

CHAPTER

2



Emotions and the Brain

Getting Ready to Read

Read each statement. Circle whether you think each statement is true or false. In groups, discuss the statements.

1. Both thoughts and emotions are located in the same part of the brain. True False
2. It's been shown that animals such as elephants cry when they are sad. True False
3. There are some cultures in the world where people never cry. True False
4. People always feel better after crying. True False

14 *Challenges 3, Unit 1***Vocabulary Preview**

Read this passage. Pay attention to the words in bold.

Why Do People Cry?

Healers and scientists have **postulated** many theories as to why humans cry. The **premise** of early theories was the idea that tears are caused by the physical environment. The Aquatic Ape theory suggests that early human-like primates who lived near the coastline cried as a way of clearing the small bits of salt out of their eyes. Likewise, camp-fire tears were shed when the smoke from a fire irritated the eyes. Another early belief was that bad humors could be released in bodily fluids such as tears or blood. Healers used to make a sick person bleed so that evil spirits would leave the body. This practice was remarkably **resilient** and remained in use until the middle of the 19th century. Crying was far easier and didn't require a healer. During the 19th century, known for its focus on **rational** thought, many **distinguished** scientists, led by Sigmund Freud, believed that tears served as a **catharsis** because people usually feel better after crying. These theories became **secondary** to more modern ones once scientists were able to explain more of the body's parts and functions. The theory today is that crying can **trigger** emotions. To us, this seems inherently obvious, but we live in a time when we are aware of much more than early humans.

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For each sentence, choose the word or phrase to match the meaning of the word in bold. (Only base forms of the verb from the passage appear here.)

ability to remain unchanged by stress	release of built-up emotions
basic idea	start
hypothesize	subordinate
logical thinking	well-known

1. I think **postulate** means _____.
2. I think **premise** means _____.
3. I think **resilient** means _____.
4. I think **rational** means _____.
5. I think **distinguished** means _____.
6. I think **catharsis** means _____.
7. I think **secondary** means _____.
8. I think **trigger** means _____.

16 *Challenges 3, Unit 1***Understanding Genre**

The reading on pages 17–20 is a **book review** that compares two books. A book review discusses a recently published book. It typically includes basic facts about the book such as the title, author, and publisher, as well as the author’s background and purpose. A book review does not simply summarize a book but may also tell the reader about the book’s major points or plot, its general organization, its usefulness for the intended audience, and the author’s style of writing. Many book reviews evaluate the text and present the writer’s opinion about the book and whether or not they recommend it.

Before you read the book review (pages 17–20), skim it for the answers to the questions.

1. Look at the overall organization of the review. Identify which paragraph each topic appears in.
 - a. _____ conclusion
 - b. _____ Davidson’s book
 - c. _____ general idea of Trimble’s book
 - d. _____ past thinking about emotions and the brain
 - e. _____ introduction to the two books
 - f. _____ introduction to the topic
 - g. _____ Trimble’s theory of crying in humans
 - h. _____ organization of Trimble’s book

2. Although the number of words devoted to the discussion of each book is more or less the same, the writer has written three paragraphs about Trimble’s book and only one about Davidson’s book. Why do you think this was done?

Reading

Emotions and the Brain

(1) What exactly are emotions and how do they happen? These are age-old questions, but questions that have attracted a lot of attention since the means for exploring them have become easier. In addition to the long-used non-invasive EEG, MRI, and PET scan machines, there are machines that don't require the subject to remain still. This is particularly useful for people suffering from Parkinson's disease* or developmentally disabled children who cannot sit without moving. These machines are also used to study volunteers' brains and the source, use, and types of emotions.

(2) Two books on the brain and emotions are now available, although their approaches are rather different. Dr. Michael Trimble's *Why Humans Like to Cry: Tragedy, Evolution, and the Brain* (Oxford University Press, 2012) focuses on crying as a uniquely human emotional reaction, but he also discusses other emotions. Dr. Richard J. Davidson (with Sharon Begley) wrote the other book, *The Emotional Life of Your Brain* (Plume, 2012). Both authors are professors at **distinguished** universities: Trimble at the Institute of Neurology in London and Davidson at the University of Wisconsin at Madison. Both books have a lot to offer, but Davidson's book is more accessible to the lay** reader.

