
5. <a href="#">Neurotransmitters</a>	Online Discussion: Neurotransmitters	<a href="#">Neurotransmitters Grading Rubric</a>
6. <a href="#">Methods of Neuroscience Research</a>	Online Assignment: Methods of Neuroscience Research	<a href="#">Methods of Neuroscience Research Grading Rubric</a>
7. <a href="#">Visual Sensation and Perception</a>	Online Application Activity—Visual Sensation and Perception	<a href="#">Neuroscience of Vision Grading Rubric</a>
8. <a href="#">Debating Cochlear Implants</a>	Online Discussion: Debating Cochlear Implants	<a href="#">Debating Cochlear Implants Grading Rubric</a>
9. <a href="#">Neurobiology of Sleep</a>	Online Assignment: Neurobiology of Sleep and Biological Rhythms	<a href="#">Neurobiology of Sleep Grading Rubric</a>
10. <a href="#">Neurobiology of Emotion</a>	Online Application Activity: Neurobiology of Emotion	<a href="#">Neurobiology of Emotion Grading Rubric</a>
11. <a href="#">Neurobiology of Learning &amp; Memory</a>	Online Application Activity: Neurobiology of Learning & Memory	<a href="#">Neurobiology of Learning and Memory Grading Rubric</a>
12. <a href="#">Neurobiology of Ingestive Behavior</a>	Online Assignment: Neurobiology of Ingestive Behavior	<a href="#">Neurobiology of Ingestive Behavior Grading Rubric</a>
13.		
14. <a href="#">Neurobiology of Mental Health I</a>	Online Assignment: The Neurobiology of Mental Health--Schizophrenia, Affective, or Anxiety Disorders	<a href="#">Neurobiology of Mental Health I Grading Rubric</a>
15. <a href="#">Neurobiology of Mental Health II</a>	Online Assignment: Neurobiology of Mental Health: Autistic, ADHD, or Stress Disorders	<a href="#">Neurobiology of Mental Health II Grading Rubric</a>
16. <a href="#">Addiction</a>	Online Application Activity: Neurobiology of Addiction	<a href="#">Addiction Grading Rubric</a>

**Assessment of Activities**

Assessment of these activities is approved by the Miami University IRB, and will include assessing whether the activities meet their intended goals of increasing learning and retention and decreasing plagiarism. Preliminary assessment has compared anonymous student comments from  $n = 66$  students enrolled in online courses that used these assessments, vs.  $n = 62$  students enrolled in online courses that used traditional assessments (fill-in-the-blank, crossword puzzles, answering questions from the book). Comments from courses using traditional assessments included the following:

- “assignments might only cover one small section of the chapter”
- “change the assignments”
- “Assignments and discussions feel like busy-work.”
- “Assignments are not appropriate for a college-level class. I haven’t done these kinds of fill-in-the-blank activities since 5<sup>th</sup> grade.”
- “What would you change to improve the course? Different homework assignments.”

Comments from courses using the authentic assessments indicate the following:

- “There is a wide range of types of assignment which really helps with understanding the material.”
- “The assignments were creative and discussions kept the class interactive.”
- “Strength-great use of materials, there was always a variety of work and it was never the same thing over and over again”
- “the assignments are super interesting and help me learn the material in a great way.”
- “The assignments are long and intense, but I really appreciate how much information I have gotten out of them. The application activities really help to build my learning on

what I previously learned, and then having the information being based on another situation, which helps me to put the new information into real-world contexts. The discussions are cool too because I like to see what other classmates have to say about the assignments and I like to see how other students differ with my answers or are similar to my responses!”

Nonetheless, not all students have been satisfied with the change:

- “There are a lot of assignments for a short amount of time. Also, APA format wasn’t a format that I had learned in school in the past.”
- “a lot of homework assignments that were very time consuming and would sometimes take me over an hour for one assignment. Think they sometimes were a little far fetched and didn't help learn the material.”
- “At times, I felt like I was more concerned about completing the assignments rather than actually learning the material.”

These comments help to confirm that at least a subset of students are gaining knowledge through cognitive and social constructivism, a primary goal for the authentic activities. Noteworthy is that some comments contain specific reference to applying knowledge in real-world contexts, not something directly shared with students as a learning outcome for the activities or course. This suggests that students are able to see inherent in these activities the learning value gained by applying information in a personalized way. Adding information about expected time to complete may help students adjust their expectations for each activity. I include time commitment on my course syllabus, which explains that students should expect to spend roughly 3 hours to complete

each assignment, discussion, and application activity. Adding this information directly to the activity may help to clarify the expected time commitment for students. Users of these activities will notice that some of the lengthier activities included here do include an expected time to complete.

### **Acknowledgements**

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### **References**

- Ambrose, S., Bridges, M., DiPietro, M. Lovett, M. & Norman, M. (2010). *How learning works: 7 research-based principles for smart teaching*. San Francisco, CA: Josey-Bass.
- American Psychological Association. (2008). *Teaching, Learning, & Assessing in a Developmentally Coherent Curriculum*. APA Task Force on Strengthening the Teaching and Learning of Undergraduate Psychological Science. Retrieved from <https://www.apa.org/ed/governance/bea/curriculum.pdf>
- American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.
- American Psychological Association. (2016). Guidelines for the undergraduate psychology major: Version 2.0. *American Psychologist*, 71(2), 102–111. <https://doi.org/10.1037/a0037562>



- Dunn, D. S., Halonen, J. S., & Smith, R. A. (2008). *Teaching critical thinking in psychology: a handbook of best practices*. Wiley-Blackwell.
- Lang, J. M. (2016). *Small teaching: Everyday lessons from the science of learning*. San Francisco, CA: Joseey-Bass.
- Mayo, J. A. (2010). *Constructing undergraduate psychology curricula: Promoting authentic learning and assessment in the teaching of psychology*. Washington: American Psychological Association. <https://doi.org/10.1037/12081-000>
- Mueller, J. (2005). The authentic assessment toolbox: enhancing student learning through online faculty development. *Journal of Online Learning and Teaching*, 1(1), 1–7. Retrieved from [http://jolt.merlot.org/documents/vol1\\_no1\\_mueller\\_001.pdf](http://jolt.merlot.org/documents/vol1_no1_mueller_001.pdf)
- Wiggins, G. (1990). The case for authentic assessment. - practical assessment, research & evaluation. *Practical Assessment, Research, & Evaluation*, 2(2), 1–3. Retrieved from <http://pareonline.net/getvn.asp?v=2&n=2>
- Wiggins, G. (1999). Healthier testing made easy: The idea of authentic assessment. Retrieved November 20, 2017, from <https://www.edutopia.org/authentic-assessment-grant-wiggins>

**Activity 1. Online Discussion: Ethical Use of Animals in Neuroscience Research**  
**50 points**

**ASSIGNMENT:** Use scientific evidence to adopt a position to debate the ethical use of animals in neuroscience research.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Search scientific databases to find scientific sources (meets APA Goal 2.2, Demonstrate psychology information literacy)
2. Apply ethical standards to evaluate neuroscience research with animals (meets APA Goal 3.1, Apply ethical standards to evaluate psychological science and practice)
3. Use evidence to argue a position in writing using APA style (meets APA Goal 4.1, Engage in effective writing for different purposes)
4. Discuss with others the risks and benefits of ethical research with animals (meets APA Goal 4.3, Interact effectively with others)

**STATEMENT OF THE PROBLEM:** You have been told that there is current, cutting-edge research with animals that could lead to the development of neural implants that could stop life-threatening seizures in humans. It is not guaranteed that this research will lead to a viable device, but without the research, no such device could ever be developed. To determine if the device will work in humans, roughly 250 rats will have surgery that will permanently implant devices into their brain. The devices are fastened to the skull with tiny screws and dental acrylic, which will dry very quickly and will not weigh much. The rats will be under general anesthesia during the surgery, which will take place under sterile conditions, similar to human surgery. Rats will receive pain treatments during recovery, which will last two days. Animals are expected to behave normally and experience little change in their behavior or quality of life following recovery.

**QUESTION:** Do humans have a right to conduct this type of exploratory research in animals? Why or why not?

**TASK:** Using this information, prepare an essay arguing either FOR or AGAINST the use of animals in neuroscience research. Use the information in the text AND at least one peer-reviewed scientific source on ethical research in animals. Use the library databases such as PsychInfo, Agricola, or Medline to find your article. Try searching for your scientific source using the key words “ethical research in animals.” Your essay should argue a minimum of **two** points supported by the evidence you find. Follow APA format in your essay, and be sure to cite your sources AND INCLUDE THE FULL REFERENCE in APA format at the end of the essay. Your essay should be 300-450 words. **INSTRUCTOR NOTE:** Faculty may choose to assign students to argue either “for” or “against” to ensure an even number of students presenting each side.

**SUBMIT:** By Day 3 of the Module, post on the class Discussion Board your essay for or against the use of animals in research.

**PARTICIPATE/PEER REVIEW:** By Day 7 of the Module, respond to at least two other posts: one to at least one person who presents the argument opposite to yours, AND one to at least one person who commented on your post or took a position in agreement with yours. Response posts should be at least 100 words in length, and should include evidence with citations for your position.

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 2. Online Assignment: Consciousness and the Brain**  
**50 points**

**PURPOSE:** This assignment will aid in understanding the role that specific brain areas play in behavior and consciousness.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Compare and contrast the neural bases of at least three neurological conditions: split-brain, blindsight, unilateral neglect, and prosopagnosia (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Discuss in a letter to your friends how these neurological conditions might alter a person's life (meets APA Goal 4.1, Demonstrate effective writing for different purposes)

**ACTIVITY:** Oh my goodness! Your four best friends were recently in a car accident. I'm so sorry! On the good side, all survived. On the bad side, all four suffered brain damage in the accident. Alexis has been diagnosed with [blindsight](#), Tyler is exhibiting symptoms of [unilateral neglect](#), Sarah has [prosopagnosia](#), and Micah has been diagnosed with symptoms similar to [split-brain](#). You are curious to learn more about these conditions. You would like to help your friends understand what to expect from their condition, and how their conditions may be similar to or different from the other three. For this assignment, choose any **three** of the **four** conditions to learn more about. Watch the videos linked above, and read about these conditions in the book as appropriate.

**TASK:** After watching the hyperlinked videos above and reading the assigned readings, write a 300+-word letter to your friends, to explain the three conditions you chose. Be sure to explain what they share in common, and how they are different. Using evidence from the text and videos, explain what these conditions tell us about brain function. In your letter, be sure to address the following:

1. Complete definitions of all three conditions you chose
2. Full explanations of what can cause all three conditions
3. A discussion of how each might affect a person's life
4. An explanation of what these three conditions have in common, including what they tell us about brain function. (**INSTRUCTOR NOTE:** correct answer here is that each of these conditions tell something about how the brain regulates consciousness).
5. Even though this is a letter to your friend, be sure to cite your sources, and provide a reference section in APA format at the end.

**SUBMIT:** Your 300+ word letter to Canvas (or other LMS) by the deadline.

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 3. Online Application Activity: Mini-Lecture on Neurotransmission**  
**50 points**

**PURPOSE:** This activity will assist you in learning principles of neural transmission. This activity will take the average student 3-4 hours to complete.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Explain how neurons generate action potentials. (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Present a “mini-lecture” explaining neural transmission appropriate for a high school level or above. (meets APA Goal 4.2, Demonstrate effective presentation skills for different purposes).

**ACTIVITY:** For this project you will create a 3-5 minute video lecture whose purpose is to explain at a high school level or above, neurotransmission, that is, how neurons generate action potentials to send messages through the brain and nervous system.

