Psychology:
A Christian Perspective
High School Ed.

Teachers' Guide

Chapter Outline and Summary
Key Concepts & People
Activities & Discussion
Learing Objectives
For Further Study
Questions for Review
Chapter Quizzes

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Psychology: A Christian Perspective.

High School Edition.

Teachers' Guide and Student Workbook

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Published by
Rocking R Ventures, Inc.
104 Goss Street
Epworth, GA 30541
www.rockingrventures.com
www.homeschoolpsych.com

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Introduction

It is right and proper for Christian students to study the wonders of the mind, the brain, and human behavior. It is crucial, however, that we approach the study of psychology from a Christian worldview perspective. It is crucial that Christian students are equipped to recognize and evaluate the worldview assumptions underlying modern psychology's theories, its schools-of-thought, and its presentation in academia and the culture.

It is crucial that Christian students recognize the worldview assumptions underlying modern psychology's theories and schools-of-thought. Our approach is one of guiding students to recognize psychology-specific worldview issues and to introduce them to the study of the wonders of ***God's greatest creation***; the human mind.

Psychology should be fun and interesting for students. Psychology should be interesting and fun for teachers, too, if we approach it from a Christian perspective. If we do not approach it with our worldview lenses in focus, psychology class ***can be dangerous***.

Christians studying and teaching psychology ***have to work a little harder*** than everyone else. In this class, students must think about psychology's content in the context of their Christian worldview. Teachers must make ***complex abstract concepts*** understandable and meaningful. In this class you must think like a Christian about psychology's concepts, and more importantly, its underlying worldview assumptions. In this class you and your students need to prayerfully consider ***deep thoughts***. Both Psychology and the Christian worldview are complex topics. Your job is to struggle with how they relate to one another (if they relate at all). This instructor's guide and online support was created to help ease that struggle for both student and teacher.

This is a survey course. As a survey course, we address the main topics generally covered in introductory psychology classes, but we do not delve very deeply into any one topic. This course is not special because of its insight into the Christian worldview, and there are many texts that do a good job presenting psychology's content. This course is special because it asks you to consider psychology ***vis a' vis a Christain worldview***.

In a course in which you learn lots of little bits and pieces, there's a risk of losing sight of the whole. We are whole persons, more than genetics plus development plus personality plus, plus, plus. Because we are made in the image of God, we are more than the sum of our parts. Let's not forget that. ***We are more than the sum of our parts***.

In addition to this teacher's guide, you have access to our ***online support*** which includes a discussion group with ***teachers just like you***. Your questions, ideas, teaching methods…all of your teaching tips and suggestions will be available to our community of Christian educators. Look for it at http://groups.google.com/group/psychology-a-christian-perspective-high-school and on Facebook at Homeschool Psych and Psychology: A Christian Perpective.

This teacher guide/student workbook is intended for use by ***parents***, ***classroom teachers***, or by ***independent study students***. It is divided into 15 chapters that correspond to the chapters in ***Psychology: A Christian Perspective, High School Edition***. Each chapter contains:

- Chapter outline
- Chapter summary
- Learning objectives
- Key concepts & people
- Activities & discussion
- For further study
- Questions for review
- Chapter quiz
- Answers to review questions
- Answers to chapter quiz

As you prepare to teach this course, we'd like to offer a few thoughts on how the author intended this text to be used.

CRITICAL THINKING AND REFLECTIVE THINKING: Most importantly, this course was designed to ***teach your students to think***. Throughout the course teachers and students should practice critical thinking skills. Upon introduction to new information, we need to ask ourselves the following questions:

- What is the claim?
- What are you being asked to believe?
- **What does the Bible have to say?**
- What worldview assumptions underlie the claim?
- What is the evidence?
- Are there alternative ways of interpreting the evidence?
- What additional evidence would be helpful in evaluating the claim?
- What conclusions are most reasonable?

By introducing these reflective questions, we are giving the students the tools they need to assess information as it comes to them through college professors, the media, or even ***well-intentioned friends***.

Some of our favorite ways to encourage reflective and critical thinking:

- Holding debates with other classmates in a semi-formal environment
- Creating stories, scenarios, or vignettes that require the students to take a perspective other than their own, (i.e. explain things from a Freudian, humanistic, evolutionary, etc. perspective.)
- Posing questions in several different ways to reach different kinds of learners. It is important that students enter college with ***strong writing skills***, and the discussion topics and for further study items provide excellent opportunities for students to proactice their writing skills. Creative teaching encourages us to give the students different ways to think about their answers. For example, for the discussion question the question, "What do you think causes mental pain and suffering?" you may ask your students to write their response in their voice, or in the voice of a parent speaking to a child. They may write an article for a local newspaper or for a Christian publication. Some students find it helpful to write letters to key characters, sharing their opinions of the characters philosophy. We want the students to use their fluency in communication to answer these questions ***in a way that is meaningful to them***.

QUIZZES: In some chapters there are ***dozens of quiz questions***. These are meant as a guide, and not intended to be used as a comprehensive exam. Some of these questions can be used in a game show format, and played with the class like a Jeopardy game. Others can simply be written on the board as questions of the day. You may also consider using these as a basis for extra credit points.

AP EXAM: This text is intended to be ***useful*** for students studying for the AP Psychology exam, but it should not be your ***sole source*** for text preparation. Go to a used bookstore (especially in college towns) and pick up a used AP test guide (I like the Barron's and Princeton Review versions) and a used copy of a Psychology 101 textbook by ***David G. Myers***. Dr. Myers is a Christian who writes excellent college-level psychology texts. There's also an on-line dictionary of psychological terms at http://allpsych.com/dictionary/ and at http://www.apa.org/research/action/glossary.aspx.

In the free-response section of the AP Psychology Exam, students are asked to answer two ***essay questions***. The questions may require students to interrelate different content areas and to analyze and evaluate psychological constructs and, more generally, theoretical perspectives. Students are ***expected to use their analytical and organizational skills*** to formulate cogent answers in writing their essays. See the College Board's AP Psychology Course Description for more information. Also see the Easy-to-Grade Writing Assignments for AP Psychology.

Contact the author with your comments and suggestions at tim@homeschoolpsych.com

Chapter 1 What is Psychology?

1.0 *Chapter 1 Outline*

What is psychology?
Psychology's influence.
A Christian approach to Psychology
Psychology's Goals
Psychology's Fields of Study
Psychology's Approaches

1.1 *Chapter 1 Overview and Summary*

It is important to begin the study of psychology by establishing the basics. Chapters 1 – 3 are about the basics. In this class, like every other introduction to psychology, you will learn about psychology's history, theories, and methods. Every introductory psychology class teaches the basics of the brain, learning, development, memory, and so on. But in this class you will consider the worldview assumptions embedded in those topics and theories. In this class you will also compare and contrast modern psychology's worldview assumptions with a Christian worldview.