(3) For a long time, emotions were thought to be located in the evolutionary "primitive" limbic system, which is sometimes called the reptilian brain. Scientists believed that the higher-functioning parts of the brain were used for cognitive processes only. Indeed, emotions were thought to disturb cognitive processes. Later, it was **postulated** that all emotions felt the same but were identified through cognitive interpretations. It has been shown that this is not the case and that, in fact, emotions interact with the cognitive brain (the frontal cortex) quite intimately.

***Parkinson's disease**: a neurological disease that causes sufferers to tremble

****lay**: non-experts in a field

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(4) Trimble's **premise** is that crying sets humans apart from animals, including the higher primates. It's true that most mammals shed tears to moisten and cleanse their eyes, but humans are the only ones who cry because of emotional stimuli. That isn't to say that other mammals, especially primates such as gorillas and chimpanzees, don't have emotions. There is evidence that they do. However, Trimble claims that they don't shed tears in response to an emotion.

(5) Trimble begins his book with a philosophical discussion on the nature of emotion and **rationality** and how they have evolved over time. He spends a large part of the book explaining how the brain works anatomically and what parts of the brain stimulate identifiable emotions. It's difficult to understand the big picture let alone the details, but the book has an appendix and a glossary to help the general reader follow his descriptions.

(6) Trimble reports that crying is not only unique to humans, but it is also universal among humans. It usually takes place because of a sense of loss—frequently grieving for a loved one. He answers the question of whether or not crying is a **catharsis** (usually, but not always). And, if it isn't cathartic, what is its purpose? Trimble suggests that we also cry for communicative and aesthetic reasons. For example, the crying of a child is almost impossible for a mother to ignore and is the only way an infant has to signal for help. Adults cry as well as a means of communication—of empathy, understanding, caring. In addition, crying can also occur when a piece of art **triggers** a profound emotional response. Not surprisingly, music evokes emotional feelings more than any other type of art.

(7) Davidson's book is written in a more linear fashion, so following the book is easier. It is in essence the tale of his evolving and continuing fascination with the relationship between the brain and human emotions. When he was in the beginning of his career (in the 1970s), emotion was considered to be totally disconnected from and **secondary** to the cognitive brain. Davidson instinctively knew that this wasn't the case and proceeded to prove it. Through experiments with university students, babies, and depressed people over the following 40 years, he came to the conclusion that humans possess a variety of emotional styles: **resilience**, outlook, social intuition, self-awareness,

sensitivity to context, and attention. (See Table 2.1 for descriptions of the styles.) Davidson is **cognizant** that these styles need to be differentiated from other categorizations of personality and temperament by linking each one to a specific area of the brain. He is quick to point out that one style is not more important than another and that one place on the continuum is not better than another place. Indeed, Davidson insists, we as humans would not be where we are today were it not for having people on every point on the continuum. Davidson's book is prescriptive as well as descriptive in that he connects emotional styles to physical ailments and believes that emotional style is not genetically predisposed and that a person can change. He ends his book with his experiences in meditation.

Table 2.1: Emotional Style Continuum

Emotional Style	Continuum
Resilience How easily you get over disturbance in your life	able to recover quickly \longleftrightarrow recover slowly
Outlook General feeling about the environment around you	positive \longleftrightarrow negative
Social Intuition Attuned to the feelings of others	confused social interactions \longleftrightarrow socially perceptive
Self-awareness Attuned to feelings of yourself; know yourself well	do not understand yourself \longleftrightarrow understand yourself well
Sensitivity to context Attuned to what's going on around you	aware of surroundings \longleftrightarrow unaware of surroundings
Attention Can complete a task in an attentive manner	not able to focus on task at hand \longleftrightarrow able to focus on task at hand

Adapted from: The Emotional Life of Your Brain, Richard J. Davidson (2012), page 64, Hudson Street Press.

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(8) The human brain's relationship to emotions has long held fascination for many of us—even those who aren't psychologists or neurologists. After all, what are we, really, besides our thoughts and feelings? The ways to examine the brain are only becoming more sophisticated and will likely lead to a better understanding of the brain and how it functions. To understand the future development of brain science, start with *The Emotional Life of Your Brain*, and if you want more detailed information, get a copy of *Why Humans Like to Cry: Tragedy, Evolution, and the Brain*. Despite the difficulty of these books, you will get a very interesting glimpse of your own emotional world.

Reading Comprehension

Circle the correct answer, or write a short answer.