**TASKS:**

1. Create a slide show using PowerPoint or Prezi on neurotransmission, that is, how neurons generate action potentials to send messages through the brain and nervous system. In your presentation, use as many graphics as possible to illustrate your points. You can find graphics by searching google images. Be sure to include citations for your graphics in [APA format](#).
2. Record yourself delivering your slideshow as a “mini-lecture” for high school students or above, using Screencast-o-Matic <http://www.screencast-o-matic.com> or some other screen-casting software of your choice, or you may record using your own video recording software (i.e., your phone). **Be sure we can see both you and your slideshow in your presentation** (Helpful Tip: Screencast-o-Matic will let you add a video insert of yourself, and this feature is free from the website—just download the software as instructed on their website).

In your slide show and video, be sure to explain the following:

- a. **The parts of neuron and what they do.** You should include at least seven parts of a neuron in your description. You will need approximately one slide to explain and illustrate parts of a neuron and what they do. **Helpful Tip:** Here is a good place for a graphic: a picture of a neuron.
- b. **The electrical portion of the action potential.** Your explanation should include the major ions involved, a discussion of the resting membrane potential, and an explanation of how the resting membrane potential changes to generate an action potential. You will need approximately 1-4 slides to explain this. **Helpful Tip:** Here is another good place for a graphic: a picture of a neuron that includes ions and ion channels.
- c. **The chemical portion of the action potential.** Your explanation should explain how neurotransmitters bind to receptors, and how this binding action can change membrane potentials. Also be sure to explain how the chemical portion of the signal is both initiated and terminated, that is, how neurotransmitters are released from vesicles, and how neurotransmitters are removed from the synapse. You will need approximately 1-3 slides to explain this. **Helpful Tip:** Here is another good place for one or more graphics: pictures of terminal buttons with vesicles, synapses, and post-synaptic dendrites with receptors.

**SUBMIT:** A link to your screencast-o-matic or upload your video file to Canvas (or other LMS) by the deadline.

#### References

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 4. Online Application Activity: Infograph of the Nervous System**  
**50 Points**

**PURPOSE:** The purpose of this activity is to help students learn more about the divisions of the central and peripheral nervous systems and their function in behavior and mental processes.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Identify at least SIX major divisions/subdivisions of the central and peripheral nervous systems (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Describe the function of the major divisions/subdivisions of the nervous systems, and explain the relevance of their function to behavior and mental processes (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology).

**TASK:** Last Sunday at family dinner, your aunt brought her new partner, a third grade teacher. Over dinner, you were talking about what you've been learning in your Biopsychology class about the brain and nervous system. Your aunt's partner was so excited, they invited you to share information about the nervous system with her class. They told you about a resource they use a lot called an "infographic", a way to present information visually that is easy to understand. More than just an accumulation of data, infographs use images and text to present information at a glance. They ask if you could develop an infographic of the nervous system that they could share with her class. You are intrigued, and accept the challenge!

Using information from the text and course resources, create an infographic describing the divisions of the nervous system. Be sure your infographic not just correctly identifies the divisions, but also explains the function of each division and how this relates to behavior. You may find free templates and software to create an infographic at <https://create.piktochart.com/infographic> (you can create an account for free at this website). Some samples are included at the end of this assignment. Some students have liked this template from the website: <https://create.piktochart.com/infographic/editor/1049> (create an account first to access).

**NOTE:** Faculty may share samples in class or online.

**SUBMIT:** Upload to Canvas (or course LMS) by the deadline, an infographic that identifies and include descriptions of **both** central and peripheral nervous systems. If you cannot include descriptions of the structures on the infographic, you may include as a separate page.

### References

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

Two Example Infographs.

# The NERVOUS system

### Central Nervous System

The central nervous system is comprised of the brain and spinal cord.

#### Forebrain

- Telencephalon:** Cerebral cortex, basal ganglia, hippocampus, amygdala.
- Diencephalon:** Thalamus, hypothalamus.

The forebrain is responsible for movement, planning of movement, perceiving and learning, and species typical behaviors.

#### Midbrain

- Mesencephalon:** Tectum, tegmentum.

The midbrain is responsible for controlling visual reflexes and reactions to moving stimuli. It plays a role in sleep, arousal, and parts of the motor system.

#### Hindbrain

- Metencephalon:** Pons, cerebellum.
- Myelencephalon:** Medulla.

The hindbrain integrates and coordinates movement. Plays a role in sleep and arousal, and vital bodily functions such as heart rate, breathing, and blood pressure.

### Peripheral Nervous System

The peripheral nervous system is comprised of the cranial nerves, spinal nerves, and peripheral ganglia.

#### Automatic NS

- Sympathetic NS
- Parasympathetic NS

The sympathetic nervous system is in charge of controls activities that occur during excitement & exertion. The parasympathetic nervous system controls activities during relaxation.

#### Somatic NS

The somatic nervous system is in charge of muscles and systems. It has the spinal nerves, and cranial nerves that convey sensory and motor axons.

Brain, Spinal cord, Central nervous system, Peripheral nervous system, Ganglion, Nerve

Carlson, Neil R. (2014) *Foundations of Behavioral Neuroscience* 9th edition.

## All about MY BRAIN

Name: \_\_\_\_\_

### The Nervous Systems

Peripheral Nervous System: Cranial, Spinal Nerves, and Peripheral Ganglia

- Somatic:** In charge of muscles and senses
- Autonomic:** In charge of smooth muscle, cardiac muscle, and glands

#### Central Nervous System: Brain and Spinal Cord

- Forebrain: surrounds rostral (front of the face) area & consists of the telencephalon and diencephalon
- Telencephalon: has the Basal ganglia (large amount of nuclei), cerebral cortex (outer layer of cerebellum), & limbic system (hippocampus & amygdala)
- Diencephalon: has the Thalamus (receives visual & auditory info) & the hypothalamus (controls the autonomic system & endocrine system)
- Midbrain: Surrounds cerebral aqueduct
- Consists of the Tectum and Tegmentum
- Hindbrain: Surrounds the fourth ventricle
- Contains: cerebellum, pons, medulla oblongata, metencephalon, and the myelencephalon

#### Somatic

Contains Spinal Nerves

- Dorsal root ganglia: unipolar neurons in white matter of spine
- Ventral root ganglia: multipolar neurons in gray matter of spine

#### Autonomic

Contains

- Sympathetic: "Fight or flight" response
- Parasympathetic: Resting, calming, digestion, sleeping, and healing

Metencephalon: Pons & Cerebellum  
 Myelencephalon: Medulla Oblongata  
 Spinal Cord: distributes motor fibers & receives sensory info.

**Activity 5. Online Discussion: Neurotransmitters and Neurotransmission**  
**50 points**

**PURPOSE:** This activity will help students to learn about different neurotransmitters and properties of neurotransmission.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Identify and describe several neurotransmitters and properties of neurotransmission (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Critically evaluate others' work (meets APA Goal 2.3, Engage in innovative and integrative thinking and problem solving)
3. Respectfully offer constructive criticism based on fact (meets APA Goal 4.3, Interact effectively with others)

**BACKGROUND:** Yay!! It is time to get ready for Brain Awareness Week (BAW). BAW is a nationwide effort organized by the Dana Alliance for Brain Initiatives and the Society for Neuroscience to educate the public on the benefits of brain research. BAW takes place each year during the second week of March. To learn more about BAW, visit the following websites: <https://www.sfn.org/BAW>, <http://dana.org/BAW>

**TASK:** Your Biopsychology professor wants the class to sponsor some fun and creative activities for BAW this year. They have asked your class to create a crossword puzzle to educate about neurotransmitters and neurotransmission. Your professor said that your puzzle must include a minimum of 20 clues and definitions, and must be accurate based on information in the textbook.

For this activity, each student will create their own puzzle to share with the class. Others in the class will then have the chance to complete your puzzle and offer feedback, and you'll be asked to complete at least two others and offer feedback to them. The professor will use the feedback on all of the puzzles to choose the best one(s) to include at the event.

To create your puzzle, you can use sites such as

<http://puzzlemaker.discoveryeducation.com/CrissCrossSetupForm.asp>, <https://www.puzzle-maker.com/CW>, <https://worksheets.theteacherscorner.net/make-your-own/crossword>, <http://tools.atozteacherstuff.com/free-printable-crossword-puzzle-maker> or find one of your own. Most sites offer you the chance to enter a term and definition, and then generate the puzzle for you.

Make sure you spell everything correctly and have the correct definitions!

For inspiration, here is an example: <https://www.puzzle-maker.com/start?O=7212b7btc6uwnU2yz1xyUem67u&StartPuzzle=Neurotransmitters.cw>

**SUBMIT:** Post a copy or link to your puzzle on the Canvas (**or other LMS**) discussion board by day 3 of the module. Make sure a blank version of your puzzle is available, but also be prepared to provide the key or link to the key (most of the websites above include both).

**PARTICIPATE/PEER REVIEW:** Review the Discussion Board and complete at least TWO other puzzles by the last day of the module. When you complete each puzzle, respond by offering constructive criticism to the student who created the puzzle. In your response post, include feedback on how easy or difficult you



thought the puzzle was and why. List at least one way you thought the puzzle helped your learning. List at least one way you thought the puzzle could be improved. Your response posts must each be at least 75 words in length.

### **References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 6. Online Assignment: Methods of Neuroscience Research**  
**50 points**

**PURPOSE:** This activity will help students to learn more about neuroscience research methods and how to evaluate sources of information.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Describe completely one method of neuroscience research (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Explain the relevance of this type of research on our understanding of the brain and behavior (meets APA Goal 2.1, Use scientific reasoning to interpret psychological phenomena)
3. Compare and contrast information regarding one neuroscience method across four types of scientific information: textbook, website, online videos, and peer-reviewed scientific journal articles. (meets APA Goal 2.2, Demonstrate psychology information literacy)
4. Communicate scientific information to a non-professional audience (meets APA Goal 4.1, Demonstrate effective writing for different purposes)

**TASK:** You've been talking with your grandmother, and telling her about this fascinating course you're taking in Biopsychology. You explain that in the class, you learn all about the brain and what it does. Your grandmother is intrigued, but skeptical—she doesn't understand how people can study the brain to know what it does. You really want her to share your excitement about what you've been learning, so you decide to try to find a way to explain it to her so she understands.

To explain to your grandmother how scientists study the brain, you decide to pick one method of neuroscience research, and explain it using four different sources of information: the textbook, a website that explains what the method is used for, a video that demonstrates the method in action, and a scientific research paper that uses the method. For the scientific paper source, make sure that it is peer-reviewed, found through Google Scholar or one of our library databases.

After finding and evaluating each source, prepare a written summary of what you plan to present to your grandmother. Be sure to address each of the following in your summary:

1. A description of the method from the textbook. Be sure you address both strengths and limitations of this method in your description (for example, a strength may be that the method is non-invasive and can be used in people, but a weakness may be that the method does not adequately determine that brain areas CAUSE specific functions—then explain why) (50-75 words).
2. A summary of the method from the website. Who sponsored the website you evaluated? What was their purpose or "voice" in their explanation—were they trying to inform, or were they trying to get you to purchase something? Be sure to include an APA-style citation and link to the site in your summary. (25-50 words)
3. A summary of the video. What did it demonstrate? What did you learn by watching? Identify at least one thing you found surprising in the video. Be sure to include an APA-style citation AND link to the video in your summary. (25-50 words)
4. A summary of the research article. What did this article study? Why did they use this method of research? What did they find? What does it mean? Include an APA-style citation and full reference for the article in APA format. (25-75 words)

5. Briefly compare and contrast the relevance and quality of the sources. Which source offered the most information? Which source was easiest to understand? Which source contained the most reliable information? Why? (25-75 words)

**SUBMIT:** Submit on Canvas (or course LMS) by the deadline a Word file that contains your explanation to your grandmother.