We prepare to do that by:

- Defining and describing what the word psychology means.
- Understanding psychology's influence in academia, the culture, and the Christian Church.
- Describing a Christian approach to the study of psychology.
- Defining Psychology's goals.
- Describing psychology's subfields.
- Describing modern psychology's major approaches or schools of thought.

Psychology is one of the most controversial and divisive academic subjects among Christians today. Many Christians think that psychology is harmless and has a place alongside biology, chemistry, and physics in high school studies. Many Christians claim that psychology is a dangerous, idolatrous, and ungodly rival religion. If Christ is Lord of all, He is Lord of theology, education, biology, and psychology.
Psychology is the scientific study of human affect, behavior, and cognition. Its theories influence the culture, academia, and the Church. Christians studying and working in psychology must be faithful to Scripture, not compromise their Christian worldview assumptions, and must understand modern psychology's history, worldview assumptions, and methods.

Evolution, atheism, and humanism are common threads in psychology, but they do not define the discipline. Christians need not fear or avoid the entire discipline. We must, as we do with biology and other academic disciplines, recognize and respond to anti-Christian assumptions and claiming psychology for Christ.

The main purposes for psychological research include:

- Observing and describing psychological phenomena.
- Creating and testing hypotheses to explain the observations.
- Discovering the factors that influence mental processes.
- Developing techniques to predict, improve, or otherwise change behavior, thoughts, learning, and emotions.

When psychologists focus on a particular aspect of study or practice, they enter one of psychology's subfields.

- Cognitive psychologists study mental processes.
- Physiological psychologists (also called neuroscientists) study the brain and nervous system.
- Personality psychologists study the unique characteristics of people.
- Developmental psychologists study changes in behavior and mental processes across the life span.
- Counseling psychologists study the causes of and the cures for mental and behavioral disorders.
- Educational psychologists study teaching and learning.
- School psychologists test and diagnose learning and academic problems.
- Social psychologists study the ways people interact with other people and in groups.

There are five main approaches to psychology also known as "schools." Each makes worldview assumptions about the nature of Mankind.

- The biological approach emphasizes biological structures and electro-chemical processes.
- The behavioral approach emphasizes the relationship between environmental influences and behavior.
- The cognitive approach emphasizes thought processes.
- The psycho-analytic approach emphasizes unconscious processes.
- The humanistic approach emphasizes the belief in Mankind's innate goodness and potential.

1.2 *Chapter 1 Learning Objectives*

Students will be able to:

- Define and explain what the word "psychology" means.
- Discuss the importance of worldviews in defining psychology and describe how psychology's definition has changed.
- Describe the controversy among Christians about psychology.
- Describe psychology's influence in academia, the culture, and the Christian Church.
- Describe a Christian approach to the study of psychology.
- Describe psychology's goals.
- Describe psychology's subfields and careers.
- Describe modern psychology's major approaches or schools of thought.
- Identify possible career alternatives in psychology.
- Describe areas of potential psychological research on topics of interest to Christians.

1.3 *Chapter 1 Key Concepts & People*

ABCs (Affect, Behavior, Cognition)
Psyche
Psychology
Dominion
Affect
Cognition
Popular psychology
Stigma
Freedom
Subjective
Objective
Hubris
Divisive
Heresy
Modernism
Philosophy
Agnosticism
Atheism
Determinism
Empiricism

Chapter 1 Activities & Discussion

1.4

1 Christian high school students beginning an introductory psychology course probably bring with them very different presuppositions about psychology. At the beginning of class, pass out index cards and ask to complete the sentence "Psychology is_____." Repeat this exercise at the end of the course to see how their answers changed. The video High School Psychology Commercial is a cute introduction to the question "what is psychology?"

2 What does the word "psychology" mean to you?
Why is psychology controversial among Christians today?
What is the reputation of psychological therapy and psychological science in your church?
How does the duty to love God with one's mind extend to psychology?
What do the terms freedom, determinism, and responsibility mean to you?
What does the term cultural commission mean and how does the term apply to psychology?
What does it mean to love the Lord your God with all your heart, soul, and mind?
Why is it especially important to wear the full armor of God while studying psychology?
How could failing to recognize the worldview assumptions embedded in psychology's theories lead Christian students to inadvertently compromise their Christian worldview?
What impact do you think Darwin's theory of evolution had on the study of the human mind?
In what ways has psychology influenced the Church?
In what ways has psychology influenced modern culture?
Why do many Christian students walk away from their faith after the first year of college?

1.5 ***Chapter 1 For Further Study***

1 Web: Review the Divisions of the American Psychological Association and visit the homepage for a few of the divisions to explore the extent of psychological topics.

2 Find word #5590 (psuche) in Strong's Exhaustive Concordance of the Bible. Review usage of psuche, read verses containing the word, and compare and contrast meanings of psuche.

3 Video: Discovering Psychology is an instructional series on introductory psychology for college and high school classrooms and adult learners comprised of 26 half-hour video programs. The series features demonstrations, classic experiments and simulations, current research, documentary footage, and computer animation and provides students plenty of opportunity to discern the worldview perspectives embedded in Dr. Zimbardo's narration.

4 Read: Christ, the Lord of Psychology, by Eric L. Johnson in the Journal of Psychology and Theology.

5 Read: Select articles from the Neuroscience & Christianity page of the American Scientific Affiliation where there are a number of resources for further study on the Psychology.

6 Read: The End of Christian Psychology by Martin & Deidre Bobgan at Psychoheresy-aware.org

7 Read : All Truth God's Truth? by Martin & Deidre Bobgan at Psychoheresy-aware.org

8 Read: Christian Psychology - Part I by Dave Hunt at the Berean Call. Hunt describes Christian psychology as the most deadly and at the same time the most appealing and popular form of modernism ever to confront the church.

9 Read: Christian Psychology - Part II by Dave Hunt at the Berean Call. Hunt describes Christian psychology as cult-like and calls desperately for a return to biblical Christianity.

