

1. List in order the six basic steps of the scientific method, and explain each of them.
2. Define *nature and nurture*, and give an example of each. Also describe the nature–nurture debate.
3. Explain epigenetics, and describe the perspective most modern developmentalists take on the nature–nurture debate.
4. Define a *critical period* and a *sensitive period*. Explain the difference between the two periods, and give an example of each.
5. Explain Bronfenbrenner's ecological-systems theory and describe his five systems.
6. Define *cohort*, explain its effects, and give an example of one.
7. Describe culture, and explain why researchers interested in human development study different cultures.
8. Define and discuss the term *plasticity* as it relates to human development. What factors influence plasticity in development? Offer at least one example of plasticity that has operated or is operating in your own life.
9. What is a developmental theory? Identify the three things discussed in the text that a theory can do.
10. Freud's theory of psychosexual development and Erikson's theory of psychosocial development are two examples of psychoanalytic theories. Describe two similarities of the theories and two differences between them.
11. Describe classical and operant conditioning, and name the researcher who first proposed each type of conditioning.
12. Explain social learning theory. Who first described it, where does it come from, and what does it emphasize?

13. List Piaget's four stages of cognitive development in order, and explain what Piaget believed causes intellectual advancement.
14. Define *information-processing theory*. According to this theory, what is the process that underlies cognition?
15. Name and describe each of the five levels in Maslow's hierarchy of needs in order.
16. Describe the two biologically based drives associated with evolutionary theory, and explain how selective adaptation relates to this theory.
17. Name four kinds of theories, and describe how they have contributed to science's understanding of human development.
18. Imagine you are interested in the relationship between age and reading ability for children at 8 and 12 years old. Briefly define cross-sectional design, and summarize how you could test this relationship using that design.
19. What practices must be built into a research study to protect participants?
20. Define *correlation*, and give an example. Can one determine cause and effect from correlations? Explain why or why not.
21. What are ethics, and why are ethical standards so important to scientific research?

Answer Key

1. Step 1: Begin with curiosity. Pose a question based on a theory, prior research, or personal observation. Step 2: Develop a hypothesis, which is a specific research question that can be tested through research. Step 3: Test the hypothesis. Design and conduct research to gather empirical evidence (data). Step 4: Draw conclusions. Using the evidence gathered in the research, conclude whether the hypothesis is supported or refuted. Step 5: Report the results by sharing the data, conclusions, and alternative explanations with other scientists. Step 6: Repeat the study, usually using different participants.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
List steps of scientific method in order	States six of the steps in order	States three of the steps in order	States fewer than three steps or does not state the steps in order
Explain each step	Describes the six steps	Describes three steps	Describes fewer than three steps or does not describe steps accurately

2. Nature refers to the influence of genes on a person, and nurture refers to environmental influences on a person. Environmental influences include the health and diet of the embryo's mother and continues lifelong, including family, school, community, and society. An example of nature would be having a gene that predisposes one to addiction. An example of nurture would be having that gene but avoiding addictions as a result of not being exposed to abuse or parental addictions. The debate concerns how much of any person's characteristics, behaviors, or emotions is the result of genes and how much is the result of the person's experiences.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define nature and nurture	Accurately defines both terms and gives an example of both	Accurately defines one term and gives at least one accurate example	Does not accurately define both terms or supply accurate examples
Describe the debate	Accurately describes both sides of the debate	Accurately describes one side of the debate	Does not accurately describe the debate

3. Modern researchers have learned that neither nature alone nor nurture alone can provide a complete way to understand development. Both nature and nurture matter, as both genes and environment affect nearly every characteristic. Epigenetics refers to the study of how environmental forces affect genes and genetic expression.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Researcher's viewpoint	States modern researchers' stance that both matter	Is vague about modern researchers' stance	Incorrectly states modern researchers' stance

