

# Identifying Independent & Dependent Variables: Practice

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1. Will students do better in school if you “pay for grades”? To test this question, an instructor gives students a math test. Before taking the test, half the students were told that they would receive \$0.25 for every correct answer. The other half was not given a monetary incentive. The number of correct answers was recorded for each student.

Independent variable: **monetary incentive**

Levels: **paid vs. not paid**

Dependent variable: **# of correct answers (this is the score each person receives)**

Scale for the DV: **ratio**

2. A social psychologist thinks that people are more likely to conform to a large crowd than to a single person. To test this hypothesis, the psychologist had either one person or five people stand on a busy walking path on campus and look up. (note: people who are in cahoots with the experimenter are called confederates). The psychologist stood nearby and counted the number of people passing by who looked up and the number who did not look up.

Independent variable: **crowd size**

Levels: **1 person vs. 5 people**

Dependent variable: **conformity (looked up vs. did not look up)**

Scale for the DV: **nominal**

3. To test a new voice feature in a cockpit design a flight simulator was used. The simulator was programmed to give visual readings of flight information, or to give visual and auditory (voice) readings of flight information. All test pilots were put through a simulated emergency landing procedure, but were randomly assigned to the visual, or visual and auditory conditions. Flight experts rated each pilot's performance in the simulator on a scale of 1 (very poor) to 10 (excellent).

Independent variable: **type of flight information**

Levels: **visual vs. visual + audio**

Dependent variable: **pilot performance**

Scale for the DV: **interval**

4. A researcher was interested in the effects of reward on intrinsic motivation. Some children were told that they would be given a special award for drawing with magic markers (an activity they already enjoyed). Other children were simply asked to draw with the magic markers. One week later, the children were unobtrusively observed for how much time they spent drawing with the markers. The children who expected and received a reward for drawing with the markers spent less time drawing with them later.

Independent variable: **reward**

Levels: **rewarded vs. not rewarded**

Dependent variable: **time spent drawing with markers**

Scale for the DV: **ratio**

5. In an investigation of the fundamental attribution error, subjects were given a speech to read that either favored or opposed Fidel Castro, the former communist leader of Cuba. Subjects were told that the speech was written by a student who had been assigned to the position taken in the paper (that is, the student writing the speech had no choice on which position to take). Nevertheless, subjects believed that the student who wrote the pro-Castro speech had positive attitudes toward Castro, while subjects who read the anti-Castro paper believed the writer had negative attitudes toward Castro. Attitudes toward Castro was measured on a 6 point Likert scale, where 1 = extremely negative and 6 = extremely positive.

Independent variable: **speech about Castro**

Levels: **favorable (pro-Castro) vs. unfavorable (anti-Castro)**

Dependent variable: **participants' perception of the author's attitude toward Castro**

Scale for the DV: **interval**

6. A researcher suspects that a newly discovered brain structure (the snookum) plays an important role in the desire to show affection. To test this, he administered a drug which inhibits the snookum. He tested 3 groups of people who received either: 0 mg, 5 mg, or 10 mg of the drug. He predicted that the more the snookum was inhibited, the less affection people would show (number of hugs and kisses to a cute, cuddly puppy).

Independent variable: **snookum inhibition**

Levels: **no inhibition (0 mg), moderate inhibition (5 mg), high inhibition (10 mg)**

Dependent variable: **number of hugs and kisses to a cute, cuddly puppy**

Scale for the DV: **ratio**

7. A researcher suspects that the amount of oxygen in the air affects how quickly yeast will grow. To test this, he varies the amount of oxygen present in 3 closed chambers (low O<sub>2</sub>, medium O<sub>2</sub>, high O<sub>2</sub>) and records the rate of yeast growth (density per square mm) in each chamber.

Independent variable: **oxygen levels**

Levels: **low O<sub>2</sub>, medium O<sub>2</sub>, high O<sub>2</sub>**

Dependent variable: **rate of yeast growth (density per square mm)**

Scale for the DV: **ratio**

8. A soap manufacturer wants to show that their detergent (Suddsy-Clean) works better to remove tough stains compared to the leading brand (Tidey-Clean). To test this, 20 white t-shirts were purchased. On each t-shirt, 10 different types of stains were placed. Half the t-shirts were then washed with Suddsy-Clean, and the other half were washed with Tidey-Clean. Afterwards, the number of stains left on each t-shirt was recorded.

Independent variable: **type of soap**

Levels: **Suddsy-Clean vs. Tidey-Clean**

Dependent variable: **number of stains**

Scale for the DV: **ratio**

9. An entomologist wants to determine if temperature (50, 70, 90 degrees) affects how many times a cricket chirps in a one hour period.

Independent variable: **temperature**

Levels: **50, 70, 90 degrees**

Dependent variable: **number of chirps in 1 hour**

Scale for the DV: **ratio**

10. Previous research has shown that playing music helps plants grow taller. But, does the type of music matter? Does the volume of the music matter? To test this, 1" seedlings were assigned to a specific music group (country, rock, classical). Then within each of these groups, the music was played at either a low, medium, or high volume. At the end of one month, each plant's height was recorded.