10 Read: Biola University's Journal of Psychology & Theology

11 Read: Psychology and Faith, by David G. Myers

1.6 *Chapter 1 Questions for Review*

1. Define psychology in your own words.
2. Describe reasons that psychology is controversial among Christians today.
3. Explain and provide examples of psychology's influence in the culture and in the Christian Church.
4. Why does the author of the text say that "psychology is not a harmless academic discipline nor is it inherently anti-Christian?"
5. Describe the impact of Darwin's theory of evolution on the study of the psychology.
6. Name and describe five of psychology subfields.
7. What advice does the text offer about a Christian approach to Psychology?
8. The text named four things psychologists do? Name and describe them.
9. The text named five main approaches to psychology. Name and describe them.
10. Describe three helping careers Christians might pursue and the ways that psychology influences those careers.

1.7 *Chapter 1 Quiz*

1. Name five of psychology subfields.
2. Name the five main approaches to psychology.
3. A Christian approach to psychology recognizes that Mankind is uniquely created _____.
4. By studying God's _____, guided by _____, psychology should seek understanding of how we are like the animals and how we are unique in our God-likeness.

1.8 *Chapter 1 Questions for Review (Answers)*

1 The scientific study of the brain and behavior. The science of human affect, behavior, and cognition. The study of the soul, the mind, and the relationship of mind to the brain and the body.

2 Some Christians see psychology as a harmless academic discipline and other Christians believe that psychology (especially counseling psychology) represents a secular, humanistic, and idolatrous replacement for Biblical anthropology and Biblical models of caring for problems of living.

3 Psychological theories influence sermons across the country. Some pastors leave the pulpit for jobs in pastoral counseling or social work. Christian authors and speakers sometimes take popular secular self-help books, theories, and speaker and "Christianize" them by mentioning the Bible and Jesus.

4 Modern psychology's worldview assumptions are not harmless, but they do not define or limit psychology.

5 Beginning with Charles Darwin's Origin of Species psychology, underwent a transformation. Data was interpreted in ways that excluded supernatural beliefs and assumptions. Psychology, once the study of the soul, became the study of the brain and behavior Darwinian macro-evolution is now imposing itself on the Christian understanding of Man (psychology) and trying to exclude anything Christian.

6 Cognitive psychologists study mental processes.
Physiological psychologists study the brain, how nerve cells communicate and transmit information, and the role of genetics in mental disorders.
Personality psychologists study the unique characteristics of people.
Developmental psychologists study changes in behavior and mental processes across the life span.
Counseling, clinical, and community psychologists study the causes of mental and behavioral disorders and devise techniques to help people recover from those problems.
Educational psychologists study teaching and learning and develop strategies to improve teaching and learning.
School psychologists testing for, diagnose, and treat learning and academic problems.
Social psychologists study the way that people interact with other people and in groups.

7 Christians studying psychology must;
Respect the inspiration and authority of the Bible.
Not underestimate the distorting, and destructive influence of sin on human thinking.
Remember that there will be no conflict between true psychology and a Christian worldview.
Not compromise their Christian worldview assumptions
Must understand modern psychology's history, philosophical assumptions, and empirical methods

8 Psychologists observe and describe psychological phenomena.
Psychologist test theories and hypotheses explaining the phenomena.
Psychologists attempt to identify the factors that influence our thoughts, feelings, and behaviors.
Psychologist develop and implement techniques to predict and change thoughts, feelings, behavior.

9 The biological approach views mental processes and behaviors in terms of biological structures and electro-chemical processes.
The behavioral approach emphasizes the relationship between environmental influences and behavior.
The cognitive approach emphasizes conscious thought processes. Cognition refers to perception, problem solving, memory, thinking, and any mental process that transforms sensory input.
The psychoanalytic approach emphasizes unconscious processes.
The humanistic approach emphasizes the influence of our thoughts, feelings, and experiences on the environment and emphasizes innate goodness and potential.

10 Your discretion.

Chapter 1 Quiz (Answers)

1 Cognitive psychologists
Physiological psychologists
Personality psychologists
Developmental psychologists
Counseling, clinical, and community psychologists
Educational psychologists
School psychologists

2 The biological approach views mental processes and behaviors in terms of biological structures and electro-chemical processes.
The behavioral approach emphasizes the relationship between environmental influences and behavior.
The cognitive approach emphasizes conscious thought processes. Cognition refers to perception, problem solving, memory, thinking, and any mental process that transforms sensory input.
The psychoanalytic approach emphasizes unconscious processes.
The humanistic approach emphasizes the influence of our thoughts, feelings, and experiences on the environment and emphasizes innate goodness and potential.

3 A Christian approach to psychology recognizes that Mankind is uniquely created in the image of God.

4 By studying God's natural revelation, guided by special revelation, psychology should seek understanding of how we are like the animals and how we are unique in our God-likeness.

Chapter 2 A Christian Worldview

Chapter 2 Outline

What is a Worldview
What is a Christian Worldview?
What Do You Believe About God?
What is the Nature of Mankind?
How Can We Know Things With Certainty?
Are There Moral Absolutes?
What Are the Causes and Cures for Mental Pain and Suffering?

2.1 *Chapter 2 Summary*

Everyone has core beliefs and assumptions – a worldview. All psychological research and theorizing happen in a worldview context. Ultimately, truth is only discernible from error at the worldview level. The Christian worldview begins with the biblical account of God, creation, the fall, and redemption. A Christian worldview and modern psychology intersect around five questions.

- What Do You Believe About God?
- What is the nature of Man?
- How can we know things with certainty?
- Are there moral absolutes?
- What are the causes of and the cures for abnormal thoughts, feelings, and behaviors?

2.2 *Chapter 2 Learning Objectives*.

Students will be able to:

- Define "worldview."
- Explain their worldview and explain how it intersects with modern psychology along the five worldview issues.
- Describe a Christian view of God and the nature of Mankind.
- Define and describe epistemology from a Christian perspective.
- Describe a Christian view of moral absolutes.
- Describe a Christian perspective of the causes for mental pain and suffering.
- Describe the history and influence of naturalism on psychology and other sciences.
- Describe the limitations of naturalistic descriptions of Mankind.
- Describe the history and influence of Darwinian evolution on psychology.
- Name several of the fathers of modern psychology who were atheists.
- Define Biblical anthropology.
- Define epistemology. Describe a Christian view of knowledge.
- Describe the "faith/Science dichotomy" and discuss a Christian view of science.
- Describe the phrase "All Truth is God's Truth" as it relates to a Christian worldview.
- Describe general and natural revelation in relation to knowledge about the nature of Man.
- Describe empiricism and its limits.
- Describe the effect of sin on the study of psychology.
- Describe the role of sin in a Christian understanding of mental pain and suffering. Compare a Christian view of sin with moral relativism and humanism.