Epigenetics	Defines the term and clearly explains what it means	Defines the term without explaining its meaning	Does not describe the term or give an explanation
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4. A critical period is a time when something must occur to ensure normal development, and a sensitive period is a time when a specific developmental task occurs most easily. An example of a critical period would be the fetus growing arms and legs and hands and feet—this can occur only at a specific time in utero. Language development is an example of a sensitive period. It occurs most easily at a young age but can occur at a later age as well.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define and differentiate	Defines both periods; differentiates between them	Defines just one period or is vague about differentiation	Fails to define both periods or fails to differentiate
Examples	Gives a correct example for both periods	Gives a correct example of either period	Does not give any examples

5. Bronfenbrenner believed that each person is affected by his or her social context. Over the course of his career, he identified five systems. The first is the microsystem (e.g., one's family and peer group), the second is the exosystem (school, clubs, and church), and the third is the macrosystem (larger social setting such as cultural values and economic policies). The fourth system, called the chronosystem, is the role of historical context, and the fifth system, the mesosystem, is the interaction that occurs between all of the other systems.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Explain ecological systems theory	Clearly states what the theory is	Gives a vague explanation of the theory	Is unable to describe the theory
Identify the systems	Identifies the five systems and gives an example of microsystem, exosystem, and macrosystem	Identifies three of the systems or gives examples for three of the systems	Identifies fewer than three of the systems or gives fewer than three examples

6. A cohort is a group of people born within a few years of each other who move through life together. Cohorts travel through life affected by the interaction of their chronological age with the values, events, technologies, and culture of the era. Cohort examples will vary but should show an understanding of a cohort. Common examples include the Greatest Generation (people who lived through the Depression and WWII) and the Millennials (Generation Y, born between the early 1980s and the early 2000s). Another example would be Generation X, born between the early 1960s to the early 1980s.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
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Explain cohort	Correctly defines cohort and explains its importance on members	Defines cohort without explaining its affect on members	Does not define cohort correctly
Give an example	Gives an example of a cohort	Gives a vague example of cohort	Gives an incorrect example or doesn't give an example

7. Culture is a strong social construction, a concept created by a society. Such social constructions affect how people think and act—what they value, praise, ignore, and punish. Different cultures may view the same behaviors or phenomenon as either an asset or a deficit. Therefore, by studying different cultures, researchers can identify which patterns are universal among humans and which occur only in certain cultures. This provides insights into the effects of different environments.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Describe culture	Clearly describes culture	Gives a definition of culture without describing it	Does not define culture
Explain why researchers study different cultures	Clearly explains why researchers study different cultures	Is vague about why researchers study different cultures	Does not explain why researchers study different cultures

8. Plasticity is the molding of human traits while simultaneously maintaining some durability of identity. The idea of plasticity is that human development is an ongoing, ever-changing interaction between the body and mind and between the individual and every aspect of his or her environment. Influences that affect plasticity include culture, upbringing, and genes. The example should relate to some aspect of growth in one's life, such as how a high-functioning person on the autism spectrum can eventually earn a college degree. [The autism remains (durability), but with school and other societal interventions, the person can still achieve traditional milestones.]

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define and discuss plasticity	Defines and discusses plasticity	Defines <i>or</i> discusses plasticity	Cannot define or discuss plasticity
List factors that influence plasticity	Lists three factors that influence plasticity	Lists two factors that influence plasticity	Lists one or no factors that influence plasticity
Give plasticity example	Gives an example of plasticity	Gives an example of plasticity	Does not give an example of plasticity

9. A developmental theory is a systematic statement of principles and generalizations that provides a framework for understanding how and why people change as they grow older. Theories are groups of ideas, assumptions, and generalizations that interpret and illuminate thousands of observations about human growth.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
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Define developmental theory	Defines developmental theory	Gives a vague definition of developmental theory	Does not define a developmental theory
Identify the three things a theory can do	Tells the three things a theory can do	Tells two things a theory can do	Tells one thing or nothing that a theory can do