### References

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 7. Online Application Activity—Visual Sensation and Perception**  
**50 points**

**PURPOSE:** This activity will help you to explain how the brain processes and interprets visual information.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Describe multiple aspects of vision, including visual neuroanatomy and perception of visual stimuli (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Develop materials to educate 8<sup>th</sup> graders about aspects of visual sensation and perception (meets APA Goal 2.3, Engage in innovative and integrative thinking and problem solving)
3. Create a presentation to deliver scientific information about visual sensation and perception at an 8<sup>th</sup> grade level (meets APA Goal 4.2, Exhibit effective presentation skills for different purposes)

**TASK:** You have just been invited to teach a class of 8<sup>th</sup> graders how the brain processes visual information. For these students, you've been asked to prepare three things: 1) a brief presentation that addresses at least two concepts related to visual sensation and/or perception, 2) one activity that will help students to apply at least one of the concepts you're presenting, and 3) one assessment to determine the level of understanding of both of the concepts you present. Your presentation, activity, and assessment must address at least TWO of the aspects of visual processing detailed below. Remember these are 8<sup>th</sup> graders—you'll want to be as creative as possible in your presentation, to capture their attention and interest. You'll also want to make sure that your explanations are not too scientific—you have to present at a level that a typical 8<sup>th</sup> grader would understand.

Choose at least **two** of the following topics to include in your presentation and assessment (the activity only needs to address one):

1. Describe how the physical dimensions of light correspond to the psychological dimensions of color.
2. Explain what is involved in the process of sensory transduction, including coding of visual information by photoreceptors and ganglion cells in the retina
3. Outline the anatomy of the eye and its connections with the brain
4. Define and explain what is meant by *agnosia* and identify at least two things that can cause visual agnosia
5. Describe the anatomy of the visual association cortex and discuss the location and functions of the two streams of visual analysis that take place there, including the perception of color and the analysis of form.

**TIPS FOR PRESENTATIONS:** Presentations can be made with PowerPoint, Prezi, Word, Publisher, or any other presentation software. Your presentation should include a minimum of TWO illustrations, at least one for each of the concepts covered. **Begin your presentation with a list of learning objectives for the presentation: what will students learn by participating?**

**TIPS FOR ACTIVITIES:** Activities can include things like viewing a video, engaging in an online demonstration, solving a crossword puzzle, creating a model or demonstration, or answering questions. Your activity must include learning objectives and a key if there are definite correct/incorrect answers (for example, for a crossword puzzles or questions/answers).

**TIPS FOR ASSESSMENTS:** Assessments can include things like answering multiple-choice, true/false, short

answer, or matching questions about the topic. Your assessment should include a minimum of six questions, with at least three addressing each topic covered in the presentation. Your assessment must include a key with correct answers.

**SUBMIT:** Your presentation, activity (with key, if necessary), and assessment (with key) to Canvas (**or other LMS**) by the deadline.

#### **References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 8. Online Discussion: Debating Cochlear Implants**  
**50 points**

**PURPOSE:** This activity will help you learn more about the facts and controversies surrounding the use of cochlear implants to reverse hearing impairment.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Identify controversies surrounding the use of cochlear implants (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Critically evaluate multiple sources of information (meets APA Goal 2.3, Engage in innovative and integrative thinking and problem solving)
3. Respectfully offer constructive criticism based on fact (meets APA Goal 4.3, Interact effectively with others)

**TASK:** Your cousin was born deaf, though everyone else in your family can hear. Now that he is four years old, his parents (your aunt and uncle) are thinking of getting him cochlear implants—electronic devices that can restore his hearing. Cochlear implants have been approved by the FDA since the 1980's, but they remain controversial, especially among the deaf community. For this discussion, use the internet to compare and contrast at least FOUR sources discussing the use of cochlear implants, two sources from within the deaf community, and two sources from outside the deaf community (i.e., medical professionals, pharmaceutical companies, research articles, etc.).

Using your research, adopt a position either “for” or “against” the use of cochlear implants to share with your aunt and uncle, which will help them decide what decision to make with your four-year old cousin. Use evidence to develop a 150+ word argument to support your position. Include citations and APA-style references and/or links to the sites where you got your information in your argument.

**SUBMIT:** Post your argument to the Canvas (or other LMS) Discussion board by day 2 of the module.

**PARTICIPATE/PEER REVIEW:** By the last day of the module, respond to at least TWO other posts, one of which is to a person who adopted the position OPPOSITE from yours, and one to someone who argues your original post. In your response post, use evidence you learned from your research to try to RESPECTFULLY convince the person why their position is wrong and yours is right. Your response posts must each be at least 100 words in length.

### References

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 9. Online Assignment: Neurobiology of Sleep and Biological Rhythms**  
**50 points**

**PURPOSE:** This activity will help you to learn more about how the brain regulates sleep and biological rhythms.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Identify why we sleep, focusing on brain and physiological mechanisms that control sleep, including the effects of sleep deprivation on physical and mental activity, and how sleep is studied in the laboratory (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Identify ethical concerns with sleep research (meets APA Goal 3.1, Apply ethical standards to evaluate psychological science and practice)
3. Explain in writing for a lay audience why we sleep, the effects of sleep deprivation, how sleep is studied in the laboratory, and ethical concerns with sleep research (meets APA Goal 4.1, Demonstrate effective writing for different purposes)

**TASK:** You've been really excited about everything you're learning in class this semester, and especially interested to learn about sleep. Over dinner one night, you mention to your partner that you've been studying the brain mechanisms involved in sleep. Your partner gets very interested, and wants to know more, especially why people have to sleep at all....wouldn't we be so much more productive if we didn't have to sleep? Explain to your partner why we sleep, paying special attention to the hypothesis that sleep is a restorative process. Make sure to discuss the effects of sleep deprivation and physical and mental activity. Next explain what controls sleep—could it be a blood-borne chemical? Why or why not? Finally, explain how you know—describe the laboratory methods used to study sleep, paying special attention to any ethical concerns with this type of research. Explain in an essay that is 250+ words.

**SUBMIT:** Your 250+ word essay to Canvas (or other LMS) by the deadline.

#### References

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 10. Online Application Activity: Neurobiology of Emotion**  
**50 points**

**PURPOSE:** This activity will help you to learn more about how the brain processes emotion.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Describe three components of an emotional response, differentiate the brain substrates of innate emotional regulation, describe brain substrates for recognizing emotion, and explain how brain structures involved in emotion are studied (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Create a brochure to educate on emotion (meets APA Goal 4.2, Exhibit effective presentation skills for different purposes)

**TASK:** Your sister has just had a baby—congratulations! You swear that even at one day old, you can tell when the baby is feeling happy or sad, even though your sister keeps telling you things like babies don't smile or laugh until they're at least 3 months old, and babies don't truly feel emotions until they learn emotions from their environment.

Using evidence from the text, create a brochure to share with your sister that educates on emotion. Begin your brochure by addressing the three components of an emotional response. Next, use evidence to defend the proposition that emotional expressions are innate and not learned, including a description of the brain areas that regulate specific emotions. Finally, describe the role of the right hemisphere in the recognition of emotions, discussing at least TWO strategies that have been used to study this. You may use templates in Word or Publisher to create your brochure.

**SUBMIT:** Your completed brochure Canvas (or other LMS) by the deadline.

#### References

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.



**Activity 11. Online Application Activity: Neurobiology of Learning & Memory**  
**50 Points**

**PURPOSE:** The purpose of this activity is to help you understand processes of learning and memory in the brain.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Define and explain at least four of the following: 1) the "Hebb rule;" 2) a Hebbian synapse and its role in learning and memory; 3) long-term potentiation including the neurotransmitters, receptors, and ions involved; 4) the role of place cells in spatial memory; 5) the memory deficits experienced by patient H.M. and the role that the brain plays in these functions (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Create at least one activity and one assessment to promote and measure learning of these four concepts (meets APA Goal 2.3, Engage in innovative and integrative thinking and problem solving)
3. Prepare a presentation to educate a college-level audience on at least four of these aspects of learning and memory (meets APA Goal 4.2, Exhibit effective presentation skills for different purposes)

**TASK:** It's that time of the semester again! You have been asked by your professor to create a presentation for the class. Your topic is "The Neurobiology of Learning and Memory." Along with your presentation, you need to include at least one activity, and a final assessment that measures student learning of the material you presented. Your professor hasn't given much guidance, other than requiring that your presentation must address at least FOUR of the following five questions:

1. Explain what is meant by the "Hebb rule."
2. Describe the typical experimental setup and procedure that would be used to produce long-term potentiation (LTP) and explain how LTP would be assessed using this procedure
3. Explain LTP. In your explanation, include the neurotransmitters, receptors, and ion channels involved.
4. Describe the major memory deficits suffered by Patient H.M. following bilateral temporal lobectomy. Describe two specific abilities that were spared in Patient H.M.
5. Explain what is meant by a place cell and discuss the role of these cells in spatial memory.

**TIPS FOR PRESENTATIONS:** Presentations can be made with PowerPoint, Prezi, Word, Publisher, or any other presentation software. **Begin your presentation with a list of learning objectives for the presentation: what will students learn by participating?** Be sure to include these learning objectives: you will be graded on whether your information and activities meet your stated learning objectives (see grading rubric). In addition, your presentation should include a minimum of two illustrations that explain either the experimental procedure, synapse(s), or brain structure(s) you are describing.

**TIPS FOR ACTIVITIES:** Activities can include things like viewing a video, engaging in an online demonstration, solving a crossword puzzle, creating a model or demonstration, or answering questions. Your activity should include learning objectives (for example, "By viewing this video you will learn more about the synaptic changes produced by LTP"), and a key if there are correct answers (for example, the correct answers to the crossword puzzle or questions).

**TIPS FOR ASSESSMENTS:** Assessments can include things like answering multiple-choice, true/false, short answer, or matching questions about the topic. Your assessment should include a minimum of six questions, that address all four of the questions you addressed in the presentation. Your assessment must

include a key with correct answers.

**SUBMIT:** Your presentation, activity (with key, if necessary), and assessment (with key) to Canvas **(or other LMS)** by the deadline.

#### **References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 12. Online Assignment: Neurobiology of Ingestive Behavior**  
**50 points**

**PURPOSE:** This activity will help you to learn more about how the brain regulates hunger.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Compare and contrast evidence on the heritability of obesity vs. environmental factors that influence obesity, describe the absorptive and fasting phases of metabolism, and the hormonal events that regulate these (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Write an essay for a lay audience to educate on the neurobiology of childhood obesity and gene vs. environment contributions (meets APA Goal 4.1, Demonstrate effective writing for different purposes)

**TASK:** Your sister who just had a baby has been reading a lot lately about childhood obesity, and she is very concerned about her newborn son. Your mom has always struggled with her weight, and your sister is worried that obesity runs in your family. Write a letter to your sister that describes the evidence on the heritability of obesity. The letter should provide evidence from the literature on humans and rats that suggests that obesity is related to the availability of high-energy foods. Next, compare and contrast the hormonal events that take place during the absorptive and fasting phases of metabolism, so your sister can understand what factors will motivate hunger in her son. Your letter should be 250+ words.

**SUBMIT:** Your 250+ word essay to Canvas (or other LMS) by the deadline.

#### References

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 13. Online Assignment: The Neurobiology of Mental Health I--Schizophrenia, Affective, or Anxiety Disorders**  
**50 points**

**PURPOSE:** This activity will help you to learn and apply information related to the cause and treatments of schizophrenia or depression or anxiety disorders.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Describe the biological bases and possible treatments of schizophrenia or depression or anxiety (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Write a letter for a lay (non-professional) audience educating on the psychological disorder you chose (meets APA Goal 4.1, Demonstrate effective writing for different purposes)

**TASK:** Choose **ONE** of the following options:

**OPTION 1:** Your 52-year old uncle has just been diagnosed with paranoid schizophrenia. You've noticed some strange behaviors recently, including a lack of enthusiasm and appropriate facial expressions, along with ramblings about devils breaking into his shed and stealing his tools. His doctor told your aunt that your uncle is suffering from both positive and negative symptoms of schizophrenia, and that he will need to take two different medications, one that will help with the positive symptoms and one that will help with the negative. Your aunt comes to you and says she is confused since she thought ALL of the symptoms of schizophrenia were "negative." Your aunt also mentions that one of the drugs the doctor prescribed is called clozapine, an "atypical antipsychotic," which she doesn't understand. Using evidence from the text, write a 250+ word letter to your aunt explaining the difference between positive and negative symptoms and the course of treatment for your uncle. Include in your explanation a discussion of why positive and negative symptoms are thought to involve distinct mechanisms in the brain. Next explain to your aunt why clozapine is considered an atypical antipsychotic, including a description of the difference between "typical" and "atypical" antipsychotics in how they affect the brain and their potential side effects. To close your letter, be sure to explain why it will be so important that he not stop taking the drugs for any reason.