2.3 *Chapter 2 Key Concepts & People*

Vis-à-vis
Psyche
Mind
Soul
Theism
Epistemology
Faith/science dichotomy
God-likeness
Naturalism
Popular Psychology
Freedom vs. Determinism
Heridity vs. Environment
The Self
Cultural Commission

2.4 *Chapter 2 Activities & Discussion*

How does psychology "fit" in your worldview?
Is psychology a dangerous rival religion?
What other core beliefs are parts of your Christian worldview (i.e. the family, sexuality, dancing)?
It this statement true or false? Support your answer. "The foundational beliefs of a Christian worldview, of an atheist's worldview, and of a psychology professor's worldview are matters of faith and philosophy and not of data and science."
Do we have a mind that is greater than the sum of our brain activity?
Why do Christians disagree about whether extra-biblical techniques are proper approaches to caring for mental suffering?
How does God use guilt, pain, and suffering as tools to conform Christians to Christ's image?
In what ways are we like the animals physically?
In what ways are we like animals mentally?
In what ways are we different from the animals?
Describe a monistic, dualistic, and tripartite perspective on human nature. Differentiate between naturalistic monism and Christian monism.
What do you believe about God?
What do you believe about the nature of Mankind? Are we products of nature or nurture? Is human behavior determined, or are we free to make willful choices? Are people basically good or bad?
What do you believe about moral absolutes?
What do you think causes mental pain and suffering?
Is "all truth God's Truth?"
Why do many people believe that a Christian worldview and science are inherently in conflict?
How does Biblical theism provides the foundation of science (and therefore of psychology)?
Using Romans 1:25 as your guide, respond to this statement; "Christians should reject any use of natural science methods to understand Mankind."
Pelagianism is a theological doctrine proposed by Pelagius, a British monk, and condemned as heresy by the Roman Catholic Church in A.D. 416. It denied original sin and affirmed the ability of humans to be righteous by the exercise of free will. Compare and contrast Humanism with Pelagianism then contrast each with the Biblical concepts of justification and sanctification.

2.5 *Chapter 2 For Further Study*

1 Read: The Spheres of Revelation and Science. What Are Their Limitations in Relation to Each Other? Clark, R. E. (1953). Journal of the American Scientific Affiliation
2 Web: Historical Studies of Science and Christianity
3 Read: How Sin Affects Scholarship: A New Model by Stephen K. Moroney
4 Web: Summit Ministries
5 Web: What's a Christian Worldview? by Del Tackett, Focus on the Family

2.6 *Chapter 2 Questions for Review*

1. What is a worldview?
2. What is epistemology?
3. What is natural revelation? What is special revelation?
4. What do you believe about God?
5. What do you believe about the nature of Mankind?
6. What do you believe about moral absolutes?
7. What do you think causes mental pain and suffering?
8. Describe a monistic, dualistic, and tripartite view of human nature.
9. Describe the faith/science dichotomy. Do you believe there is a dichotomy between science and a Christian worldview? Explain your answer.
10. Have your thoughts and opinions about psychology and worldviews changed?

2.7 *Chapter 2 Quiz*

1. Complicated mental processes like "thoughts" and "feelings" involve complex interactions between the _____, _____, _____, and _____.
2. One's worldview is a complex system of core _____, _____, and _____.
3. Psychologists don't often use the word "worldview," but they do define a _____ as a mental structure used to organize and understand the world around us.
4. The Christian worldview begins with the Biblical account of _____, _____, _____, and _____.
5. Our personal bias and depravity should cause us to maintain a _____ and hold our conclusions _____.
6. Christians studying psychology must be willing to _____ and be willing to _____.
7. A Christian worldview recognizes moral absolutes described _____ and _____ by Jesus Christ.
8. A Christian worldview emphasizes _____ as the primary (if not exclusive) cause of mental and emotional pain
9. Your worldview of the causes of and cures for mental suffering includes whether you believe that _____, _____, and _____ and guilt have meaning and purpose or are unfortunate circumstances to be avoided at all costs.
10. A Christian view of the nature of Mankind is also called _____.
11. According to a Christian worldview, God reveals Himself in _____, _____, and supremely in _____ His Son.
12. The historical Christian approach to science was that faith and science were _____.
13. The fathers of modern science (many of whom were Christians) saw science as one tool to ____, ____, and to _____.
14. A Christian worldview believes that God reveals things to us in two ways: _____ revelation and _____ revelation.
15. God's natural and special revelations are parts of an _____ and _____ whole.

Chapter 3 Psychology's History and Worldview

3 *Chapter 3 Outline*

What Does it Mean to be Human?
New Ways of Knowing.
Psychology as a Science.
Atheism, Naturalism, and Evolution.
What is Man? Neurobiology.
What is Man? Behavioral Genetics.
What is Man? Behaviorism.
What is Man? Sigmund Freud.
What is Man? Cognitive Psychology.
What is Man? Humanism.
What is Man? The Self and Positive Psychology.
What is Man? Mental Pain and Suffering.
What is Man? Morality.
What is Man? Feminist Psychology.

3.1 *Chapter 3 Summary*

Psychology is old and psychology is new. Poets, theologians, and philosophers throughout history have thought deeply about the mind, the soul, and the nervous system. Most histories date the beginning of modern scientific psychology at in 1879 with Wilhelm Wundt's psychological laboratory in Germany.

The fathers of modern psychology proposed alternative non-biblical models of Mankind. Psychology's history is best understood in the worldviews expressed in its major theories and schools of thought.

Modern psychology can trace its roots through Renee Descartes and rationalism and Francis Bacon and empiricism. Early modern psychology embraced empiricism as its guiding principle, and it is its primary approach today.

The structuralists were interested in describing the characteristics of mental "structures." Functionalists like Herbert Spencer, William James, Edward Thorndike, and Charles Darwin were interested in describing mental processes in terms of survival and reproductive advantages. Darwin set the stage for describing complex mental processes as collections of simpler underlying processes, each with a development and purpose explained by adaptation and survival. Modern psychology sees evolution as a unifying explanation for all behavior and mental processes.

Neuro-biology is the study of the nervous system's structures and processes. Neuro-biology focuses "reductively" on brain structures and mental processes as collections of simpler component structures and processes. Behaviorism, as a worldview, sees Mankind as nothing more than very complicated machines that react to stimuli (input) in predictable ways.

Freud explained the mind in terms of psychic conflicts and opposing unconscious forces. The cognitivists approached psychology in terms of the ways we acquire, process, and understand information.

