

Independent & Dependent Variables

Independent Variables & Dependent Variables.

The independent variable is the CAUSE.

The dependent variable is the EFFECT.

If you say, "The distance travelled depends on the speed of the car." The dependent variable is distance travelled ... because you said it "depends" on something.

If you say, "How high my marks are depends on how long I study for." Then the dependent variable is marks and the independent variable is amount of study time.

If a doctor says that your health depends on how much exercise you get, then ...

Notes:

1. In an experiment, the *independent variable* is the variable that is varied or manipulated by the researcher, and the *dependent variable* is the response that is measured.
2. The IV is the antecedent (one you start with), whereas the DV is the consequent (what happens).
3. In experiments, the IV is the variable that is controlled and manipulated by the experimenter; whereas the DV is not manipulated, instead the DV is observed or measured for variation as a presumed result of the variation in the IV.
4. "In nonexperimental research, where there is no experimental manipulation, the IV is the variable that 'logically' has some effect on a DV. For example, in the research on cigarette-smoking and lung cancer, cigarette-smoking, which

has already been done by many subjects, is the independent variable."
(Kerlinger, 1986, p.32)

Some Examples of Independent and Dependent Variables

The following is a hypothesis for a study.

1. "There will be a statistically significant difference in graduation rates of at-risk high-school seniors who participate in an intensive study program as opposed to at-risk high-school seniors who do not participate in the intensive study program." (LaFountain & Bartos, 2002, p. 57)

IV: Participation in intensive study program. **DV:** Graduation rates.

The following is a description of a study.

2. "A director of residential living on a large university campus is concerned about the large turnover rate in resident assistants. In recent years many resident assistants have left their positions before completing even 1 year in their assignments. The director wants to identify the factors that predict commitment as a resident assistant (defined as continuing in the position a minimum of 2 years). The director decides to assess knowledge of the position, attitude toward residential policies, and ability to handle conflicts as predictors for commitment to the position." (LaFountain & Bartos, 2002, p. 8)

IV: knowledge of position, attitude toward policies, and ability to handle conflicts.

DV: commitment to position (continuing in position for 2 years or not continuing).

Questions: Identify the dependent (measured) and independent (deliberately changed) variables in the following examples (circle the dependent variable and underline the independent variable):

1. Height of bean plants is recorded daily for two weeks.
2. Guinea pigs are kept at different temperatures for 6 weeks. Percent weight gain is recorded.
3. The diversity of algal species is calculated for a coastal area before and after an oil spill.
4. Light absorption by a pigment is measured for red, blue, green, and yellow light.

5. Batches of seeds are soaked in salt solutions of different concentrations, and germination is counted for each batch.
 6. An investigator hypothesizes that the adult weight of a dog is higher when it has fewer littermates.
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