1. Peter conducted a correlational study of two variables which yielded a correlation coefficient of -0.83. Which of the following is true about this example?
    a. The relationship between the two variables is said to be weak.
    b. The relationship between these two variables is a perfect one.
    c. This correlation demonstrates a cause and effect relationship.
    d. As the value of one variable increases, the value of the other decreases.
    e. As the value of one variable increases, the value of the other also increases.
2. Which of these sentences is a correct assessment of a cross-sectional study?
    a. It measures changes in the same group of subjects over a period of time.
    b. It measures differences among differently aged subjects at a single time.
    c. It measures differences in age and time to account for birth cohort effects.
    d. It is considered to be one of the types of the experimental research designs.
    e. It takes much less time than doing a longitudinal study, but costs much more.
3. Which of these is *not* true of the cross-sequential research design?
    a. It was developed by the psychologist Klaus Warner Schaie.
    b. It was designed to study effects of different birth cohorts.
    c. It is one of several types of experimental research designs.
    d. It combines the cross-sectional and longitudinal designs.
    e. It compares different age groups at different points in time.
4. Bob and Carol are doing a study involving two groups of participants. They have chosen scores on memory tests as their dependent variable and hours of sleep before taking the tests as their independent variable. They want to see if their participants will score lower on memory tests when they have had less sleep the night before. This is an example of:
    a. A non-experimental research design using correlation coefficients.
    b. A developmental research design known as longitudinal research.
    c. A developmental research design known as cross-sectional research.
    d. A research method that will use naturalistic observation of subjects.
    e. An experimental research design where researchers control variables.
5. In 1937, psychiatrist George Vaillant began studying mental and physical well-being in a group of male Harvard University sophomores. He followed these subjects' lives for over 70 years. This is an example of:
    a. A longitudinal research design.
    b. A cross-sectional research design.
    c. A cross-sequential research design.
    d. A case study research design.
    e. A correlational research design.
6. In researching his theory of cognitive development, Jean Piaget conducted case studies of a number of children. He also used observational research. Which of these is *not* true about observational research?
    a. Observational research is a type of descriptive research method.
    b. Observational research is a non-experimental research method.
    c. The researcher can see behavior in its natural setting using observational research.

d. The observer is often able to ascertain certain causes and effects.
e. Observer bias can occur, but interobserver reliability can be used.

7. Which of these is true regarding early brain development?
    a. Newborn infants do not have brain lateralization, but they develop it in two years.
    b. In the first two years of life, there is pruning of synapses and formation of new ones.
    c. In the first two years of life, new neural circuits form, and no old ones are lost.
    d. In the first two years of life, neural circuits are pruned, but no new ones form.
    e. By two years of age, the brain weighs 90% of what an adult's brain will weigh.
8. Which of the following diseases is *not* carried on a recessive gene?
    a. Cystic fibrosis
    b. Sickle-cell anemia
    c. Huntington's disease
    d. Phenylketonuria
    e. Tay-Sachs disease
9. Which of these is *not* a name of a hormone?
    a. Thyroxin
    b. Endocrine
    c. Adrenalin
    d. Cortisol
    e. Progesterone
10. Research has found that which of the following can be caused in children born to mothers who suffered emotional stress during pregnancy?
    a. Anxiety
    b. Hyperactivity
    c. Aggression and anger
    d. Less ability to cope with stress
    e. All of these result from prenatal stress.

Answers

1. Answer (d) is correct.

    A perfect positive correlation would be represented by a value of 1. No correlation is represented by 0. A negative number, such as the -0.83 in this example, represents an inverse, or negative, correlation. Because -0.83 is very close to -1, the correlation in this example is strong, not weak (a). The correlation is not perfect (b), since a perfect correlation would have a value of 1 or -1. Correlations *never* demonstrate any cause and effect relationship between two variables, only that they are related. To determine causality, a researcher would have to do experimental research and manipulate the variables being studied in a systematic way. The negative number of -0.83 indicates that the variables have an inverse correlation, i.e., as one variable's value increases, the other decreases and vice-versa (d). If the correlation

coefficient were a positive number, then, as the value of one variable increased, the other would do the same (e), which is not the case here, since the coefficient is a negative number.