1. Why is it easier to study the brains of people with Parkinson's disease today?

2. What is NOT true about the reptilian brain?

- a. It is considered primitive.
- b. It is part of the brain's limbic system.
- c. It alone controls our emotional selves.
- d. It is one part of the brain that controls our emotional selves.

3. Trimble makes a distinction between shedding tears and crying. What is it?

4. According to Trimble, only humans cry, and people in all cultures cry.

- a. true
- b. false

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5. Why do most mammals shed tears?
- to show emotions
 - to soothe irritated eyes
 - to attract attention
6. Which author contends that music is the art form that causes the most emotional responses from people?
- Davidson
 - neither author
 - Trimble
7. Despite current theories at the time, Davidson sensed that both the cognitive and the limbic parts of the brain play a part in producing emotions.
- true
 - false
8. After his many years of research, Davidson developed a system for categorizing emotions. What is this theory and how does it differ from other previously accepted ways of thinking?
-
-
9. The author suggests that Davidson's book is both descriptive and prescriptive. What does she mean?
-
-
10. What does the author think about the usefulness of the two books?
- Trimble's book is more useful.
 - Davidson's book is more useful.
 - Both books are useful.
 - Neither book is useful.

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Discuss Your Ideas

In small groups, discuss the answers to these questions. Be prepared to share your answers with the class.

1. Look at your responses to the true/false statements on page 13. How has your understanding of the statements changed?
2. Look at the continuums offered in Table 2.1. Where would you place yourself on each continuum? How do your placements differ from those of your classmates?
3. Which one of these books would you rather read? Why?



STUDY TIP

Communicating with Faculty

Most professors are happy to talk to students individually, but talking to faculty can be intimidating for some students. If you are polite, considerate, and sincere, you are more likely to communicate well.

- **Contacting the professor**—Today, most professors prefer to be contacted by email and usually put their campus email address on their syllabus. Most professors also include their office hours, the best time for students to visit, on the syllabus. Better yet, ask for a specific appointment in an email message or in person after class.
- **During the appointment**—Be sure that you arrive on time to your appointment with a clear idea of what you want to talk about. Present your question or problem in a positive, non-confrontational manner. You don't want to put the professor in a defensive position. Realize that the professor may not be able to satisfy your request if it is something other than questions about the class.
- **Asking about class content**—If the professor gives an answer to your question that is not clear, don't hesitate to ask for clarification. In the United States, the relationship between a professor and a student is usually not adversarial, and chances are that your professor wants you to do well in the class.

Vocabulary Comprehension

With a classmate, fill in the empty boxes in the chart. Do not write anything in the boxes that have an X. You can use an English dictionary.

Nouns	Verbs	Adjectives	Adverbs
catharsis	X		X
		distinguished	X
	postulate	X	X
premise		X	X
	X	rational	
1.	X	resilient	
2.			
X	X	secondary	
	trigger	X	X

Odd One Out

Circle the word that does not belong in each group. Be prepared to say why the word does not belong.

- best, lesser, secondary, subordinate
- catharsis, ease, relief, tension
- common, distinguished, typical, unknown
- flaw, fright, resilience, weakness
- logical, rational, sensible, thoughtless
- fact, premise, proof, truth
- cause, halt, start, trigger
- postulate, prepare, propose, theorize

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Multiple Choice

Circle the word or phrase that best completes the sentence.

1. Which is an example of a rational statement?
 - a. Friendship is a treasure.
 - b. Friends both give and receive, so you have to be a friend to have a friend.
 - c. The friends you make early in life are the friends that will always be with you.
 - d. Some people have many friends, but others have few.

2. What can be postulated?
 - a. a fact
 - b. a feeling
 - c. a problem
 - d. a theory

3. Which can be a cathartic experience?
 - a. crying during a movie
 - b. falling asleep
 - c. memorizing vocabulary words
 - d. standing in a long line

4. When trying to help a hungry child, which is clearly a secondary concern?
 - a. medical care
 - b. nourishing food
 - c. a toy animal
 - d. a safe place to sleep

5. Which member of a community is considered most distinguished?
 - a. the grocer
 - b. the car salesperson
 - c. the babysitter
 - d. the mayor

Vocabulary Use

Vocabulary Notes

Some forms of the target vocabulary in Chapter 2 have other usages and meanings that are **different from** the way they were used in the reading and chapter. To become a better reader, become familiar with these phrases/usages and common collocations.

premises (plural)	<i>to enter/vacate the premises</i>
distinguished	<i>distinguished gentleman, distinguished scholar, to distinguish from</i>
resilience	<i>to be resilient to, to have natural resilience, resilience to disease, strength and resilience;</i>
secondary	<i>secondary research, secondary school, secondary source</i>

Completing Analogies

An analogy is a comparison of two things, processes, or situations. It is written as a formula:

caution: warn :: advise: suggest

You can read this as: *caution* is to *warn* as *advise* is to *suggest*. This means that the relationship between the words *caution* and *warn* can be compared to the relationship between the words *advise* and *suggest*.