Independent variable 1: **type of music**

Levels for IV 1: **country, rock, classical**

Independent variable 2: **volume level**

Levels for IV 2: **low, medium, or high volume**

Dependent variable: **height**

Scale for the DV: **ratio**

11. Harvester ants often strip a bush of all of its leaves. Some people believe this helps the plant grow thicker, healthier stems. In an experiment, a student stripped off all the leaves from a set of plants. In a second set of identical plants, the student allowed ants to strip off the plants' leaves. The student measures the plants' stem thickness (in mm) 4 weeks later.

Independent variable: **method of leaf stripping**

Levels: **student vs. ant**

Dependent variable: **stem thickness (mm)**

Scale for the DV: **ratio**

12. Does watching aggressive team sports on TV increase aggression in the observer? To test this, half your participants watch a hockey game and the other half watch a team relay race. Immediately after, the participants are asked to sentence a hypothetical convicted felon to a jail sentence. You infer that longer sentences equate with more aggression.

Independent variable: **type of sport**

Levels: **hockey (aggressive) vs. relay race (non-aggressive)**

Dependent variable: **length of jail sentence**

Scale for the DV: **ratio**

13. You want to test a new drug that supposedly prevents sneezing in people allergic to grass. You randomly assign  $\frac{1}{2}$  the participants to the drug group and the rest to a placebo control. One half hour later, you have them sit in a room filled with the grass they are allergic to. You record the total number of sneezes over the next 30 minutes.

Independent variable: **anti-sneezing drug**

Levels: **drug vs. placebo**

Dependent variable: **number of sneezes in 30 min**

Scale for the DV: **ratio**

14. Orchids were studied to determine if the amount of humidity (25%, 55%, 85%) affects the flowering of these plants. The researcher placed 20 four month old plants with no blooms on them in each of these humidity conditions. After 3 weeks, he recorded the total number of blooms on the 20 plants in each condition.

Independent variable: **amount of humidity**

Levels: **25%, 55%, 85%**

Dependent variable: **number of blooms**

Scale for the DV: **ratio**

15. Which method of wound closure produces the least noticeable scarring 12 weeks later: stitches, staples, or steri-strips? He randomly assigns 10 patients to each method. Degree of scarring is measured on a 6 point Likert scale, where 1 = no visible scar and 6 = extremely visible scar.

Independent variable: **method of wound closure**

Levels: **stitches, staples, or steri-strips**

Dependent variable: **degree of scarring**

Scale for the DV: **interval**

16. Which method of learning brain anatomy is more effective: using a coloring book for the brain or the rap song method. Students in the respective groups are scored on an anatomy test after using their method for 2 weeks.

Independent variable: **method of learning brain anatomy**

Levels: **coloring book for the brain vs. the rap song method**

Dependent variable: **score on an anatomy test**

Scale for the DV: **ratio**

17. A florist wants to see if Product X or Product Y will extend the life of cut flowers so that they last longer. Longevity is measured by rating the health of the flower from 1 (dead) to 10 (no visible deterioration).

Independent variable: **Type of Product**

Levels: **Product X vs. Product Y**

Dependent variable: **health rating for the flower**

Scale for the DV: **interval**

18. Within a classroom setting, subjects were asked to listen to a guest instructor. All subjects were given a description of the instructor before class. Some subjects read a description containing the phrase “People who know him consider him to be a rather cold person...”, while other people read a description where the word “warm” was substituted for the word cold (otherwise, the descriptions were identical). After the lecture, subjects were asked to rate the instructor. Subjects who were told the instructor was warm gave him more favorable ratings compared to subjects who were told that the instructor was cold. Instructor rating was assessed using a 5 point Likert scale.

Independent variable: **description of guest instructor**

Levels: **warm vs. cold**

Dependent variable: **instructor rating**

Scale for the DV: **interval**

19. Subjects watched a videotape of a woman taking an SAT-like test. In all cases, she correctly answered 15 out of 30 questions. But subjects who observed a pattern of initial success followed by failure perceived the woman as more intelligent than did those who observed the opposite pattern of failure followed by success. Intelligence was measured by having participants estimate her IQ

Independent variable: **pattern of success & failure on test**

Levels: **success → failure vs. failure → success**

Dependent variable: **IQ of woman in video**

Scale for the DV: **interval** But is it? Participants are asked to "estimate" using a crude method so it would be acceptable to say ordinal.

20. Subjects read about a woman who used a particular title, and then rated her on a number of traits. When the woman used the title Ms. rather than Miss or Mrs., she was assumed to be more assertive, achievement oriented, and dynamic, but also cold, unpopular, and unlikely to have a happy marriage. Each of these “traits” was assessed using a Likert scale

Independent variable: **woman’s title**

Levels: **Ms., Miss, Mrs.**

Dependent variables: **rating for the traits: assertive, achievement oriented, and dynamic, cold, unpopular, and unlikely to have a happy marriage**

Scale for the DVs: **interval for each of the 6 DVs**