OR,

**OPTION 2:** Your boss has just been diagnosed with major depression. She has a lot of questions about what is causing her depression and what is the best course of treatment. She's been prescribed an MAO inhibitor, but she doesn't know what that means or how it works to help her feel better. She also doesn't like the side effects, and read on the internet that the best treatment for depression is sleep deprivation. She also heard that electroconvulsive therapy can cure her depression without the need for medications. Write a 250+ word letter to your boss to help her understand the causes and treatments for her depression. In your letter, explain how her MAO inhibitor works in the brain, being sure to describe the monoamine hypothesis of depression and presenting evidence that supports this hypothesis. Next explain the rationale for using sleep deprivation as a treatment for depression, and compare the efficacy of medication vs. sleep deprivation in treatment of depression. Finally, explain to your boss what ECT is, how it works, and compare it's efficacy with medication for depression.

OR,

**OPTION 3:** Your best friend has been diagnosed with an anxiety disorder. He tells you the doctor says he

has symptoms of both obsessive-compulsive disorder and panic disorder. He doesn't understand how these two disorders could be related. Write a 250+ word letter to explain to him why it is believed that both panic attacks and OCD have a biological basis. Compare and contrast the biological substrates of these two disorders. Using this evidence, discuss probable treatments for both. Will he be able to take one medicine or will he need two, and why? Your best friend doesn't like the idea of taking meds, and heard that there was a surgical treatment for OCD. Describe the surgical procedures used for the treatment of OCD, and compare its efficacy with medication.

**SUBMIT:** Your 250+ word essay to Canvas (or other LMS) by the deadline.

### References

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 14. Online Assignment: Neurobiology of Mental Health II: Autistic, ADHD, and Stress Disorders**  
**50 points**

**PURPOSE:** The purpose of this activity is to help you learn and apply information on autistic, ADHD, and stress disorders.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

1. Describe the signs, symptoms, and possible treatments, based on biological bases, of autistic or ADHD, or stress disorders (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
2. Explain the biological bases of a disorder at a level understandable by a “lay” (non-professional) audience (meets APA Goal 4.1, Demonstrate effective writing for different purposes)

**TASK:** For this assignment, choose ONE of the following options. Responses should be 250+ words:

**OPTION 1:** Your 4-year old nephew has been diagnosed with autism. Your dad doesn’t understand what that means. Write an essay to explain to your dad the symptoms that comprise autistic disorder, and assess the potential for treatment of autism. Next, your mom blames your brother, saying he’s too permissive and doesn’t give your nephew enough affection. Include in your essay an explanation to your mom why it is no longer believed that parenting plays a role in autism.

OR,

**OPTION 2:** Your 13-year old sister has been diagnosed with ADHD. Your grandmother has no idea what that means, but she is very worried—she has heard that kids who get diagnosed with this disorder get put in “dumb” classes. Write an essay that describes to your grandmother the symptoms of ADHD and assess the potential for treatment. In your essay be sure to explain to your grandmother the main concern for children diagnosed with ADHD, and evaluate ways that this concern may be addressed.

OR,

**OPTION 3:** You have been under a great deal of stress lately. Not only did you find spending time with your family over the recent holiday really stressful, your relationship with your partner has been strained, you’re overwhelmed with homework in your Biopsych class, your boss has been making you work 50-hour weeks, and you’re really nervous about the upcoming semester, which is sure to be a beast. You feel like you just can’t remember anything anymore, you’ve gotten every cold that has come within 3 miles of you, and you’re really worried about the long-term effects this stress might have on you, with good reason. Write an essay that describes and explains to yourself how the hormonal changes that accompany stress can alter health. In your essay, describe the relationship between stress and infectious disease. Finally, make sure your essay describes the effects of chronic stress on memory.

**SUBMIT:** Your 250+ word essay to Canvas (or other LMS) by the deadline.

### References

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 15. Online Application Activity: Neurobiology of Addiction**  
**50 points**

**PURPOSE:** This activity will help you learn more about the neurobiology of addiction, including causes and treatments.

**STUDENT LEARNING OUTCOMES:** *After completing this activity, the student will be able to:*

- 1) Identify criteria of addiction, and differentiate between physical and psychological addiction (meets APA Goal 1.1, Describe key concepts, principles, and overarching themes in psychology)
- 2) Explain why some drugs are so addictive, using principles of learning, heredity, and neuropharmacology (meets APA Goal 2.1, Use Scientific Reasoning to Interpret Psychological Phenomena).

**TASK:** You suspect your brother is addicted to \_\_\_\_\_ (fill in drug of choice here). Using evidence from the text, complete the following worksheet. Then answer the reflection questions that follow.

**Worksheet**

Name of Drug: \_\_\_\_\_

Check all that apply:

- This drug is physically addicting
- This drug is psychologically addicting

Brain Substrates Activated by this Drug	
Symptoms of Addiction to this Drug (list at least 2)	
Is Addiction to this Drug Hereditary?	
Can Addiction to this Drug be Learned? Give two examples	
Treatments (list at least 2)	

Now reflect on your answers in the worksheet and the evidence reviewed in the text or other readings regarding addiction to this drug. Prepare a 200+ word pamphlet that could be used in a collegiate addiction center to educate students on the brain substrates, symptoms of addiction, causes of addiction (including hereditary and learned), and treatments for addiction to this drug.

**SUBMIT:** Your worksheet and 200+ word pamphlet to Canvas (or other LMS) by the deadline.

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Appendix B. Grading Rubrics****Activity 1. Ethical Use of Animals in Neuroscience Research Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online discussion could be evaluated with the following rubric:

<b>Criteria</b>	<b>Sufficient Development</b>	<b>Present, but Underdeveloped</b>	<b>Insufficient Development</b>	<b>Missing or Not Accurate</b>
<b>2.2 Demonstrate Psychology Information Literacy: Search Scientific Databases to Find Scientific Sources</b>	Demonstrates proficiency in locating a peer-reviewed empirical or review article from a scientific database through our library website	Demonstrates proficiency in locating a peer-reviewed empirical or review article, but through a source other than our library website (e.g., Google, Google Scholar, etc.)	Locates a source through a scientific database through our library website, but it is not a peer-reviewed empirical or review article (e.g., it is a dissertation, letter to the editor, commentary, book chapter, etc.)	Fails to locate a scientific source (e.g., uses an article from a magazine like Psychology Today, or a news article, website, or other published but non-scientific source).
	10 points	8 points	5 points	0-4 points
<b>3.1 Apply Ethical Standards to Evaluate Psychological Science and Practice</b>	Demonstrates proficiency at applying ethical standards to evaluate psychological science and practice.	Generally demonstrates proficiency at applying ethical standards, but may overlook considerations regarding approved uses for animals in psychological science and practice.	The essay suffers from multiple failures to address appropriate ethical standards regarding the use of animals in psychological science and practice.	The essay does not address ethical considerations regarding the use of animals in psychological science and practice
	10 points	7 points	1-5 points	0 points
<b>4.1a Demonstrate Effective Writing for Different Purposes: Use Evidence to Argue a Position</b>	Demonstrates proficiency at interpreting the argument(s) presented in the text and scientific source and using evidence	Generally demonstrates proficiency at using evidence, but fails to see the significance	Exhibits some success in interpreting the arguments or evidence presented in	Demonstrates many failures in understanding the scientific sources used to



<p><b>in APA Style</b></p>	<p>to argue a position.</p>	<p>of the problem, solution, or other aspects of the scientific writing used to argue the position adopted for the essay.</p>	<p>scientific writing, but also exhibits multiple failures in interpreting information used to argue the position adopted for the essay.</p>	<p>formulate arguments for the essay.</p>
	<p>10 points</p>	<p>7 points</p>	<p>5 points</p>	<p>0-4 points</p>
<p><b>4.1b Demonstrate Effective Writing for Different Purposes: Use Correct APA Style</b></p>	<p>Demonstrates proficiency at proper citation and referencing in APA format.</p>	<p>Generally demonstrates proficiency but exhibits some errors in APA formatting in citation or referencing.</p>	<p>The essay suffers from multiple failures to properly cite or reference sources.</p>	<p>APA format, citations, and referencing are not followed at all.</p>
	<p>10 points</p>	<p>7 points</p>	<p>5 points</p>	<p>0-4 points</p>
<p><b>4.3 Interact Effectively with Others: Discuss with Others Risks and Benefits of Ethical Neuroscience Research in Animals</b></p>	<p>At least two responses are posted by Day 7 of the Module, that make a valuable contribution to the discussion, include references, and are at least 100 words in length each, one to a person taking the opposite position, and one in response to a comment to your post or to someone who argues the same position as you.</p>	<p>At least two responses are posted by the 7<sup>th</sup> day of the module, but they may not make a that make a valuable contribution to the discussion, may not include references, may not be at least 100 words in length each, or may not otherwise satisfy the requirements of the assignment</p>	<p>Only one response that makes a valuable contribution to the discussion and follows other criteria is posted</p>	<p>No response posts are posted, or none of the posted responses make a valuable contribution or otherwise follow other criteria for the assignment</p>
	<p>10 points</p>	<p>7 points</p>	<p>5 points</p>	<p>0-4 points</p>

**FACE-TO-FACE ADAPATION:** In a face-to-face course, students could be asked to complete the required research and position paper at home or during class period 1. The instructor may choose to assign each student to a side, either “for” or “against” animal research in neuroscience. Students bring the completed position paper to class and divide into two teams based on their position. Teams meet for 15-30 minutes to compare evidence and prepare a debate to argue their position. Each team is given 10 minutes to present their position. Time can be allotted for rebuttal. This activity works best in classes under 30 students. For classes over 30 students, multiple debate teams could be formed.

Adding a presentation component will satisfy APA Goal 4.2, Exhibit effective presentation skills for different purposes, in addition to those listed above, and could be evaluated with the following rubric:

Criteria	Sufficient Development	Present, but Underdeveloped	Insufficient Development	Missing or Not Accurate
<b>4.2 Effective Presentation Skills for Different Purposes</b>	Demonstrates proficiency at presenting and articulating a position based on evidence	Generally demonstrates proficiency, but presentation or articulation suffered from lack of information or lack of clarity	Exhibited some success in presentation and/or articulation, but many failures as well: the presentation was unclear or hard to follow, or appeared hastily prepared or based on opinion rather than fact.	The presentation suffered from many failures in quality and preparation, and/or the material was not articulated well, and/or appeared unrehearsed or underdeveloped.
	10 points	7 points	5 points	0-4 points

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 2. Consciousness Activity Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This assignment could be evaluated with the following rubric:

Criteria	Sufficient Development	Present, but Underdeveloped	Insufficient development	Missing or Not Accurate
<p><b>1.1 Describe key concepts, principles, and overarching themes in psychology: split-brain, blindsight, unilateral neglect, prosopagnosia</b></p>	<p>Using evidence from the text, videos, and possibly other sources, accurately defined and compared and contrasted the neural bases of at least three neurological conditions: split-brain, blindsight, unilateral neglect, and prosopagnosia</p>	<p>Using evidence from the text, videos, and possibly other resources, accurately defined and compared and contrasted the neural bases of at least two neurological conditions: split-brain, blindsight, unilateral neglect, and prosopagnosia OR did not accurately explain what these have in common</p>	<p>Using evidence from the text, videos, and possibly other resources, accurately defined and compared and contrasted the neural bases of just one neurological condition: split-brain, blindsight, unilateral neglect, and prosopagnosia</p>	<p>Failed to define or compare or contrast the neural basis of any neurological condition of split-brain, blindsight, unilateral neglect, or prosopagnosia</p>
	<p>40 points</p>	<p>30 points</p>	<p>15 points</p>	<p>0-14 points</p>
<p><b>4.1a Demonstrate effective writing for different purposes: writing an informative letter to your friends</b></p>	<p>Demonstrates proficiency at summarizing through independent informal writing, scientific information presented in the readings and videos.</p>	<p>Generally demonstrates proficiency at summarizing scientific information presented in the text and video, but may have failed to accurately express through informal writing some critical information</p>	<p>Exhibits some success in expressing evidence from the readings and videos through informal writing, but also exhibits multiple failures in expressing information And/Or: The essay suffers from multiple grammatical errors, or is not more than 80% original writing (including quotes).</p>	<p>Demonstrates many failures in expressing information through informal writing,</p>
	<p>10 points</p>	<p>8 points</p>	<p>5 points</p>	<p>0-4 points</p>
<p><b>4.1b Demonstrate Effective</b></p>	<p>Demonstrates proficiency at proper</p>	<p>Generally demonstrates proficiency</p>	<p>The essay suffers from</p>	<p>APA format, citations,</p>

<b>Writing for Different Purposes: Use Correct APA Style</b>	citation and referencing in APA format.	but exhibits some errors in APA formatting in citation or referencing.	multiple failures to properly cite or reference sources.	and referencing are not followed at all.
	10 points	7 points	5 points	0-4 points

**DISCUSSION ADAPTATION: ONLINE OR FACE-TO-FACE ADAPATION:** This activity could be adapted into a discussion by putting students into small groups of four to individually research one condition, then come together to discuss and prepare a collaborative essay addressing the questions.

