

1. DEFINITIONS

Independent variable is that factor which is measured, manipulated or selected by the experimenter to determine its relationship to an observed phenomenon. The variations of an independent variable may be called levels.

Dependent variable is that factor which is observed and measured to determine the effect of the independent variable.

Control variable is that factor which is controlled by the experimenter to cancel out or neutralize any effect they might otherwise have on the observed phenomenon (dependent variable).

Moderator variable is that factor which is measured, manipulated or selected by the experimenter to discover whether it modifies the relationship of the independent variable to the observed phenomenon (dependent variable).

Intervening variable is that factor which theoretically affects the observed phenomenon but cannot be seen, measured or manipulated; its effect must be inferred from the effects of the independent and moderator variables on the observed phenomenon, i.e. that conceptual variable which is being affected by the independent, moderator and control variables, and in turn affects the dependent variable.

2. EXAMPLES OF INDEPENDENT AND DEPENDENT VARIABLES

1. Hypothesis: Under intangible reinforcement conditions, middle-class children will learn significantly better than lower-class children.
2. Hypothesis: Culturally advantaged first graders are more mature in perceptual-motor development than their lower-class disadvantaged counterparts.
3. Hypothesis: Individuals who graduate with a Doctor of Education degree in educational administration attain better paying jobs than those who received a Specialist in Education in educational administration.

3. EXAMPLES CONTAINING INDEPENDENT, DEPENDENT AND MODERATOR VARIABLES

1. Hypothesis: Male experimenters get more effective performances from both male and female subjects than female experimenters, but they are singularly most effective with male subjects.
2. Hypothesis: Grade point average and intelligence are more highly correlated for boys than for girls.

4. EXAMPLES WHERE CONTROL VARIABLES ARE MENTIONED IN THE HYPOTHESIS.

1. Hypothesis: Among boys there is a correlation between physical size and social maturity, while for girls in the same age group there is no correlation between these variables.
2. Hypothesis: First-born college students with a Machiavellian orientation get higher grades than their Non-Machiavellian counterparts of equal intelligence, while no such differences are found among later-borns.

5. EXAMPLES INVOLVING AN INTERVENING VARIABLE.

1. As task interest increases, measured task performance increases.
2. Children who are blocked from reaching their goals exhibit more aggressive acts than children not so blocked.

6. EXERCISES ON IDENTIFYING AND LABELING VARIABLES.

1. Identify the independent, dependent control, moderator and intervening variables in the problem below where the hypothesis is given.
 - a. With I.Q. held constant, boys with perceptual-motor training will perform better on eye-hand coordination tasks than boys without this training while such differences will not appear among girls.
 - b. Inexperienced male teachers are more likely to change their attitudes toward teaching after having a microteaching experience than without having such an experience while experienced male teachers are equally likely to maintain their attitudes with or without microteaching.
 - c. Consider a study of teacher style and its affect on satisfaction among different types of students. Suppose the hypothesis states directive teachers would yield more course satisfaction among students whose personality style is measured as "concrete", while nondirective teachers would yield more course satisfaction among students measured as "abstract".
2. Connect the terms in column A with those in column B.

A

B

- a. independent variable
- b. dependent variable
- c. moderator variable
- d. control variable
- e. intervening variable

1. avoided
2. inferred
3. cause
4. modifier
5. effect