

# Research methods exercise

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Research Methods Exercise Check for Understanding: Directions: Answer the Multiple Choice and True/False Questions below about Research Designs to check your understanding.

1. If a researcher finds a negative correlation between two variables, then as values on one variable decrease, values on the other variable \_\_\_\_\_.

- a. Increase
- b. Decrease
- c. Remain the same
- d. Become negative

2. In an experiment, the potentially causal factor that is manipulated by the investigator is called the \_\_\_ variable.

- a. Dependent
- b. Independent
- c. Control
- d. Experimental

3. Dr. Johns carefully monitors and records the behaviors of children in her classrooms in order to track the development of their social and intellectual skills. Dr. Johns is most clearly engaged in:

- a. Survey research.
- b. Experimentation.
- c. Replication.
- d. Naturalistic observation.

TRUE/FALSE:

4. \_\_\_\_\_T\_\_\_\_\_ Quasi-experimental research lacks random assignment but typically

compares two groups that naturally exist (like boys vs. girls or two different

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classrooms of students).

5. \_\_\_T\_\_\_\_\_ A true experiment includes random assignment of participants to either the experimental or control groups and allows researchers to determine cause and effect.

Directions: For the following scenarios, identify the following:

Independent Variable (IV), Dependent Variable (DV), Experimental Group (EG) and Control/Comparison Group (CG)

1. A principal is curious about the effectiveness of her afterschool tutoring program in increasing math grades. She compares the math test scores of students who attend the program to students who do not attend the program.

IV: After school tutoring program participation

DV: Math Grades

EG: Students attending the program

CG: Students not attending the program

2. Do teachers' instructions influence students' beliefs about the difficulty of concepts? To answer this research question, after a lecture where some teachers purposefully used phrases like "this concept is difficult" and other teachers taught the lecture without this phrase, students completed a survey indicating their perceived level of difficulty of the content.

IV: Wording of instructions

DV: Students perception of difficulty

EG: students who heard phrases like "concept is very difficult"

CG: students who did not hear such phrases

Application:

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Directions: Read the scenarios below and identify the following about each research study. One to two words or phrases are fine for answers. This exercise will prepare us for what is to come next week when we evaluate research studies!

1. The type of research design: (experimental, quasi-experimental, or non-experimental)
2. The goal of the research: (predict, explain, describe, or control)
3. The method of data collection: (case study, survey, natural observation, laboratory, field)
4. Some advantages of the research design: (strength of findings; what conclusions can be drawn)
5. Some disadvantages or limitations of the research design: (time; efficiency; cost; training; limitations of conclusions)

Research Scenarios:

1. Researchers wish to examine the behaviors of college students at local bars. They hire young graduate students and train them to go to local college bars every Thursday, Friday, & Saturday night for one month and record their observations of students. To be accurate, the graduate research assistants engage in conversations with the patrons and ask if they are college students. If so, they observe & record the number of drinks consumed and flirtatious behavior over the course of the night. At the end of the month, the graduate students turn in their observations which are synthesized into a descriptive summary of college student behavior at local bars.

TYPE: non-experimental

GOAL: describe behavior in relation to flirtation and alcohol consumption

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METHOD: natural observation

ADVANTAGE: simple methodology, natural settings leading to natural behavior

DISADVANTAGE: non-predictive, difficult to re-produce, many extenuating variables

2. Research out of the University of Washington examines what happens when students expect to be given alcohol but are actually given a placebo drink (non-alcoholic beverage that looks and tastes like alcohol but has no alcohol in it!). Students are invited to participate in the research study. Researchers then randomly assign students to one of four conditions: 1. expect alcohol/given alcohol; 2. expect alcohol/not given alcohol; 3. not expect alcohol/given alcohol; 4. not expect alcohol/not given alcohol (see the image below for clarification). Students are then instructed to come to the “Bar Lab” (a laboratory on campus designed to look like a bar; see image below) on their assigned day. Students in the expectation conditions are told that they will be given alcohol that day and then are either given the alcohol in group 1 or given the placebo drink in group 2. Students in the non expectation condition are told they will not be given alcohol and then are either tricked and given alcohol in group 3 or not given alcohol but given the placebo drink in group 4.

TYPE: experimental

GOAL: explain effects of alcohol intoxication (IE are they placebo effects or pharmacological effects)

METHOD: laboratory

ADVANTAGE: controlled variables, statistically rigorous,

DISADVANTAGE: unnatural settings may change participant’s behavior

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