2 Answer (b) is correct.

Measuring changes in the same group over time (a) defines a longitudinal study. Measuring differences among different subjects at a single point in time (b) is the definition of a cross-sectional study. A study that measures both changes over time and differences in age groups (c) is a sequential or cross-sequential research design. A cross-sectional study is not an experimental research design (d), as it only measures changes or differences and does not systematically manipulate variables to determine causation. A cross-sectional study does take much less time to perform than a longitudinal study, but it also costs much less, not more than a longitudinal study (e).

1. Answer (c) is correct.

The cross-sequential design was developed by Klaus Warner Schaie (a). He wanted to find a way to measure not only the differences in subjects of different ages, but also the differences due to the subjects being born in different years, or age cohorts (b). It is *not* an experimental research design (c), as it does not systematically manipulate variables to discover a causal relationship. It is a combination of the longitudinal (changes over time in the same subjects) and the cross-sectional (differences in different subjects at one point in time) research designs (d). As such, it does compare differently aged subjects at different points in time as well as at the same time (e).

2. Answer (e) is correct.

The example described is not a non-experimental design, and correlation coefficients (a) are not being used. It is not a longitudinal study (b), as it does not just measure changes in the subjects at different points in time over a long period. It is not cross-sectional research (c), as it does not compare different age groups. It is not a descriptive study and will not be using naturalistic observation of the subjects (d), but will be manipulating variables and testing them. It is an experimental design (e), as the researchers will be manipulating an independent variable (hours of sleep) to see whether it causes different effects on the dependent variable (memory test scores).

3. Answer (a) is correct.

The fact that Vaillant studied the same subjects over a time period of more than 70 years indicates that this was a longitudinal study (a). It was not a cross-sectional design (b), because there is no mention of his comparing differently-aged subjects at one time. It was not cross-sequential (c), because all of Vaillant's subjects were college sophomores, not in different age groups. It was not a case study (d), which studies only one subject in depth and

detail, because it involved a group of men. It was not correlational (e), as there is no mention of looking for relationships among variables.

4. Answer (d) is correct.

   Observational research is a type of descriptive research method (a), and it is a non-experimental method of research (b). An advantage of observational research is that the observer, by being unobtrusive, can watch behavior as it occurs in its natural setting (c) without manipulating or changing it. In observational research it is *not* possible to ascertain cause and effect relationships (d), which can be done in experimental research. Observer bias can exist in observational studies, and one way of assessing this is to measure interobserver reliability (e), or the level of agreement among two or more observers of the same behavior at the same time.

5. Answer (b) is correct.

   Only (b) is true: In the first two years of life, new neural circuits develop, and at the same time others that are not being used or that are defective are lost or "pruned." Newborns demonstrate brain lateralization from birth and do not develop it at two years of age (a). Since (b) is true, (c) and (d) must be false. At two years of age, a child's brain weighs 75% of the weight of an adult brain; while at five years of age, a child's brain weighs 90% of the weight of an adult brain (e).

6. Answer (c) is correct.

   The genetic diseases cystic fibrosis (a), sickle-cell anemia (b), phenylketonuria (PKU) (d), and Tay-Sachs disease (e) are transmitted by single gene-pair inheritance (recessive-recessive) and are recessive traits. Huntington's disease (c) is carried on a dominant gene, so it will be expressed regardless of whether it is paired with another dominant gene or with a recessive one.

7. Answer (b) is correct.

   Endocrine (b) is the name of the endocrine system, which is made up of glands such as the pituitary gland and the thyroid gland, and is not the name of a hormone. Thyroxin (a) is a hormone secreted by the thyroid gland, which controls physical growth and development and nervous system development. Adrenalin (c) and cortisol (d) are stress hormones secreted by the adrenal glands. Progesterone (e) is a hormone controlling female sexual maturation that is secreted by the ovaries.

8. Answer (e) is correct.

Research studies into prenatal stress have found evidence that children born to mothers who were under emotional stress while pregnant have increased reactions to stress themselves, as well as a lower physical capacity to cope with stress in their lives (d), and that prenatal stress can result in anxiety (a), aggression, anger (b), and hyperactivity (c) in these children when they reach school age. Therefore, all of these (e) are results in children of maternal prenatal stress.