10. Both Freud and Erikson proposed stage theories based on the belief that adult problems echoed childhood conflicts. However, Erikson's psychosocial theory had eight stages, while Freud's psychosexual theory had just four. Erikson named two polarities at each stage, and his stages encompassed the entire life span, while Freud's ended in adolescence. Erikson's theory also emphasized the influence of family and culture, while Freud's theory emphasized unconscious sexual urges.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Describe similarities	States that both men had stage theories based on the idea that adult problems echoed childhood conflicts	States that both theories had stages	Does not describe accurately how the theories are similar
Describe differences	States all four ways in which the theories differed	States three of the four ways in which the theories differed	States two or fewer ways in which the theories differed or does not accurately describe how the theories differed

11. Classical conditioning is a process by which a person learns to associate a neutral stimulus with a meaningful stimulus, gradually reacting to the neutral stimulus with the same behavior as the meaningful one. Ivan Pavlov is associated with classical conditioning.

In operant conditioning, a person performs some action and then a response occurs. If the response is pleasurable, the person is likely to repeat the action. If the response is unpleasant, the person is unlikely to repeat the action. B. F. Skinner is associated with operant conditioning.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Describe classical and operant conditioning	Correctly describes both types of conditioning	Correctly describes one type of conditioning	Cannot describe either type of conditioning or confuses the two types
Name the researchers associated with each	Correctly names Pavlov and Skinner	Correctly names Pavlov <i>or</i> Skinner	Cannot name either Pavlov or Skinner or confuses who belongs with each type of conditioning

12. Social learning theory is an extension of behaviorism that emphasizes the influence that other people have over a person's behavior. Even without specific reinforcement, every

individual learns many things through observation and imitation of other people. Albert Bandura, who first described the theory, emphasized that humans are social beings who learn from observing others even without reinforcement.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Explain social learning theory	States that the theory is an offshoot of behaviorism and how everyone learns by observation and imitation	States that everyone learns through observation and imitation	Is vague about the definition of social learning theory

13. The four stages are sensorimotor, preoperational, concrete operational, and formal operational. According to Piaget, cognitive equilibrium causes intellectual advancement because humans seek mental balance. Disequilibrium can cause cognitive growth if people change their thinking through assimilation or accommodation.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
List the stages of cognitive development	Lists the four stages in order	Lists three of the stages in order <i>or</i> confuses the order of two of the stages	Lists two or fewer stages or has the stages out of order
Cause of intellectual advancement	Understands how people seek cognitive equilibrium and that disequilibrium can cause assimilation or accommodation	Understands that people seek cognitive equilibrium	Does not adequately explain Piaget's beliefs about intellectual advancement

14. Information-processing theory is a perspective that compares human thinking processes to a computer's analysis of data, including sensory input, making connections to stored memories, and output. Information-processing scientists believe that cognition begins with input picked up by the five senses. It proceeds to brain reactions and making connections to stored memories and concludes with some form of output.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define information-processing theory	Gives the definition of information-processing theory	Knows that information-processing theory compares cognition to computer processes	Gives an incorrect or vague definition of information-processing theory
Explain the process	Tells four of the steps in the process	Tells two of the steps in the process	Tells fewer than two of the steps in the process

15. Level 1 is physiological needs, which is having access to things such as food, water, clothing, and shelter. Level 2 is safety, which is protection from harm, both physical and emotional. Level 3 is love and belonging, which is having a social network such as friends and family and possibly a religious community. Level 4 is esteem, which is

being respected by oneself and others. Level 5 is self-actualization, which is reaching one's full potential (being creative, spiritual, curious, and appreciative of one's environment and others).

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Name levels	Names five levels in the correct order	Names three levels in the correct order	Names two or fewer levels in the correct order
Describe levels	Describes five levels	Describes three levels	Describes two or fewer levels

16. According to evolutionary theory, every species has two long-standing, biologically based drives: survival and reproduction. A basic idea from evolutionary theory is selective adaptation, which proposes that humans today react in ways that helped their ancestors' survival and reproduction millions of years ago. Thus, some of the best human behaviors—such as cooperation and self-sacrifice—may have originated long ago when groups survived because they took care of one another and other groups died out when they didn't take care of each other. In one version of selective adaptation, genes for traits that aid survival and reproduction are the ones most commonly selected over time, thereby allowing the species to thrive.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Identify the drives associated with evolutionary theory	States the two biologically based drives	States either survival <i>or</i> reproduction	Cannot identify either survival or reproduction
Explain selective adaptation	Explains both aspects of selective adaptation (human behaviors and genes)	Explains either aspect of selective adaptation	Does not adequately explain either aspect of selective adaptation