Humanism is a philosophy that emphasizes human values, reason, and individual self-worth above all else. Humanist psychology suggests that high-self-esteem, personal fulfillment, self-expression, self-acceptance, and self-fulfillment define good mental health.

Psychology's naturalistic worldview sees the causes of abnormal thoughts, feelings, and behaviors as anything except sin and disunity with God. A Christian worldview recognizes sin as a primary (if not exclusive) cause of mental and emotional pain.

Moral relativism is a worldview in which standards of behavior are based on some temporal framework of values and beliefs and not on any moral absolutes. A Christian worldview recognizes that the Bible prescribes moral absolutes. When we violate those absolutes, we are personally responsible for our actions.

3.2 *Chapter 3 Learning Objectives*

Students will be able to:

- Describe Cartesian Dualism.
- Describe the emergence of experimental psychology.
- Describe the study of psychology pre-dating the establishment of modern scientific psychology.
- Describe examples of ancient psychological research and theories.
- Describe the development of psychology as an empirical science.
- Describe phrenology.
- Trace the history of psychology through each of its five major schools-of-thought.
- Describe Sigmund Freud's worldview on the nature of Man and contrast his view with a Christian view.
- Describe Freudian/psychodynamic psychology.
- Describe behaviorism and radical behaviorism's claims about the nature of Mankind and contrast behaviorism with a Christian view.
- Describe the structuralists.
- Explain the contribution of Dr. Charles Bell, Franz Gall, Gustave Fechner, Wilhelm Wundt, Edward Titchener to the development of modern psychology.
- Describe reductionism and its implications on the nature of Mankind.
- Describe the functionalists.
- Describe the influence of Herbert Spencer, Charles Darwin, and William James on modern psychology.
- Summarize the theory of evolution as applied to human behavior and mental processes.
- Describe behaviorism and contrast behaviorism and Freudian psychology at the level of the nature of Mankind.
- Describe humanism and contrast humanism's beliefs about the nature of Man with a Christian view. Define self-esteem. Evaluate "selfism" in comparison to Biblical anthropology.
- Describe cognitive psychology.
- Describe neuro-biology
- Describe various explanations for mental illness in terms of underlying worldview assumptions.

3.3 *Chapter 3 Key Concepts & People*

Naturalism
Atheism
Church authority
The Reformation
Martin Luther
Rationalism
Renee Descartes
Deductive reasoning
Monism
Cartesian dualism
The conarium
Reflex arc
Empiricism
Francis Bacon
Inductive reasoning
Hippocrates
Four humors
Wilhelm Wundt
Phrenology
Franz Gall
Psychophysics
Paul Broca
Gustav Fechner
Stucturalism
Herman von Helmholtz
Introspection
Charles Bell
Edward B. Titchener
Charles Darwin
Evolutionary psychology
Functionalism
Herbert Spencer
William James
Proximate and ultimate cause
Neuro-biology
Reductive (reductionism)
Francis Crick: The Astonishing Hypothesis
Behavioral Genetics
Francis Galton
Behaviorism
Sigmund Freud
Cognitive psychology
Humanism
Self psychology
Abnormal thoughts, feelings, and behaviors
Feminist psychology

3.4 *Chapter 4 Activites & Discussion*

1 Based on your knowledge of Charles Darwin's Origin of Species and its implications on modern biology, write an essay in which you discuss how evolutionary theory influences modern psychology.

2 Is psychology old or is it new? Explain your answer.

3 Do a web search of the following phrases: Social Darwinism, Economic Darwinism, Political Darwinism, Legal Darwinism, Educational Darwinism. Based on your observations of the application of Darwinian evolution to sociology, economics, politics, the law, and education, write an essay describing how Darwinian evolution might influence psychology.

4 What are the limits of the biological and behavioral perspectives on explaining human behavior and mental processes?

5 What is the nature of the human "heart" as described in Acts 14:17, Romans 9:2, Matthew 5:28, Luke 24:32, John 12:40, Matthew 9:4, Matthew 13:15, Acts 2:37, Acts 11:23 and Romans 10:10. Why was phrenology condemned by some Christians as heretical?

6 Compare and contrast Descartes' rationalism and Francis Bacon's empiricism.

7 How might psychologists explain aggression from behavioral, psychodynamic, humanistic, and Christian perspectives?

3.5 *Chapter 3 For Further Study*

1 Web: History of Psychology , in conjunction with Dr. Donald Pozella of the University of Dayto (http://elvers.us/hop/welcome.asp)

2 Read: Reductionism in the Psychology of the Eighties: Can Biochemistry Eliminate Addiction, Mental Illness, and Pain? by Stanton Peele at the Stanton Peele Addiction Website (http://www.peele.net/lib/reduct.html)

3 Read: the affirmations of the Humanist Manifesto I at the American Humanist Association (http://www.americanhumanist.org/Who_We_Are/About_Humanism/Humanist_Manifesto_I)

4 Read about ancient philosophers influential in the history of psychology"

Democritus (http://www.iep.utm.edu/democrit/)

Epicurus (http://www.iep.utm.edu/epicur/)

Galen (http://www.iep.utm.edu/galen/)

Marko Marulic -The Author of the Term "Psychology" (http://psychclassics.yorku.ca/Krstic/marulic.htm)

John Locke – An Essay Concerning Human Understanding (http://psychology.okstate.edu/museum/history/undrstnd.txt)

David Hume – An Enquiry Concerning Human Understanding (http://ebooks.adelaide.edu.au/h/hume/david/h92e/)

5 Read: Elements of Psychophysics by Gustav Fechner

6 Read: Sigmund Freud: Psychoanalyst from Time Magazine (http://www.time.com/time/magazine/article/0,9171,990609,00.html)

7 Web: Classics in the History of Psychology an internet resource developed by Christopher D. Green, York University, Toronto, Canada (http://psychclassics.yorku.ca/links.htm)

8 Web: The Center for Evolutionary Psychology (http://www.psych.ucsb.edu/research/cep/)

9 Journal: *Evolutionary Psychology* is an open-access peer-reviewed journal that aims to foster communication between experimental and theoretical work on the one hand and historical, conceptual and interdisciplinary writings across the whole range of the biological and human sciences on the other. (http://www.epjournal.net/)

10 Read: Darwin's Dirty Secret by Nancy R. Pearey (from World Magazine 3/13/2000) (http://www.leaderu.com/orgs/arn/pearcey/np_world-rape0300.htm)

11 Read: Non-bizarre delusions as strategic deception, by Edward H. Hagen. Hagen suggests that delusion are an evolved adaptive survival benefit (http://anthro.vancouver.wsu.edu/media/PDF/Delusions_revised_Aug_2007.pdf)