Adding a discussion component will satisfy APA Goal 4.3, Interact effectively with others, in addition to those listed above, and could be evaluated with the following rubric:

Criteria	Sufficient Development	Present, but Underdeveloped	Insufficient development	Missing or Not Accurate
<b>4.3 Interact Effectively with Others</b>	Demonstrate proficiency at working collaboratively to develop an essay and present to the class. The group successfully delegated tasks so that everyone had equal opportunity to contribute and present.	Generally demonstrated proficiency at working collaboratively, but could be observed off task or did not actively participate in the creation of the essay or presentation to the class	Exhibited some success at working collaboratively, but evidence of contribution was not obvious in either the essay or the presentation	Did not appear to contribute to either the essay or presentation.
	10 points	7 points	5 points	0-4 points

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 3. Neurotransmission Activity Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This assignment could be evaluated with the following rubric:

Criteria	Sufficient Development	Present, but Underdeveloped	Insufficient Development	Missing or Not Accurate
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: neural transmission</b>	Information in the video is factually correct. Information in the video is comprehensive (addressed all 3 criteria stated in the activity). Information in the video makes connections between the material in the textbook and the module activities.	Information is generally correct but suffers from a few minor errors in accuracy.	Information is not generally correct OR information is generally correct but the student addressed only 2 of the stated criteria in the presentation.	Information is not generally correct AND/OR the presentation addressed 1 or zero of the stated criteria
	30 points	20 points	10 points	0-9 points
<b>4.2 Exhibit effective presentation skills for different purpose: Creates a video “mini-lecture” appropriate for a high-school level or above to education on neural transmission</b>	Includes a working link to a video on neurotransmission. The video includes at least one frame where the student’s face is clearly visible. The presentation is clear and engaging and is accompanied by a PowerPoint or Prezi.	Includes a working link to a video mini-lecture neurotransmission, but the video does not include at least one frame where the student’s face is clearly visible OR there is no accompanying PowerPoint or Prezi, OR the mini- lecture is not informative.	The video does not work though audio recording accompanied by PowerPoint or Prezi is submitted that accurately summarizes neural transmission	
	20 points	10 points	0-9 points	

**FACE-TO-FACE ADAPATION:** Students deliver their mini-lecture to the class. This will not satisfy any additional APA Goals.

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 4. The Nervous System Activity Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This assignment could be evaluated with the following rubric:

Criteria	Sufficient Development	Present, but underdeveloped	Insufficient development	Missing or Not Accurate
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: functional significance of the divisions of the nervous system</b>	Created an accurate visual representation of at least six major divisions of the nervous system that included accurate descriptions of what each division did and their relevance to behavior and mental processes.	Described at least six major divisions of the nervous system in accurate detail and relevance to behavior and mental processes, but did not use an appropriate visual display OR created a visual display that lacked accurate detail.	Visually presented and described 3-5 major divisions of the nervous system in accurate detail and with appropriate explanations of relevance to behavior and mental processes	Visually presented and described less than 3 major divisions of the nervous system OR did not use adequate visual representation OR did not use adequate detail or explanation of relevance
	50 points	40 points	25 points	0-25 points

**FACE-TO-FACE ADAPATION:** Following an overview of the divisions of the nervous system in class, students can work alone or in small groups to create an infograph by hand or using online resources (approximate time: 30 minutes). Following completion, students can present their infograph to the class and engage in discussion comparing and contrasting their own and other infographs (time: 30 minutes).

Adding a presentation component will satisfy APA Goal 4.2, Exhibit effective presentation skills for different purposes, in addition to those listed above, and could be evaluated with the following rubric:

Criteria	Sufficient Development	Present, but underdeveloped	Insufficient development	Missing or Not Accurate
<b>4.2 Effective Presentation Skills</b>	Demonstrates proficiency at presenting and articulating the	Generally demonstrates proficiency, but presentation or articulation	Exhibited some success in presentation and/or	The presentation suffered from many

<b>for Different Purposes</b>	information represented in the infograph	suffered from lack of information or lack of clarity	articulation, but many failures as well: the presentation was unclear or hard to follow, or appeared hastily prepared or did not clearly describe the information contained in the infograph	failures in quality and preparation, and/or the material was not articulated well, and/or appeared unrehearsed or underdeveloped.
	10 points	7 points	5 points	0-4 points

Adding a discussion component will satisfy **APA Goal 4.3, Interact effectively with others**, in addition to those listed above, which could be evaluated with the following rubric:

<b>Criteria</b>	<b>Sufficient Development</b>	<b>Present, but underdeveloped</b>	<b>Insufficient development</b>	<b>Missing or Not Accurate</b>
<b>4.3 Interact Effectively with Others</b>	Made multiple thoughtful contributions to the discussion based on comparisons between one’s own and other infographs.	Made two or more thoughtful contributions to the discussion, but may have not adequately drawn comparisons between infographs, or may have made contributions not based on evidence (for example, failing to notice flaws or exemplars in one’s own or other’s work).	Made less than two thoughtful contributions to the discussion	Failed to adequately contribute to the discussion, either by choosing not to participate, or by not responding appropriately to the contributions of others.
	10 points	7 points	5 points	0-4 points

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 5. Neurotransmitters Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online discussion could be evaluated with the following rubric:

Criteria	Sufficient development	Present, but Underdeveloped	Insufficient Development	Missing or Not Accurate
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: Psychopharmacology</b>	The student created a crossword puzzle that could be completed by others that included at least 20 accurate clues and definitions related to neurotransmitters and neurotransmission	The student identified at least 20 accurate clues and definitions, but did not present them in a way that could be completed by others OR the student created a crossword puzzle that could be completed by others, but it contained 15-19 accurate clues and definitions.	A crossword was created but it contained 10-14 accurate clues and definitions OR no crossword was created and only 15-19 terms and definitions were identified	A crossword was created but it contained less than 10 accurate clues and definitions, OR no crossword was created and fewer than 15 terms and definitions were identified
	20 points	14 points	10 points	0-9 points
<b>2.3 Engaged in innovative and integrative thinking and problem solving: Critically Evaluated Others' Work</b>	Completed at least 2 other crossword puzzles and offered feedback that evidenced critical evaluation of the presented information, including at least 1 suggestion of something that improved learning, and something that could be improved about the puzzle.	Completed 1 other crossword puzzle but offered feedback that evidenced critical evaluation of the information, OR completed at least 2 other puzzles but did not evidence critical evaluation of the information		Did not complete any crossword puzzles
	20 points	10 points		0 points
<b>4.3 Interact Effectively with Others: Respectfully Offer Constructive Criticism Based on</b>	At least two responses based on two crossword puzzles were posted by Day 7 of the Module. Responses were respectful, were at least 75 words in	At least two responses based on crossword puzzles were posted by the 7 <sup>th</sup> day of the module, but they were less than 75 words in length	Only one response based on completion of a crossword puzzle was posted but it was at least 75 words in	No responses were posted, or posts were not respectful or posts did not offer



<b>Fact</b>	length, and offered constructive criticism on the information contained in the puzzle.	or did not offer realistic constructive criticism in line with the quality of the puzzles.	length and offered insightful constructive criticism.	constructive criticism in line with the quality of the puzzle.
	10 points	7 points	5 points	0-4 points

**FACE-TO-FACE ADAPATION:** Students could be asked, alone or in groups, to create puzzles, either in class or at home. Class time could be used to share and complete puzzles. Class discussion could follow, focused on accuracy and efficacy for aiding learning. This activity could be used in small or large classes. No additional APA Goals would be met with this adaptation.

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 6. Methods of Neuroscience Research Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online assignment could be evaluated with the following rubric:

Criteria	Sufficient development	Present, but Underdeveloped	Insufficient Development	Missing or Not Accurate
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: Neuroscience Methods</b>	The essay clearly describes the method and explains the information gained from all four sources (textbook, website, video, research article)	The essay clearly describes the method, but the connection or relevance of the four sources isn't obvious.	The essay clearly describes the method but does not address the connection or relevance of at least 2 sources	The essay does not clearly describe the method and/or does not address the connection or relevance of at least 2 sources.
	20 points	14 points	10 points	0-9 points
<b>2.1 Uses Scientific Reasoning to Interpret Psychological Phenomena: Explain the relevance of this type of research on our understanding of the brain and behavior</b>	Adequately explains the relevance of this research method to understanding the brain and behavior. Specifically addresses strengths and limitations of the chosen method	Adequately explains the relevance of this research method, but does not address strengths and limitations or vice versa		Did not adequately explain the relevance of the method or strengths/limitations.
	10 points	5 points		0 points
<b>2.2 Demonstrate psychology information literacy: Compare and contrast information regarding one neuroscience method across four types of scientific information: textbook, website, online videos, and peer-reviewed scientific journal</b>	Demonstrates proficiency in locating a relevant website, video, and peer-reviewed article	Demonstrates proficiency in locating two out of three required sources	Demonstrates proficiency in locating one required source	Fails to locate any relevant sources (website, video, or peer-reviewed article)
	10 points	7 points	5 points	0-4 points

articles				
<b>4.1a Demonstrate effective writing for different purposes: communicating to a lay audience</b>	Demonstrates proficiency at summarizing scientific information presented in the text, website, video, and article at a level understandable by a lay audience.	Generally demonstrates proficiency at summarizing scientific information presented in the text, website, video, and article, but may have failed to accurately express some critical information, and/or presented information at too high a level.	Exhibits some success in interpreting the arguments or evidence presented in the website, video, and article, but also exhibits multiple failures in expressing information at an appropriate level. And/Or: The essay suffers from multiple grammatical errors, or is not at least 80% original work.	Demonstrates many failures in expressing information through informal writing,
	10 points	7 points	5 points	0-4 points
<b>4.1b Demonstrate Effective Writing for Different Purposes: Use Correct APA Style</b>	Demonstrates proficiency at proper citation and referencing in APA format.	Generally demonstrates proficiency but exhibits some errors in APA formatting in citation or referencing.	The essay suffers from multiple failures to properly cite or reference sources.	APA format, citations, and referencing are not followed at all.
	10 points	7 points	5 points	0-4 points

**FACE-TO-FACE ADAPATION:** Students could be asked, alone or in groups, to research a neuroscience method, either in class or at home. Class time could be used to present findings. Class discussion could focus on comparing and contrasting each method. This activity could be used in small or large classes.

