

Experimental Data Are Different from Correlational Data
(S-R and R-R Relationships)

Independent variables are antecedent conditions, that is, they occur before the dependent variable. Dependent variables in psychology are generally responses or behavior of the subjects being studied.

16-1 A variation in the independent variable is the condition under which a variation in the _____ variable will occur. (Dependent)

16-2 Dependent variables are generally measures of behavior.
A. True
B. False (A)

The dependent variables in psychology generally are responses, and the independent variables are stimuli. A stimulus, such as a puff of air in the eye results in a response (blinking the eye). This type of relation is referred to as a stimulus response law (written as S-R Law).

16-3 S-R Laws state that R's:
A. are the dependent variables.
B. are the independent variables. (A)

16-4 In the S-R Law, S refers to the subject and R to the report.
A. True
B. False (B)

16-5 A relationship between an antecedent and a response is called an S- Law. (R)

R. A. Fisher, a famous statistician, did a study in which he found that during years in which many people were falling on banana peels on the docks of an India port and breaking their hips, the birth rate was high in London. In years when the birth rate was low few hips were broken on the docks of the India port. Over a number of years a relationship existed between these two events (birth rate in London and broken hips from slipping on the dock on an India port). In this case you would not say that the "dock scene" caused the birth. We do not refer to this as an S-R relation, but rather an R-R relationship (Response-Response Relationship). In R-R relationships all we do is show that two events are related or correlated (they just occur together).

16-6 If a person responds well on a standard intelligence test, then we may predict that he or she will respond well in the classroom (all other things being equal). This is an example of R-R law, since performing in the classroom and performing on an intelligence test are both types of
A. stimuli
B. responses (B)

S.B. 16-1

16-7 When a gardener spades his soil to a depth of 8 inches, (an antecedent condition) the vegetables are larger and more numerous than when he/she

spades his soil to only 4 inches. This relationship is most similar to which of the following classifications?

- A. S-R
- B. S-S
- C. R-S
- D. R-R

(A)

16-8 (Hint: Which one does not show an antecedent condition accounting for the Response). Which of the following statements could not be an example of an S-R law in psychology? (Whether the statement is actually true or false is irrelevant)

- A. The speed of responding in a task increases with the number of hours of food deprivation.
- B. A child who is deprived of attention develops behavioral problems in later life.
- C. Performance in a learning task improves as the reward is increased.
- D. Rats that learn a simple maze very slowly will be unable to learn to press the bar to receive a food reward.

(D)

Hasty generalization regarding the dependence of one variable on another is given the special name of "post hoc ergo propter hoc fallacy." ("Post hoc ergo propter hoc" is Latin for "After this; therefore, because of this.") If one is playing poker and happens to have a friend's letter in a pocket, and one wins, and then makes a practice of putting a letter from his/her friend in his/her pocket with the belief that this will help him/her win in poker, s/he is accepting the "post hoc ergo propter hoc" fallacy.

16-9 The fallacy of post hoc reasoning consists of concluding that the later of two events must have been caused by the earlier.

- A. True
- B. False

(A)

When the two events are related and one does not cause the other, we say the two events are correlated.

16-10 A convenient method of expressing a relationship between two variables is a correlation.

- A. True
- B. False

(A)

(Consider the relationship between teachers' salaries and beer consumption. Years in which teachers' salaries are high, beer consumption is high.)

16-11 If two measures are highly correlated, then one must be the cause of the other.

- A. True
- B. False

(B)

S.B. 16-2

16-12 Correlation and causation are synonymous concepts.

- A. True
- B. False

(B)

16-13 If the only evidence one has is that smoking correlates with lung cancer, he can say, experimentally, that smoking causes lung cancer.

- A. True
- B. False (B)

- 16-14 A correlation depicts:
- A. the degree of relationship between two variables
 - B. percentage of cause between two variables
 - C. measure of an average
 - D. the degree to which the variable is caused by another variable. (A)

In R-R relationships, one merely assesses the relationships. In experiments (or S-R relationships) a variable is manipulated or changed.

- 16-15 Which of the following may be described as a method in which variables are assessed rather than manipulated?
- A. A subject is given a test to determine his behavior problem.
 - B. Subjects memorize a list of words when music is played at various intensities.
 - C. Rats are given varying injections of glucose before learning a maze.
 - D. Rats are shocked if they press a bar.
 - E. The effect on choice of brand is tested by having "experts" talk to subjects. (A)

- 16-16 A definition of an independent variable is that it is something:
- A. like an outcome
 - B. which stands between antecedent conditions and their effect on behavior
 - C. which the experimenter controls
 - D. which is the result of the experimental conditions (C)

- 16-17 Antecedent conditions refer to:
- A. independent variables
 - B. dependent variables
 - C. irrelevant variables
 - D. all of the above (A)

- 16-18 The "dependent variable" in the experimental situation is:
- A. the intervening variable
 - B. the controlled variable
 - C. the antecedent condition
 - D. the outcome variable (D)

S.B. 16-3

- 16-19 The outcome variable is the:
- A. antecedent condition
 - B. independent variable
 - C. dependent variable
 - D. cause (C)

- 16-20 S-R laws state that _____ are the dependent variables and _____ are the independent variables. (responses)

(stimuli)

16-21 Whether a measured change in the dependent variable is due solely to the influence of the independent variable primarily concerns the question of the adequacy of control of variables.

- A. True
- B. False

(A)

16-22 In studying the effect of food deprivation on learning, food deprivation is an example of a(n) _____.

(Independent variable)

16-23 In an experiment to test the effect of noise on speed of adding, the dependent variable is

- A. noise
- B. speed of adding
- C. the experiment
- D. accuracy of adding

(B)

16-24 The underground newspaper "P.U. Nonsense" of St. Cloud State University, published an article called "The Effects of Strong Odor on the Frequency with which a Student States, 'Father Knows Best'". In this research the strong odor would be the

- A. dependent variable
- B. only important variable
- C. independent variable
- D. only variable which is not under control

(C)

Foreman: "Do all the boys in your shop drop their tools the moment the whistle blows?"

Boss: "No, not all of them; some of them have their tools put away before that time."