12 Read: Evolutionary Psychology: Controversies, Questions, Prospects, and Limitations, by Confer et. al. http://homepage.psy.utexas.edu/homepage/Group/BussLAB/pdffiles/evolutionary_psychology_AP_2010.pdf

13 Web: History of Psychology (http://elvers.us/hop/welcome.asp)

14 Read: Leaving Psychology Behind, by Paul Vitz (http://www.summit.org/resources/essays/leaving-psychology-behind/)

15 Web: The Psychology of Religion pages. (http://www.psywww.com/psyrelig/)

3.6 *Chapter 3 Questions for Review*

1 What is Cartesian dualism?

2 How did a naturalistic worldview effect modern psychology?

3 How did rationalism contribute to the development of modern psychology?

4 How did empiricism contribute to the development of modern psychology?

5 What are some criticisms of modern psychology's reliance on empirical methods?

6 What is phrenology and how are phrenology and modern neurobiology similar?

7 How did Sigmund Freud's view of Mankind differ from a Christian view?

8 What were radical behaviorism's assumptions about the nature of Mankind?

9 What were the influences of Herbert Spencer, Charles Darwin, and William James on modern psychology?

10 In what ways is secular humanism inconsistent with a Christian worldview?

3.7 ***Chapter 3 Quiz***

1. Many of the "fathers" of modern psychology saw their theories as _____ to or _____ of Biblical understandings of Mankind.
2. Most histories say modern scientific psychology was founded in what year?
3. Who is recognized as the father of modern scientific psychology?
4. Each of psychology's models, schools of thought, and approaches represents alternative worldviews of _____.
5. Throughout history people have suggested locations and organs where the _____ (spiritual) interacted with the _____ (body).
6. Descartes did not reject _____ but believed that _____ was a crucial measure of truth.
7. Rationalists emphasize _____ over sensory experience or religious teachings.
8. Descartes believed that there are two types of human behavior that operate in interaction. Name them and provide examples of each.
9. Descartes believe that our material and immaterial natures interacted at the _____ (pineal gland).
10. Descartes theorized that sensations and voluntary movement operated in a cycle that came to be known as the _____.
11. Modern psychology rejects Descartes' dualism in favor of _____, a belief that there is no immaterial mind or soul.
12. The Greek doctor and philosopher Galen thought that personality types were determined by levels of body fluids called _____.
13. Francis Bacon's philosophy of knowledge is called _____.
14. According to Francis Bacon, by making _____ we can draw conclusions about the world.
15. Early modern psychology embraced _____ as its guiding principle, and it is its primary approach today.
16. Strict empiricism only allows psychology to study our creatureliness and reveals only sterile facts void of any meaningful contribution to what it means to be human
17. _____ is the study of the physics of sensation and perception.
18. _____, thought by some to be the real father of modern scientific psychology, was one of the very first to apply scientific procedures to mental processes in his study of psychophysics.
19. _____, generally known as the founder of scientific psychology, established a psychology laboratory at the University of Leipzig in Germany in 1879.
20. Wundt's interest was _____**.**. His goal was to identify the components (elements) of consciousness in a type of periodic table of mental elements.
21. Wundt's experimental method called _____**,** meaning trained subjects looked inward to describe subjective mental experiences.
22. _____, now discredited, suggested that the shape of the skull indicated a person's character and personality.

23. Modern psychology's _____ assumptions led its definition "evolving" from "the study of the mind, spirit, or soul" to "the science of the brain and behavior."
24. Charles Darwin anticipated that psychology's new foundation would be the "acquirement of each mental power and capacity by _____-."
25. Darwin's theory requires that psychology explain and interpret everything about mental functioning in terms of _____ passed down from one generation to the next according to _____.
26. _____ focused on discovering what adaptive purpose the brain structures served; what survival advantage did a particular behavior or mental function provide.
27. Modern psychology sees in evolution a _____ and a reason for all behavior and mental processes.
28. Evolutionary psychologists search for the _____ and _____causes of behavior.
29. _____, also called psychobiology, is the study of the nervous system's structures and processes and is the most productive research field in psychology today.
30. Modern neurobiology is _____, meaning means that each mental structure and behavior is thought to be made of ever simpler component structures and behaviors.
31. Francis Crick, co-discoverer of DNA, proposed that our mental life, consciousness, morality, decision-making, and judgment are the product of a material physical brain in what is called the _____.
32. The goal of behaviorial psychology is to explain the _____.
33. According Skinner and Pavlov, both "radical behaviorists," ALL human behavior is determined by the environment in a _____.
34. Behaviorism is a _____worldview in which free-will is an illusion.
35. From the perspective of the history of psychology, Freud's theories and behaviorism were _____.
36. Freud believed in a _____ (Id, Ego, and Super ego), and that we are not consciously aware of most of the factors that influence our emotions and behavior.
37. Freud believed that Man invented God and religion as a way to cope with our _____.
38. A _____ approach to psychology emphasizes the ways we process information and is a dominant school of thought in psychology today.
39. _____ is a philosophy that values values, reason and individual self-worth above all else.
40. Humanist psychology claims that people in their "_____" are inherently good and that in accepting and nonjudgmental environments; we can recover that original goodness.
41. _____ means achieving personal fulfillment and full potential as determined by humanistic values.
42. A Christian worldview sees personal fulfillment and full potential in terms of the extent to which we look like _____.
43. Humanistic psychology, which rejected the determinism in Freudian and behavioral approaches, was also known as psychology's _____.
44. The popular perspective that people should feel good about themselves, learn to love themselves, and rid themselves of needless shame and guilt is known as known as _____, _____, and most recently, positive psychology.

45. In positive psychology, a new "branch" of psychology, _____, _____, _____, _____, and _____ define what it means to be human.

46. A Christian worldview emphasizes _____ as the primary (if not exclusive) cause of mental and emotional pain; modern psychology attributes it to anything but _____.

47. Psychology's naturalistic foundation requires that mental pain and suffering be explained in terms of anything except _____ and _____.

48. Modern psychology's leading explanation for mental pain and suffering is neurobiological, known as the the _____ of mental illness.

49. _____ is the application of a naturalistic worldview to ethics and personal responsibility.

50. _____ is humanistic worldview focused on helping women achieve self-actualization, as defined by humanist values, in a male dominated world.