Adding the presentation and discussion components to the activity will satisfy APA Goal 4.2, Exhibit effective presentation skills for different purposes, and Goal 4.3, Interact effectively with others, in addition to those listed above.

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

Criteria	Sufficient development	Present, but Underdeveloped	Insufficient Development	Missing or Not Accurate
<b>4.2 Effective Presentation Skills for Different Purposes</b>	Demonstrates proficiency at presenting and articulating information about neuroscience research methods	Generally demonstrates proficiency, but presentation or articulation suffered from lack of information or lack of clarity	Exhibited some success in presentation and/or articulation, but many failures as well: the presentation was unclear or hard to follow, or appeared hastily prepared or did not clearly describe the information contained the presentation	The presentation suffered from many failures in quality and preparation, and/or the material was not articulated well, and/or appeared unrehearsed or underdeveloped.
	10 points	7 points	5 points	0-4 points
<b>4.3 Interact Effectively with Others</b>	Made multiple thoughtful contributions to the discussion based on comparisons between one’s own and other research on neuroscience methods.	Made some thoughtful contributions to the discussion, but may have not adequately drawn comparisons between presentations, or may have made contributions not based on evidence (for example, failing to notice flaws or exemplars in one’s own or other’s work).	Made less than two thoughtful contributions to the discussion	Failed to adequately contribute to the discussion, either by choosing not to participate, or by not responding appropriately to the contributions of others.
	10 points	7 points	5 points	0-4 points

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 7. Neuroscience of Vision Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online assignment could be evaluated with the following rubric:

Criteria	Sufficient Development	Present, but underdeveloped	Insufficient Development	Missing or Inaccurate
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: Visual sensation and perception</b>	The presentation adequately identifies learning objectives and explains at least two concepts related to visual sensation and perception.	The presentation includes at least two concepts related to visual sensation and perception, but one or both are not explained clearly, or learning objectives are not adequately identified	The presentation only addresses one concept or neither concept is adequately explained in the presentation	The presentation does not adequately explain any concepts related to visual sensation and perception.
	20 points	12 points	8 points	0-7 points
<b>2.3 Engage in innovative and integrative thinking and problem solving: Creates an activity and assessment that complement the presentation and that address stated learning objectives</b>	Creates both an activity and assessment that complement the presentation and that address stated learning objectives	Adequately creates an activity and/or assessment that complement the presentation (but not both) and/or the activity and assessment do not adequately address stated learning objectives	Only includes one activity or assessment that adequately complements the presentation and addresses stated learning objectives	Does not include any activity or assessment that adequately complement the presentation or learning objectives.
	20 points	12 points	8	0-7 points
<b>4.2 Exhibit effective presentation skills for</b>	Demonstrates excellence at summarizing scientific	Adequately presents scientific information in a presentation style generally appropriate for 8 <sup>th</sup> graders, but may include		Does not summarize or present factual

<b>different purposes: Develops an informative presentation appropriate for an 8<sup>th</sup> grade audience</b>	information in a presentation style appropriate for 8 <sup>th</sup> graders, which includes engaging graphics and activities that help to demonstrate important concepts	too much technical information, too much information packed on a slide, or a presentation style not engaging or not helpful for demonstrating important concepts	scientific information
	10 points	5 points	0-4 points

**FACE-TO-FACE ADAPATION:** Students present their final product to the class. No additional learning goals would be achieved.

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 8. Debating Cochlear Implants Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online discussion could be evaluated with the following rubric:

Criteria	Advanced development	Sufficient development	Present, but underdeveloped	Insufficient development / Not present
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: Identifying Controversies of Cochlear Implants</b>	Using at least four sources of information, two from within the deaf community and two from without, developed a compelling and fact-based argument either for or against the use of cochlear implants.	Using at two sources of information, one from within the deaf community and one from without, developed a compelling and fact-based argument either for or against the use of cochlear implants.	Developed a compelling argument either for or against the use of cochlear implants, but the evidence only considered one viewpoint or appeared to be based on personal opinion rather than fact.	Did not develop a compelling argument based on fact.
	20 points	10 points	5 points	0-4 points
<b>2.3 Engaged in innovative and integrative thinking and problem solving: Critically Evaluate Four Sources of Information</b>	Presented compelling evidence of least 100 words in rebuttal to a post adopting a position opposite to one’s own.	Commented on a post adopting a position opposite to one’s own, but the evidence was incomplete or not based on evidence, or the post was well below 100 words.		Did not comment on a post adopting a position opposite to one’s own.
	20 points	10 points		0 points
<b>4.3 Interact Effectively with Others: Respectfully Offer Constructive Criticism Based on Fact</b>	Posted at least two respectful discussion responses based on fact of at least 100 words each.	Posted one respectful discussion response of at least 100 words that was based on fact.		No responses were posted, or posts were not respectful or posts were way too brief (not 100 words each) or posts did not offer

			constructive criticism in line with the quality posts.
	10 points	5 points	0-4 points

**FACE-TO-FACE ADAPTATION:** In a face-to-face course, students could be asked to complete the required research and position paper at home or during class period 1. The instructor may choose to assign each student to a side, either “for” or “against” cochlear implants. Students bring the completed position paper to class and divide into two teams based on their position. Teams meet for 15-30 minutes to compare evidence and prepare a debate to argue their position. Each team is given 10 minutes to present their position. Time can be allotted for rebuttal. This activity works best in classes under 30 students. For classes over 30 students, multiple debate teams could be formed.

Adding a presentation component will satisfy APA Goal 4.2, Exhibit effective presentation skills for different purposes, in addition to those listed above, and could be evaluated with the following rubric:

<b>4.2 Effective Presentation Skills for Different Purposes</b>	Demonstrates proficiency at presenting and articulating a position based on evidence	Generally demonstrates proficiency, but presentation or articulation suffered from lack of information or lack of clarity	Exhibited some success in presentation and/or articulation, but many failures as well: the presentation was unclear or hard to follow, or appeared hastily prepared or based on opinion rather than fact.	The presentation suffered from many failures in quality and preparation, and/or the material was not articulated well, and/or appeared unrehearsed or underdeveloped.
	10 points	7 points	5 points	0-4 points

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.



**Activity 9. Neurobiology of Sleep Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online discussion could be evaluated with the following rubric:

Criteria	Advanced development	Sufficient development	Present, but underdeveloped	Insufficient development / Not present
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: Neurobiology of Sleep</b>	The essay adequately explains why we sleep, the effects of sleep deprivation, brain mechanisms that control sleep, and laboratory methods to study sleep	The essay adequately explains at least three of the following questions: why we sleep, the effects of sleep deprivation, brain mechanisms that control sleep, and laboratory methods to study sleep, but not all four are adequately explained	The essay adequately explains at least two of the following questions: why we sleep, the effects of sleep deprivation, brain mechanisms that control sleep, and laboratory methods to study sleep	The essay adequately explains only one or none of the following questions: why we sleep, the effects of sleep deprivation, brain mechanisms that control sleep, and laboratory methods to study sleep
	20 points	12 points	8 points	0-7 points
<b>3.1 Apply Ethical Standards to Evaluate Psychological Science and Practice: Sleep Research</b>	Uses evidence to evaluate the ethics of methods used to study sleep	Uses opinion but not evidence to evaluate the ethics of methods used to study sleep		Does not consider the ethics of sleep research methodology.
	20 points	10 points		0 points
<b>4.1a Demonstrate effective writing for different purposes: Explain to a lay audience the neurobiology of sleep</b>	Demonstrates proficiency at summarizing scientific information to explain to a lay audience the neurobiology of sleep and sleep research methodology	Demonstrates proficiency at summarizing scientific information on the neurobiology of sleep and sleep research methodology, the information is presented at a technical level for a	Exhibits some success in writing about sleep for a lay audience, but also exhibits multiple failures in expressing information at an appropriate level. And/Or: The essay suffers from multiple grammatical errors, or is not at least 80%	Demonstrates many failures in expressing information through informal writing,

		professional audience.	original work.	
	10 points	7 points	5 points	0-4 points
<b>4.1b Demonstrate Effective Writing for Different Purposes: Use Correct APA Style</b>	Demonstrates proficiency at proper citation and referencing in APA format.	Generally demonstrates proficiency but exhibits some errors in APA formatting in citation or referencing.	The essay suffers from multiple failures to properly cite or reference sources.	APA format, citations, and referencing are not followed at all.
	10 points	7 points	5 points	0-4 points

**FACE-TO-FACE ADAPATION:** Students could be asked to work in small groups to research each portion of the question. Class time could be used to prepare and present findings. This activity could be used in small or large classes.

Adding the presentation and discussion components to the activity will satisfy APA Goal 4.2, Exhibit effective presentation skills for different purposes, and Goal 4.3, Interact effectively with others, in addition to those listed above.

<b>Criteria</b>	<b>Advanced development</b>	<b>Sufficient development</b>	<b>Present, but underdeveloped</b>	<b>Insufficient development / Not present</b>
<b>4.2 Effective Presentation Skills for Different Purposes</b>	Demonstrates proficiency at presenting and articulating information about the neurobiology of sleep	Generally demonstrates proficiency, but presentation or articulation suffered from lack of information or lack of clarity	Exhibited some success in presentation and/or articulation, but many failures as well: the presentation was unclear or hard to follow, or appeared hastily prepared or did not clearly describe the information contained the presentation	The presentation suffered from many failures in quality and preparation, and/or the material was not articulated well, and/or appeared unrehearsed or underdeveloped.
	10 points	7 points	5 points	0-4 points

<b>4.3 Interact Effectively with Others</b>	Made multiple thoughtful contributions to the discussion based on comparisons between one’s own and other presentations on the neurobiology of sleep.	Made some thoughtful contributions to the discussion, but may have not adequately drawn comparisons between presentations, or may have made contributions not based on evidence (for example, failing to notice flaws or exemplars in one’s own or other’s work).	Made less than two thoughtful contributions to the discussion	Failed to adequately contribute to the discussion, either by choosing not to participate, or by not responding appropriately to the contributions of others.
	10 points	7 points	5 points	0-4 points

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 10. Neurobiology of Emotion Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online assignment could be evaluated with the following rubric:

Criteria	Advanced development	Sufficient development	Present, but underdeveloped	Insufficient development / Not present
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: Neurobiology of Emotion</b>	The brochure does an excellent job explaining three components of an emotional responses, describing the innate properties of emotion including brain substrates, and describing two strategies used to identify the brain substrates of emotion recognition in infancy	The brochure adequately explains three components of an emotional responses, and/or describes the innate properties of emotion including brain substrates, and/or describes two strategies used to identify the brain substrates of emotion recognition in infancy, but does not excel at all 3.	The brochure adequately explains one of the following: three components of an emotional responses, and/or describes the innate properties of emotion including brain substrates, and/or describes two strategies used to identify the brain substrates of emotion recognition in infancy	The brochure does not adequately explain any of the following, or is not based on fact: three components of an emotional responses, innate properties of emotion including brain substrates, two strategies used to identify the brain substrates of emotion recognition in infancy.
	40 points	25 points	15 points	0-14 points
<b>4.2 Exhibit effective presentation skills for different purposes: Create a Brochure to Educate on Emotion</b>	Demonstrates excellence at summarizing scientific information appropriate for a brochure to educate on the neurobiology of emotion	Adequately presents scientific information appropriate for a brochure to educate on the neurobiology of emotion, but may include too much technical information, too much information, or uses a presentation style not engaging or not helpful for demonstrating important concepts		Does not summarize or present factual scientific information
	10 points		5 points	0-4 points

**FACE-TO-FACE ADAPATION:** Students could be asked, alone or in groups, to research emotions and prepare the brochure, either in class or at home. Class time could be used to present the brochure to the class. Class discussion could focus on critically evaluating each brochure. This activity could be used in small or large classes. Adding the presentation and discussion components to the activity will satisfy APA Goal 4.2, Exhibit effective presentation skills for different purposes, and Goal 4.3, Interact effectively with others, in addition to those listed above.