Add a form of a target vocabulary word to complete each analogy.

catharsis	postulate	premises
distinguished	rationality	resilient

- _____ : understanding :: illogic : confusion
- _____ : well-known :: obscure : unknown
- _____ : long-lasting :: weak : short-term
- theory: _____ :: book : read
- _____ : house :: farmland : barn
- _____ : relief :: risk : stress

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Word Forms in Paraphrasing

When you paraphrase a sentence, you express its meaning using different words.

Revise each sentence to use the word form in parentheses. Change the grammar and add other words if you want, as needed, but do not change the meaning of the sentence.

Example:

Original sentence:

Children are resilient and often recover from events faster than adults.
(resilience)

Paraphrase:

Children have more resilience so they often recover from events faster than adults

1. Professors who distinguish themselves in their field are often quite popular with students. (distinguished)

2. Unfortunately, in contrast to the sciences, the humanities are often a secondary concern to students and teachers. (secondarily)

3. The professor postulated a theory in a way that was hard to understand. (postulation)

4. The author offered a rational approach to the topic (rationally).

5. Listening to the war stories of others was a catharsis for the soldiers. (cathartic)



Academic Skill: Keeping a Reading Journal

Students are expected to read **a lot** in college classes. It's easy to become overwhelmed by the reading requirements and to lose track of what you have learned. Keeping a reading journal for every class can help you get and stay organized.

Here are some guidelines for what to include in a reading journal. Keep five sections in mind: bibliographic information, summary, key words/phrases, questions/comments on the reading, and personal feelings.

1. Include enough **bibliographic information** to tell you how to find the reading—title of article, author, and the title of book/journal.
2. Summarize the reading. A **summary** includes only the main or most important ideas of the passage. The key to writing an acceptable summary is not to look at the reading when you are writing and to use your own language—words, grammar, organization. See Unit 4 (page 122) for a detailed discussion of summary writing.
3. One page should be used to list the **key words/phrases** in the passage. Make the list as you read; looking at the list will help you write your summary or study for a test.
4. Make a list of the **questions/comments** about the content of the reading. Keep your journal open when you read so that you can list questions. Leave space under each question so that you can include the answer when you know it.
5. You may wonder why it's important to include your **personal feelings**. Building an emotional connection to a reading makes it more likely that you will remember what you've read. This includes noting your experience or connection to the topic and your opinion about what you've read.

A note about language used in a reading journal: You keep a reading journal for yourself so that you will have a record of information about everything you read. Therefore, spelling and grammar are not important as long as you can go back and understand what you've written. If you do have to submit part of your journal to an instructor, then you can review and edit.

28 *Challenges 3, Unit 1***Practice**

Here is a passage from this unit's first reading. Read it again, and complete the chart. (Don't worry about the summary. You'll do that in Unit 4.)

A practical joke is intended to cause confusion or alarm, whether it involves action, such as passengers in a stopped car surprising their driver by getting out of the car and running around it, or objects that cause trouble, such as a pack of hot and spicy chewing gum. A practical joke is unlike a scam, in which people are tricked for the purpose of taking their money. When a practical joke is played on someone, the person eventually understands what is happening. He or she is not being tricked but is instead being given an opportunity to find humor in the situation. A verbal joke, on the other hand, is based on language and aims to make listeners laugh. As such, it can be considered an art (not unlike poetry), which depends on timing and economy to succeed. To be a good joke teller, you must not waste any words or bore the listener. Your joke must be easy to follow and concise.

Bibliographic Information	
Key words or phrases	
Questions	
Personal feelings	

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Re-read the book review on pages 17–20 and then fill in in the chart.

Bibliographic Information	
Key words or phrases	
Questions	
Personal feelings	

Option

If you wish to learn more about keeping a reading journal, try writing an entry for one chapter of each unit in this book. This practice will help you with future reading assignments.