Chapter 4 Brain and Nervous System

4.0 *Chapter 4 Outline*

Worldview Check.
The Nervous System.
The Neuron.
Neurotransmission and Neurotransmitters.
The Peripheral Nervous System.
Sympathetic and Parasympathetic Nervous System.
The Central Nervous System.
The Brain.
Autopsies, Accidents, Brain Lesions, Psychosurgery, and Brain Imaging
Divisions of the Brain
The Endocrine System
The Limbic System

4.1 *Chapter 4 Summary*

The human nervous system is the most complex and coordinated structure in the known universe and a wonder of God's creation. The study of the brain and the nervous system is called neuro-psychology, neuro-anatomy, and neuro-biology.

The human nervous system consists of two sub-systems; the central nervous system (CNS) and the peripheral nervous system (PNS). The central nervous system consists of the brain and the spinal cord. The peripheral nervous system consists of those nerves outside of the brain and the spinal cord.

The neuron is the basic building block of the nervous system. Neurons communicate with each other via specialized extensions called dendrites and axons. At rest, a neuron has a slightly negative electrical charge. When it becomes sufficiently positively charged, a "spark" of electricity moves down the axon. Between neurons, neurotransmission occurs when a neuron releases neurotransmitters into the synaptic cleft where they are received by neighboring neurons. Psychotropic medications operate by affecting neurotransmission.

The peripheral nervous system (PNS) controls voluntary and involuntary muscle movement, sensory information, and automatic functions of the body. The PNS is made up of two main subsystems: the somatic and autonomic systems. The somatic system controls voluntary muscle movement. The autonomic system controls automatic body functions. The autonomic nervous system is further subdivided into the sympathetic and parasympathetic nervous systems which act as opposites. The sympathetic system creates an excited state and the parasympathetic system restores the body to a state of rest and relaxation.

Understanding of the structure and function of the brain came by studying the effects of brain injuries, lesions, psychosurgery, brain stimulation, and brain-imaging. Phrenology, a 19th century pseudo-science, proposed that mental functions were linked to specific areas of the brain. Phineas Gage's accident demonstrated the connection between the brain and personality. Cortical maps are graphic illustrations of the localization of brain functioning.

Brain imaging technologies provide a way for psychologists to see and measure brain activity. The electroencephalograph (EEG) records electrical voltage produced when neurons fire. The computer axial tomography (CAT scan) produces a three-dimensional x-ray of the brain. Positron emission tomography (PET scan) produces real-time three-dimensional images of blood flow, oxygen use, drug activity, and glucose metabolism. Magnetic Resonance Imaging (MRI) uses powerful magnetic fields and radio waves to create detailed images of the brain.

The brain is shielded by the skull, cushioned and nourished in cerebrospinal fluid, and protected from toxins by the blood-brain barrier. The brain consists of three major divisions: the forebrain, midbrain, and hindbrain. The forebrain makes up about two-thirds of the brain's size and includes the cerebral cortex, thalamus, hypothalamus, amygdala, and hippocampus. The hindbrain sits under the cerebral cortex at the base of the skull and is comprised of the cerebellum, pons, and medulla. The midbrain is a small area that sits between the forebrain and the hindbrain and forms a major part of the brainstem.

The cerebral cortex is the outer layer of the forebrain under the skull and forehead containing the majority of the brain's neurons. The cerebral cortex is divided into hemispheres, lobes, cortexes, and areas. The longitudinal sulcus divides the cerebral cortex into the left and right hemispheres, connected to each other by a dense bundle of nerve fibers called the corpus callosum. Each hemisphere is further divided into lobes, named for the parts of the skull under which they are located, and into cortexes and "areas" named for their functions.

4.2 *Chapter 4 Learning Objectives*

Students will be able to:

- Describe the structure and function of the neuron
- Recognize that specific functions are centered in specific lobes of the cerebral cortex
- Describe the organization of the nervous system
- Describe the function of the CNS, PNS, and the sympathetic and parasympathetic systems
- Describe techniques for studying the brain
- Describe the function of the endocrine system and how the endocrine glands are linked to the nervous system
- Classify the major divisions and subdivisions of the nervous system
- Differentiate the functions of the various subdivisions of the nervous system
- Identify the structure and function of the major regions of the brain
- Describe lateralization of brain functions
- Describe the divisions of the brain
- Indentify and describe the cerebrum, cerebellum, and medula
- Describe how brain injury contributed to our understanding of brain function
- Describe how brain stimulation studies contributed to our understanding of brain function
- Describe how imaging contributes to our understanding of brain function
- Describe lobotomy

4.3 *Chapter 4 Key Concepts & People*

Neuro-psychology
Nervous system
Central nervous system
Peripheral nervous system
Somatic division
Autonomic division
Sympathetic nervous system
Parasympathetic nervous system
Sensory neurons
Motor neurons
Interneurons
Neurotransmission
Localization of functioning
Phineas P. Gage
Galen
Franz Gall
Cortical mapping
Cerebral cortex
Thalamus
Hypothalamus
Amygdala
Hippocampus
Bi-lateral symmetry
Hemispheric specialization

Peter Milne
James Olds
Walter Penfield
Phrenology
Blood-brain barrier
Brain lateralization
Brain plasticity
Brain imaging
Endocrine system
Limbic system
Neurotransmitters

4.4 ***Chapter 4 Activities & Discussion***

Respond to this statement; "though experiencing God may correlate with brain activity, it does not disprove or diminish the experience."

Why do you think that Phineas Gage's accident was such an important event in the history of psychology?

4.5 ***Chapter 4 For Further Study***

1 Read: The Human Nervous System: Evidence of Intelligent Design [Part I] by Brad Harrub, Ph.D at Apologetics Press

2 Read: The Human Nervous System: Evidence of Intelligent Design [Part II] by Brad Harrub, Ph.D. at Apologetics Press

3 Read: Mind Life by P. David Glanzer at The American Scientific Affiliation

4 Web: Disorder Index. National Institute of Neurological Disorders and Stroke.

5 Video: The Lobotomist. American Experience on PBS.

6 Web: The Divisions of the Nervous System. Neuroscience for Kids, Eric H. Chulder, PhD.

7 Web: Neuroscience for Kids, Eric H. Chulder, PhD.

8 Web: The Wada Test, at Epilepsy.com.

9 Read: The Split Brain Experiments at Nobel.org.

10 Web: Neuroscience Online. An electronic textbook for the neurosciences. University of Texas.

11 Read: Phineas Gage's Story at Deakin University

12 Video: Kim Gorgens: Protecting the brain against concussion, at TED. Neuropsychologist Kim Gorgens makes the case for better protecting our brains against the risk of concussion.

