How to check whether your study has internal validity?

- Your treatment and response variables change together.
- Your treatment precedes changes in your response variables
- No confounding or extraneous factors can explain the results of your study.

A confounding variable is a third variable that influences the relationship between independent and dependent variables by suggesting the presence of a spurious correlation.

Can you conclude that drinking a cup of coffee improves memory performance?

How to check whether your study has internal validity?

Can you conclude that drinking a cup of coffee improves memory performance?

In the research example above, only two out of the three conditions have been met.

1. Drinking coffee and memory performance increased together.
2. Drinking coffee happened before the memory test.
3. The time of day of the sessions is an extraneous factor that can equally explain the results of the study.

EXAMPLE

Hypothesis: ***People tend to perceive themselves as smarter than others in terms of academic abilities.***

Target population= 10,000 undergraduate students

Sample= 200 participants.

- *science and engineering majors;*
- *most of them are American,*
- *male,*
- *18–20 years old and*
- *from a high socioeconomic background*.

In a laboratory setting, you administer a mathematics and science test and then ask them to rate how well they think performed. You find that the average participant believes they are smarter than 66% of their peers.

Can you conclude that most people believe themselves to be much better than others at maths and science?

Source: https://www.scribbr.com/methodology/external-validity/

ANSWER

Hypothesis: ***People tend to perceive themselves as smarter than others in terms of academic abilities.***

Can you conclude that most people believe themselves to be much better than others at maths and science?

Here, your sample is not representative of the whole population of students at your university. The findings can only reasonably be generalized to populations that share characteristics with the participants, e.g. college-educated men and STEM majors.

For higher population validity, your sample would need to include people with different characteristics (e.g. women and students from different majors, countries, and socioeconomic backgrounds).

Mini Quiz 

An experiment high in internal validity identifies that the _____ caused changes in the _____

- ❑ Independent variable; dependent variable
- ❑ Dependent variable; independent variable
- ❑ All are correct
- ❑ None are correct

What kind of validity is threatened when we cannot generalize results of a study?

- ❑ external validity
- ❑ internal validity
- ❑ construct validity
- ❑ statistical validity

Internal validity is concerned with _____

- ❑ the generalizability of findings
- ❑ the validity of measures we used
- ❑ whether we can attribute effects to the independent variable
- ❑ the use of appropriate statistical analysis