Criteria	Advanced development	Sufficient development	Present, but underdeveloped	Insufficient development / Not present
<p><b>4.2 Effective Presentation Skills for Different Purposes</b></p>	<p>Demonstrates proficiency at presenting and articulating information about the neurobiology of emotion</p>	<p>Generally demonstrates proficiency, but presentation or articulation suffered from lack of information or lack of clarity</p>	<p>Exhibited some success in presentation and/or articulation, but many failures as well: the presentation was unclear or hard to follow, or appeared hastily prepared or did not clearly describe the information contained the presentation</p>	<p>The presentation suffered from many failures in quality and preparation, and/or the material was not articulated well, and/or appeared unrehearsed or underdeveloped.</p>
	<p>10 points</p>	<p>7 points</p>	<p>5 points</p>	<p>0-4 points</p>
<p><b>4.3 Interact Effectively with Others</b></p>	<p>Made multiple thoughtful contributions to the discussion based on comparisons between one’s own and other research the neurobiology of emotion</p>	<p>Made some thoughtful contributions to the discussion, but may have not adequately drawn comparisons between presentations, or may have made contributions not based on evidence (for example, failing to notice flaws or exemplars in one’s own or other’s work).</p>	<p>Made less than two thoughtful contributions to the discussion</p>	<p>Failed to adequately contribute to the discussion, either by choosing not to participate, or by not responding appropriately to the contributions of others.</p>
	<p>10 points</p>	<p>7 points</p>	<p>5 points</p>	<p>0-4 points</p>

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 11. Neurobiology of Learning and Memory Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online assignment could be evaluated with the following rubric:

Criteria	Advanced development	Sufficient development	Present, but underdeveloped	Insufficient development / Not present
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: Neurobiology of Learning and Memory</b>	The presentation adequately identifies learning objectives and addresses at four concepts related to learning and memory that also includes at least one relevant demonstration and a final assessment of learning objectives.	The presentation includes at least two concepts related to learning and memory, but one or both are not explained clearly, or learning objectives are not adequately identified and/or activity and assessment don't adequately reflect the material.	The presentation only addresses one concept or no concepts are adequately explained in the presentation or the activity and/or assessment are missing or do not adequately reflect the material.	The presentation does not adequately explain any concepts related to learning and memory or there is no activity or there is no assessment.
	20 points	12 points	8 points	0-7 points
<b>2.3 Engage in innovative and integrative thinking and problem solving: Creates an activity and assessment that complement the presentation and that address stated learning objectives</b>	Creates both an activity and assessment that complement the presentation and that address stated learning objectives	Adequately creates an activity and/or assessment that complement the presentation (but not both) and/or the activity and assessment do not adequately address stated learning objectives	Only includes one activity or assessment that adequately complements the presentation and addresses stated learning objectives	Does not include any activity or assessment that adequately complement the presentation or learning objectives.
	20 points	12 points	8	0-7 points
<b>4.2 Exhibit effective presentation skills for different purpose: Creates a presentation appropriate for a college-level audience that</b>	Demonstrates excellence at summarizing scientific information in a presentation style appropriate for college students, which includes	Adequately presents scientific information in a presentation style generally appropriate for college students, but may include too much technical information, too much information packed on a slide, or a presentation style not engaging or not helpful for	Does not summarize or present factual scientific information	

<b>educates on learning and memory</b>	engaging graphics and activities that help to demonstrate important concepts	demonstrating important concepts	
	10 points	5 points	0-4 points

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 12. Neurobiology of Ingestive Behavior Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online assignment could be evaluated with the following rubric:

Criteria	Advanced Development	Developing	Present, but underdeveloped	Insufficient development / Not present
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: Neurobiology of Ingestive Behavior</b>	The letter does an excellent job explaining the heritability and environmental factors influencing obesity and addresses hormonal influences that motivate hunger.	The letter adequately explains the heritability and environmental factors influencing obesity and/or addresses hormonal influences that motivate hunger, but does not excel at both.	The letter mentions the heritability and environmental factors influencing obesity and hormonal influences that motivate hunger, but does not adequately explain both.	The letter does not include factual explanations of either heritability and environmental factors influencing obesity or hormonal influences that motivate hunger.
	25 points	19 points	12 points	0-11 points
<b>4.1 Demonstrate effective writing for different purposes: Write an essay for a lay audience on the neurobiology of obesity</b>	Demonstrates excellence at summarizing scientific information appropriate for a letter to educate on the neurobiology of obesity and gene/environment interactions	Adequately presents scientific information appropriate for a letter to educate on the neurobiology of ingestive behavior, but may include too much technical information, too much information, or uses a presentation style not engaging or not helpful for demonstrating important concepts		Does not summarize or present factual scientific information or does not meet the word requirement
	25 points	12 points		0-11 points

**FACE-TO-FACE ADAPATION:** Students could be asked, alone or in groups, to research these questions, either in class or at home. Class time could be used to present findings. Class discussion could focus on comparing and contrasting answers. This activity could be used in small or large classes.

Adding the presentation and discussion components to the activity will satisfy APA Goal 4.2, Exhibit effective presentation skills for different purposes, and Goal 4.3, Interact effectively with others, in addition to those listed above.



Criteria	Advanced development	Sufficient development	Present, but underdeveloped	Insufficient development / Not present
<b>4.2 Effective Presentation Skills for Different Purposes</b>	Demonstrates proficiency at presenting and articulating information about the neurobiology of obesity.	Generally demonstrates proficiency, but presentation or articulation suffered from lack of information or lack of clarity	Exhibited some success in presentation and/or articulation, but many failures as well: the presentation was unclear or hard to follow, or appeared hastily prepared or did not clearly describe the information contained the presentation	The presentation suffered from many failures in quality and preparation, and/or the material was not articulated well, and/or appeared unrehearsed or underdeveloped.
	10 points	7 points	5 points	0-4 points
<b>4.3 Interact Effectively with Others</b>	Made multiple thoughtful contributions to the discussion based on comparisons between one’s own and other research on the neurobiology of obesity.	Made some thoughtful contributions to the discussion, but may have not adequately drawn comparisons between presentations, or may have made contributions not based on evidence (for example, failing to notice flaws or exemplars in one’s own or other’s work).	Made less than two thoughtful contributions to the discussion	Failed to adequately contribute to the discussion, either by choosing not to participate, or by not responding appropriately to the contributions of others.
	10 points	7 points	5 points	0-4 points

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 13. Neurobiology of Mental Health I Grading Rubric: Schizophrenia, Affective, and Anxiety Disorders**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online assignment could be evaluated with the following rubric:

Criteria	Advanced development	Developing	Present, but underdeveloped	Insufficient development / Not present
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: Neurobiology of Mental Health</b>	The letter does an excellent job explaining the neurobiology of positive and negative symptoms of schizophrenia, and typical vs. atypical antipsychotics OR the neurobiology of depression including the monoamine hypothesis, MAO inhibitors, sleep deprivation and ECT, OR the neurobiology of OCD and panic attacks including medications and surgical treatments.	The letter adequately explains the neurobiology of positive and negative symptoms of schizophrenia, and typical vs. atypical antipsychotics but not both, OR the neurobiology of depression including the monoamine hypothesis, MAO inhibitors, sleep deprivation and ECT but not all, OR the neurobiology of OCD and panic attacks including medications and surgical treatments, but not both.	The letter mentions the neurobiology of positive and negative symptoms of schizophrenia, and typical vs. atypical antipsychotics but does not adequately explain either, OR the neurobiology of depression including the monoamine hypothesis, MAO inhibitors, sleep deprivation and ECT but does not adequately explain any, OR the neurobiology of OCD and panic attacks including medications and surgical treatments, but does not adequately explain either.	The letter does not include factual or adequate explanations of any topic to be addressed in the letter
	25 points	19 points	12 points	0-11 points
<b>4.1 Demonstrate effective writing for different purposes: Write a Letter for a Lay Audience to Educate on Mental Health</b>	Demonstrates excellence at summarizing scientific information appropriate for a letter to educate on the neurobiology of mental health	Adequately presents scientific information appropriate for a letter to educate on the neurobiology of mental health, but may include too much technical information, too much information, or uses a presentation style not engaging or not helpful for demonstrating important concepts		Does not summarize or present factual scientific information or does not meet the word requirement
	25 points	12 points		0-11 points

**FACE-TO-FACE ADAPATION:** Students could be asked, alone or in groups, to research one of these disorders, either in class or at home. Class time could be used to present findings. Class discussion could focus on comparing and contrasting each disorder. This activity could be used in small or large classes.

Adding the presentation and discussion components to the activity will satisfy APA Goal 4.2, Exhibit effective presentation skills for different purposes, and Goal 4.3, Interact effectively with others, in addition to those listed above.

Criteria	Advanced development	Developing	Present, but underdeveloped	Insufficient development / Not present
<b>4.2 Effective Presentation Skills for Different Purposes</b>	Demonstrates proficiency at presenting and articulating information about the neurobiology of mental illness	Generally demonstrates proficiency, but presentation or articulation suffered from lack of information or lack of clarity	Exhibited some success in presentation and/or articulation, but many failures as well: the presentation was unclear or hard to follow, or appeared hastily prepared or did not clearly describe the information contained the presentation	The presentation suffered from many failures in quality and preparation, and/or the material was not articulated well, and/or appeared unrehearsed or underdeveloped.
	10 points	7 points	5 points	0-4 points
<b>4.3 Interact Effectively with Others</b>	Made multiple thoughtful contributions to the discussion based on comparisons between one’s own and other research on the neurobiology of mental illness.	Made some thoughtful contributions to the discussion, but may have not adequately drawn comparisons between presentations, or may have made contributions not based on evidence (for example, failing to notice flaws or exemplars in one’s own or other’s work).	Made less than two thoughtful contributions to the discussion	Failed to adequately contribute to the discussion, either by choosing not to participate, or by not responding appropriately to the contributions of others.
	10 points	7 points	5 points	0-4 points

References

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 14. Neurobiology of Mental Health II Grading Rubric: Autistic, ADHD, and Stress Disorders**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online assignment could be evaluated with the following rubric:

Criteria	Advanced development	Developing	Present, but underdeveloped	Insufficient development / Not present
<p><b>1.1 Describe key concepts, principles, and overarching themes in psychology: Neurobiology of Mental Health</b></p>	<p>The essay does an excellent job explaining the neurobiology of autism and treatments, and why parenting is no longer believed to be a factor OR explaining the neurobiological causes and treatments for ADHD and main concerns for those diagnosed OR the neurobiology of stress and how stress can affect health and memory.</p>	<p>The essay adequately explains the neurobiology of autism and treatments, and why parenting is no longer believed to be a factor, but not both OR adequately explains the neurobiological causes and treatments for ADHD and main concerns for those diagnosed but not both, OR adequately explains the neurobiology of stress and how stress can affect health and memory, but not both.</p>	<p>The essay mentions the neurobiology of autism and treatments, and why parenting is no longer believed to be a factor, but does not adequately explain either, OR mentions the neurobiological causes and treatments for ADHD and main concerns for those diagnosed but does not adequately explain either, OR mentions the neurobiology of stress and how stress can affect health and memory, but does not adequately explain either.</p>	<p>The essay does not include factual or adequate explanations of any topic to be addressed in the letter</p>
	<p>25 points</p>	<p>19 points</p>	<p>12 points</p>	<p>0-11 points</p>
<p><b>4.1 Demonstrate effective writing for different purposes: Write a letter for a lay audience</b></p>	<p>Demonstrates excellence at summarizing scientific information appropriate for a letter to educate on the neurobiology of mental health</p>	<p>Adequately presents scientific information appropriate for a letter to educate on the neurobiology of mental health, but may include too much technical information, too much information, or uses a presentation style not engaging or not helpful for demonstrating important concepts</p>		<p>Does not summarize or present factual scientific information or does not meet the word requirement</p>
	<p>25 points</p>	<p>12 points</p>		<p>0-11 points</p>

**FACE-TO-FACE ADAPATION:** Students could be asked, alone or in groups, to research one disorder, either in class or at home. Class time could be used to present findings. Class discussion could focus on comparing and contrasting each disorder. This activity could be used in small or large classes.