13 Read: Damaged, by Malcom Gladwell, from The New Yorker (http://www.gladwell.com/pdf/damaged.pdf). What are the article's implication for understanding free will and moral responsibility?

14 Read: Is God and Accident? By Dr. Paul Bloom from The Atlantic. http://www.theatlantic.com/magazine/archive/2005/12/is-god-an-accident/4425/

15 Read: Religion: Is God in our Genes? By Jeffery Kluger from Time Magazine. (http://www.time.com/time/magazine/article/0,9171,995465-1,%2000.html)

4.6 *Chapter 4 Questions for Review*

1 Identify the major divisions of the nervous system.

2 What are the major structures of the neuron?

3 Name the three types of neurons and describe their functions.

4 Describe neurotransmission, both within the neuron and between neurons.

5 Name and describe the three subsystems of the peripheral nervous system.

.6 Respond to the following statement from a Christian worldview perspective. "All mental experience is nothing more than brain activity."

7 Describe important historical discoveries about the structure and function of the brain.

8 Discuss the case of Phineas P. Gage as an example of how brain injuries led to knowledge about brain function.

9 Describe the psycho-surgery known as the frontal lobotomy.

10 Name and describe five brain imaging techniques.

11 Identify and describe the midbrain, forebrain, and hindbrain.

12 Identify 4 lobes of the cerebral cortex.

13 Describe hemispheric specialization.

14 Describe brain lateralization.

15 Describe "the god spot" from a naturalistic perspective and from a Christian perspective.

4.7 ***Chapter 4 Quiz***

1. The near-infinite complexity of the brain represents the single biggest _____ necessary to hold an evolutionary worldview.
2. The nervous system. The human nervous system consists of two sub-systems; the _____ and the _____.
3. The _____ is the most basic building block of the nervous system.
4. Neurons differ from other cells in that they communicate with each other via specialized extensions called _____ and _____.
5. The axon is covered in a fatty covering that insulates it and speeds neurotransmission call the _____.
6. _____ neurons carry signals from the sense receptors in the body to the brain.
7. _____ neurons carry signals from the brain and spinal cord to the muscles and glands.
8. _____, exist exclusively in the brain and spinal cord, make up about 90% of all neurons, and make the connection between sensory and motor neurons and are involved in all mental activity.
9. _____ support neural functioning by digesting dead neurons, producing the myelin sheathing, and providing nutrition to neurons.
10. The process by which neurons communicate is known as _____.
11. When a neuron is sufficiently excited, it "fires," sending an _____ down the axon.
12. The _____ is the minimum level of excitement required for the neuron to fire.
13. The recovery time after firing is called the _____.
14. Psychotropic medications affect the _____ of neurotransmitters or the way in which neurotransmitters are _____.
15. _____ make more of a neurotransmitter available in the synapse. _____ decrease the amount of available neurotransmitter or blocks it from delivering its signal.
16. Neurotransmitters must cross the _____ between the axon of one neuron and the dendrite of another.
17. _____ neurotransmitters increase the likelihood that neighboring neurons will fire. _____ neurotransmitters lower the likelihood that others will fire.
18. A _____ is a poison that acts specifically on nerve cells.
19. The _____ controls voluntary and involuntary muscle movement, sensory information, and automatic functions of the body.
20. The _____ nervous system controls smooth muscles in places like the stomach, intestines, blood vessels, glands, and the bladder.
21. The autonomic nervous system is further subdivided into the _____, _____, and ____ nervous systems.
22. The _____ system creates an excited state and mobilizes the body for action by accelerating some functions and accelerating others.
23. The_____ parasympathetic system acts like a brake and restores the body to a state of rest and relaxation by slowing heart and respiration rates, diverting blood flow from the muscles, and restarting the digestive process.
24. The _____ nervous system is a network of nerve fibers in the stomach, intestines, pancreas, and gall bladder controlling the digestive process.
25. That portion of the temporal frontal lobe responsible for speech production is known today as _____.

26. Brain-related disorders in speech are known as _____.
27. The result of a cut-off of blood supply to a part of the brain is called a stroke, or _____.
28. A type of brain surgery involving cutting the connections to the prefrontal cortex with an instrument inserted into the brain through the eye socket is called _____.
29. _____ and _____ are brain-imagining techniques that produce real-time three-dimensional images of blood flow, oxygen use, drug activity, and glucose metabolism in specific regions of the brain.
30. _____ is a brain-imagining technique that can produce a precise image of brain activity as fast as every second.
31. The _____ is a membrane that lets some substances from the blood into the brain but keeps out toxins.
32. The term _____ refers to the idea that certain parts of the brain are responsible for specific mental functions.
33. The text described the brain in terms of three major divisions or parts called _____, _____, and _____.
34. As the brain develops, it folds into deep wrinkles called _____, allowing for more brain surface area to fit in the limited space in the skull.
35. The outer layer of the forebrain, called the _____ contains the majority of the brain's neurons and is involved in "higher-order" functions like language and reasoning.
36. A deep fissure called the _____ splits the cerebral cortex down the middle into the left and right hemispheres.
37. The left and right hemispheres are connected by a dense bundle of nerve fibers called the _____ which allows the two halves of the brain to communicate.
38. _____ refers to the different roles each hemisphere plays in mental functioning.
39. Handedness (being left-handed or right-handed) is a function of the _____ of the opposite cerebral hemisphere.
40. Visual processing is localized in _____ at the back of the brain.
41. The frontal lobe is related to ____ like attention, organization, planning, judgment, problem solving, and creativity.
42. The _____ controls the pituitary gland and other endocrine glands, plays a major role in the autonomic nervous system, and controls body temperature, hunger, and thirst.
43. The _____ is an almond shaped structure located deep in the temporal lobes that plays a role in fear and other emotions, learning, memory, attention, and perception.
44. The _____ is a seahorse shaped structure in the temporal lobe involved in processing memories, emotion, and spatial navigation.
45. The _____ is the second largest structure in the brain and is involved in movement, co-ordination, balance, and motor related memory.
46. The _____ is a general term for the area of the brain responsible for basic functions of life such as breathing, heart rate and blood pressure.
47. The _____ is a mesh-like network of neurons involved in sleep and consciousness, arousal and attention, coordinating signals from the senses, and in pain modulation.
48. _____ refers to the lifelong process of creating, pruning, and reorganizing neural connections.
49. The _____ system is a collection of glands that secrete hormones into the blood stream.
50. The thalamus, hypothalamus, amygdala, and hippocampus make up the _____, which plays an important role in our sense of smell and in memory and emotion.