17. Cognitive theory helps scientists to understand how intellectual processes and thinking affect people's actions. Behavioral theory (or behaviorism) has shown the effect that immediate responses and associations have on human learning. Sociocultural theories show how one's culture, social interaction, and environment impact one's behaviors. Psychoanalytic theory has made scientists aware of the importance of social and emotional experiences during early childhood. Universal theories stress those things that all humans share despite their culture, location, or era (such as the desire for safety and love).

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Name theories	Names any four: cognitive, sociocultural, behavioral, psychoanalytic, and universal theories	Names three of the theories	Names one or two of the theories

Describe how theories contributed to understanding	Describes how each of the four theories have added to science's knowledge of development	Describes how three of the theories have added to science's knowledge of development	Describes how one or two of the theories has added to science's knowledge of development
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18. A cross-sectional design compares groups of people of one age with at least one other group of people of another age at a specific point in time. It is faster than a longitudinal study because all of the data is immediately available. Ideally the participants should be matched at the same socioeconomic level. To implement a cross-sectional design to test reading, first identify a group of children aged 8 and another group aged 12. Second, evaluate each individual child's reading ability. Finally, compare the children of various ages and look for differences.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define cross-sectional design	Describes cross-sectional design and identifies that participants should be of a similar socioeconomic status	Describes cross-section design but doesn't elaborate about having similar socioeconomic status for participants	Gives a vague or incorrect description of cross-sectional design
Summarize how to do the research	Identifies the three parts of the research design	Identifies two parts of the research design	Identifies one part or cannot identify the research design

19. Researchers must ensure that people's participation is 1) voluntary, 2) confidential, and 3) harmless. They must obtain the informed consent of all the participants. Informed consent means that participants must understand and agree to the procedures after being told of any risks involved. If children are involved, consent must be obtained from the children as well as their parents. Participants must also be allowed to end their participation at any time.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Summarize practices to protect participants	States all three conditions; describes informed consent and that participants can end participation	States two conditions; explains informed consent <i>or</i> that participants can end participation	States one condition; fails to explain informed consent

20. A correlation exists between two variables when one variable changes (increases or decreases) as the other variable changes. Examples will vary but should illustrate this concept, such as the number of people who drown increases as the number of ice cream sales increases. It is impossible to determine cause and effect from correlations because even though correlations indicate a connection between two variables, they cannot determine the reason for the connection since no other variables are controlled. In the example above, people drowning and ice cream sales both increase during hot weather, so the correlation is caused by neither variable.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
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Define correlation	Gives a strong definition for correlation	Gives an adequate definition for correlation	Gives inaccurate or no definition of correlation
Give example of a correlation	Offers a good example of a correlation	Offers a vague or weak example of a correlation	Offers an incorrect or no example of a correlation
Explain relationship between causation and correlation	States that causation cannot be determined from a correlation	Implies that causation can be determined from a correlation	States that causation can be determined from a correlation

21. Ethics are a set of moral principles and specific practices that protect both participants and the integrity of research. Ethical standards provide study participants with the assurance of informed consent and knowing that their participation is voluntary, confidential, and that they will not be harmed.

Ethics are also a vital part of the reporting process after the research has been conducted. Reports of findings should be accurate, and the study should be able to be replicated under the same conditions. Collaboration, replication, and transparency are essential ethical safeguards for all scientists.

	Good (5 pts)	Fair (3 pts)	Weak (1-0 pts)
Define ethics	Defines ethics	Defines ethics only as they apply to participants <i>or</i> the reporting process	Does not define ethics
Explain the importance of ethics	States several ways in which ethics protect participants and how ethics protect findings and replication	Identifies only how ethics are important for participants <i>or</i> their importance on the reporting process and replication	Does not explain why ethical standards are important