Adding the presentation and discussion components to the activity will satisfy APA Goal 4.2, Exhibit effective presentation skills for different purposes, and Goal 4.3, Interact effectively with others, in addition to those listed above.

Criteria	Advanced development	Sufficient development	Present, but underdeveloped	Insufficient development / Not present
<b>4.2 Effective Presentation Skills for Different Purposes</b>	Demonstrates proficiency at presenting and articulating information about the neurobiology of mental disorders.	Generally demonstrates proficiency, but presentation or articulation suffered from lack of information or lack of clarity	Exhibited some success in presentation and/or articulation, but many failures as well: the presentation was unclear or hard to follow, or appeared hastily prepared or did not clearly describe the information contained the presentation	The presentation suffered from many failures in quality and preparation, and/or the material was not articulated well, and/or appeared unrehearsed or underdeveloped.
	10 points	7 points	5 points	0-4 points
<b>4.3 Interact Effectively with Others</b>	Made multiple thoughtful contributions to the discussion based on comparisons between one’s own and other research on the neurobiology of mental disorders.	Made some thoughtful contributions to the discussion, but may have not adequately drawn comparisons between presentations, or may have made contributions not based on evidence (for example, failing to notice flaws or exemplars in one’s own or other’s work).	Made less than two thoughtful contributions to the discussion	Failed to adequately contribute to the discussion, either by choosing not to participate, or by not responding appropriately to the contributions of others.
	10 points	7 points	5 points	0-4 points

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

**Activity 15. Neurobiology of Addiction Grading Rubric**

**RECOMMENDED INDIVIDUAL ASSESSMENT:** This online assignment could be evaluated with the following rubric:

Criteria	Sufficient Development	Present, but Underdeveloped	Insufficient Development	Missing or Not Accurate
<b>1.1 Describe key concepts, principles, and overarching themes in psychology: Neurobiology of Addiction</b>	The worksheet and reflection does an excellent job explaining the neurobiology of addiction to this drug and potential treatments.	The worksheet and reflection adequately explain the neurobiology of addiction for this drug and potential treatments, but may be missing some facts or evidence	The worksheet or reflection is missing several points	The worksheet or reflection is missing most points
	25 points	19 points	12 points	0-11 points
<b>2.1 Uses Scientific Reasoning to Interpret Psychological Phenomena: Addiction Causes and Treatments</b>	Demonstrates excellence in ability to interpret and explain the neurobiology of addiction and treatment	Adequately explains the neurobiology of addiction and treatment, but demonstrates some flaws in logic		Did not adequately explain the neurobiology of addiction and treatment and/or demonstrated many flaws in logic or the interpretation of scientific evidence.
	25 points	12 points		0-11 points

**FACE-TO-FACE ADAPATION:** Students could be asked, alone or in groups, to complete the worksheet, either in class or at home. Class time could be used to present results. Class discussion could focus on comparing and contrasting the different drugs chosen. This activity could be used in small or large classes.

Adding the presentation and discussion components to the activity will satisfy APA Goal 4.2, Exhibit effective presentation skills for different purposes, and Goal 4.3, Interact effectively with others, in addition to those listed above.

Criteria	Sufficient Development	Present, but Underdeveloped	Insufficient Development	Missing or Not Accurate
<b>4.2 Effective Presentation Skills for Different Purposes</b>	Demonstrates proficiency at presenting and articulating information about the neurobiology of addiction.	Generally demonstrates proficiency, but presentation or articulation suffered from lack of information or lack of clarity	Exhibited some success in presentation and/or articulation, but many failures as well: the presentation was unclear or hard to follow, or appeared hastily prepared or did not clearly describe the information contained the presentation	The presentation suffered from many failures in quality and preparation, and/or the material was not articulated well, and/or appeared unrehearsed or underdeveloped.
	10 points	7 points	5 points	0-4 points
<b>4.3 Interact Effectively with Others</b>	Made multiple thoughtful contributions to the discussion based on comparisons between one’s own and other research on the neurobiology of addiction.	Made some thoughtful contributions to the discussion, but may have not adequately drawn comparisons between presentations, or may have made contributions not based on evidence (for example, failing to notice flaws or exemplars in one’s own or other’s work).	Made less than two thoughtful contributions to the discussion	Failed to adequately contribute to the discussion, either by choosing not to participate, or by not responding appropriately to the contributions of others.
	10 points	7 points	5 points	0-4 points

**References**

American Psychological Association. (2013). *APA guidelines for the undergraduate psychology major: Version 2.0*. Washington, DC: American Psychological Association.

## Rubric for Evaluating the Design of an Authentic Assessment (AA)

Robyn R. Brown, Miami University Regionals E-Campus (2018)

Criteria	Advanced development	Sufficient development	Present, but underdeveloped	Insufficient development / Not present
<b>Learning Outcomes Alignment</b> Tasks/Assignment are aligned with the intended learning outcomes for the unit of study.				
<b>Alignment with intended learning outcomes</b>	All elements (tasks/assignment, performance evaluation criteria, and rubric) of the AA are strongly aligned with the intended learning outcomes for the unit of study.  Alignment with intended learning outcomes for the unit of study is explicitly described/detailed throughout the parts of the AA.	All elements of the AA are strongly aligned with the intended learning outcomes for the unit of study.	Elements of the AA are somewhat, but loosely, aligned with the intended learning outcomes for the unit of study.	Elements of the AA are not aligned with the intended learning outcomes for the unit of study.
	10 points	8 points	6 points	0-4 points
<b>Notes:</b>				
<b>Authenticity of Tasks/Assignment</b> Tasks/Assignment are designed to assess a student's ability to apply acquired knowledge and skills related to the intended learning outcomes in real-world contexts.  Authentic Assessment tasks/assignment include the following characteristics of AA (assessed below)				
<b>Application of knowledge and skill</b>	Tasks/Assignment requires students to use higher-order thinking skills such as analysis, synthesis, and evaluation, to apply what	Tasks/Assignment requires students to apply what they've learned, but does not go so far as to require students to use higher-order	Tasks/Assignment requires students to apply what they've learned but does not go so far as to have students apply what they've learned	Tasks/Assignment does not require students to apply what they've



	they've learned.	thinking skills such as analysis, synthesis, and evaluation.	by performing skills or demonstrating understanding.	learned.
	5 points	4 points	3 points	0-2 points
<b>Demonstration of knowledge and skill</b>	Tasks/Assignment requires students to apply what they've learned in a substantive way by performing skills and/or demonstrating scholarship.	Tasks/Assignment requires students to apply what they've learned by performing skills and/or demonstrating understanding, but does not go so far as to engage students in a substantive way.	Tasks/Assignment requires students to apply what they've learned, but does not go so far as to require students to perform skills and/or demonstrate understanding.	Tasks/Assignment does not require students to apply what they've learned.
	5 points	4 points	3 points	0-2 points
<b>Demonstration of knowledge and skill in real-life contexts</b>	Tasks/Assignment requires students to respond to or engage in complex, real-world challenges.	Tasks/Assignment requires students to respond to or engage in real-life contexts, but does not go so far as to engage them in solving real-world challenges.	Tasks/Assignment includes a reference to real-life contexts, but does not go so far as to require students to respond to those real-life contexts.	Tasks/Assignment do not include a reference to 'real-life' contexts.
	5 points	4 points	3 points	0-2 points
<b>Student-structured response</b>	Although given a set of parameters, tasks/assignment allow students to make choices about what is presented as evidence of proficiency and learning gains.  Often, students are given the option of multiple pathways from which they may choose to construct a product or demonstrate learning.	Although given a set of parameters, tasks/assignment allow students to make choices about what is presented as evidence of proficiency and learning gains, but does not go so far as to offer multiple pathways from which students may choose.	Tasks/Assignment offer students the option to make some choices, but does not go so far as to allow students to make choices about what is presented as evidence of proficiency and learning gains.	Tasks/Assignment does not offer students the option to make some choices.
	5 points	4 points	3 points	0-2 points
<b>Clarity of task/assignment</b>	Tasks/Assignment directions explicitly and sufficiently explain what students need to do	Tasks/Assignment directions explain what students need to do to complete the	Tasks/Assignment directions somewhat explain what students need to do to complete	Tasks/Assignment do not sufficiently explain what students

<b>directions</b>	to complete the assignment as intended.	assignment as intended, but does not go so far as to create unmistakable clarity of what students need to do to successfully complete the assignment.	the assignment, but leaves a lot of room for interpretation and misalignment with the intentions of the assignment.	need to do to complete the assignment.
	5 points	4 points	3 points	0-2 points
<b>Notes:</b>				
<b>Performance Evaluation Criteria and Rubric</b> Student proficiency and learning gains are measured against criteria, or specific characteristics of performance on the tasks/assignment, using a scoring scale. Authentic Assessment performance evaluation criteria and rubrics include the following characteristics (assessed below)				
<b>Relevance of performance evaluation criteria</b>	Performance evaluation criteria are relevant to the authentic nature of the tasks/assignment of the assessment and strongly and directly aligned with the learning outcomes the assessment is intending to measure.	Performance evaluation criteria are relevant to the authentic nature of the tasks/assignment of the assessment, but not strongly aligned with the learning outcomes the assessment is intending to measure.	Performance evaluation criteria are identified, but not relevant to the authentic nature of the tasks/assignment of the assessment nor strongly aligned with the learning outcomes the assessment is intending to measure.	Performance evaluation criteria are not identified.
	5 points	4 points	3 points	0-2 points
<b>Performance evaluation criteria stated in measurable terms</b>	Performance evaluation criteria are clearly stated in observable and measurable terms and leave no room for student interpretation of what is being measured by the assessment.	Performance evaluation criteria are stated in observable and measurable terms, but leave some room for student interpretation of what is being measured by the assessment.	Performance evaluation criteria are identified, but not clearly stated in observable and measurable terms.	Performance evaluation criteria are not identified.
	3 points	2 points	1 point	0 points
<b>Performance descriptors for levels of performance</b>	Stated in measurable and observable terms, descriptors are provided for each level of performance and clearly describe exactly what	Stated in measurable and observable terms, descriptors are provided for each level of performance for each criterion, but leave	Descriptors are provided for each level of performance for each criterion, but are not stated in measurable and observable terms	Descriptors are not provided.

	is expected from students at each level of performance for each criterion.	room for interpretation regarding exactly what is expected from students at each level of performance.	and/or do not describe what is expected from students at each level of performance.	
	3 points	2 points	1 point	0 points
<b>Levels of performance</b>	Levels of performance are clearly defined for the criteria measured, appropriately flexible for each criterion, and structured at fairly equal intervals across the different levels.	Levels of performance are defined for the criteria measured and structured at fairly equal intervals across the different levels.	Levels of performance are defined for the criteria measured, but structured at somewhat inconsistent intervals across the different levels.	Levels of performance are not defined for the criteria measured.
	3 points	2 points	1 point	0 points
<b>Scoring</b>	Mechanism used for assigning a score to each project is clearly defined in which the values are appropriately weighted for each criterion and across all levels of performance.	Mechanism used for assigning a score to each project is defined in which the values are appropriately weighted, but would benefit from additional balancing across each criterion and across all levels of performance.	Mechanism used for assigning a score to each project is defined, but the values are somewhat inappropriately weighted.	Mechanism for assigning a score to each project is not defined.
	3 points	2 points	1 point	0 points
<b>Notes:</b>				

**Overall Comments:**

**References:**

This rubric was developed based on the works of Dr. Jon Mueller presented in Authentic Assessment Toolbox and reviewed by Dr. Jon Mueller and his colleagues.

Mueller, J. (2018). Authentic Assessment Toolbox. Retrieved September 11, 2018, from <http://jfmueeller.faculty.noctrl.edu/toolbox/index.htm>