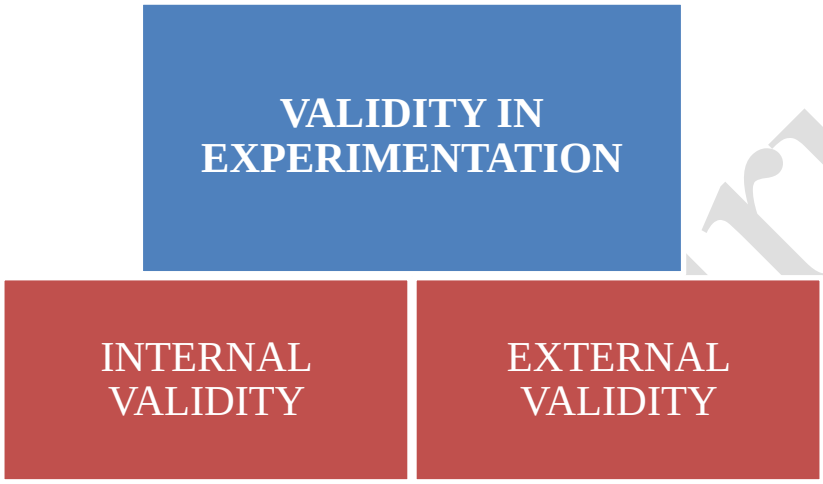
VALIDITY IN EXPERIMENTATION

In general, **validity** is an indication of how sound your research is. More specifically, validity applies to both the design and the methods of your research. Validity in data collection means that your findings truly represent the phenomenon you are claiming to measure. Valid claims are solid claims.



1) Internal Validity

Internal validity refers to the confidence we place in the cause-and-effect relationships. In other words, it address the question, "Do the conclusions we draw about a experimental relationship truly imply cause?" or To what extent does the research say that the independent variable 'X' causes a change in dependent variable 'Y'.

Factors affecting internal validity:

- **History Effects:** Certain events or factors that would have an impact on the independent variable-dependent variable relationship might unexpectedly occur while the experiment is in progress, and this history of events would confound the cause and effect relationship between two variables, thus affecting the internal validity.
- **Maturation Effects:** The maturation effects are a function of both biological and psychological processes. Examples of maturation processes could include growing older, getting tired, felling hungry, and getting bored.
- **Testing Effects:** When subjects, especially in single group studies, are given a test as a pre-test and then the same test as a post-test, the chances that they will perform better the second time due merely to practice is a concern. For this reason, two group studies with a control group are recommended.

- **Instrumentation Effects:** If the measurement device(s) used in your study changes during the course of the study, changes in scores may be related to the instrument rather than the independent variable.

- **Selection Effects:** If there are differences between the groups prior to the study taking place, these differences will continue throughout the study and may appear as a change in a statistical analysis.

- **Experimenter Bias:** The threat to internal validity could also come from biasness of experimenter to match wanted results. Using an experimenter who is unaware of the anticipated results works best to control for this bias.

- **Statistical Regression:** The effects of statistical regression are brought about when the members chosen for the experimental group have extreme scores on the dependent variable to begin with.

- **Mortality:** Mortality, or subject dropout, is always a concern to researchers. They can drastically affect the results when the mortality rate or mortality quality is different between groups.

2) External Validity

External validity refers to the extent of generalizability of the results of a casual study to other settings, people, or events. Field experiments have more external validity.

To what extent would the results found in the lab setting be transferable or generalizable to the actual organizational or field settings' In other words, if we do find a cause-and-effect relationship after conducting a lab experiment, can we then confidently say that the same cause-and-effect relationship will also hold true in the organizational setting?

Factors affecting external validity:

- **Demand Characteristics:** When subjects become wise to anticipated results, they can begin to exhibit performance that they believe is expected of them. Making sure that subjects are not aware of anticipated outcomes (referred to as a blind study) reduces the possibility of this threat.

- **Hawthorne Effects:** Research has found that the mere presence of others watching your performance causes a change in your performance. Addressing this issue can be tricky but employing a control group to measure the Hawthorne effect of those not receiving any treatment can be very helpful.

- **Order Effects:** Order effects refer to the order in which treatment is administered and can be a major threat to external validity if multiple treatments are used.

- **Treatment Interaction Effects:** The term interaction refers to the fact that treatment can affect people differently depending on the subject's characteristics. Potential threats to external validity include the interaction between treatment and any of the following: selection, history, and testing.

Difference between Internal and External Validity

BASIS FOR COMPARISON	INTERNAL VALIDITY	EXTERNAL VALIDITY
Meaning	Internal validity is the extent to which the experiment is free from errors and any difference in measurement is due to independent variable and nothing else.	External validity is the extent to which the research results can be inferred to world at large.
Concerned with	Control	Naturalness
What is it?	It is a measure of accuracy of the experiment.	It checks whether the casual relationship discovered in the experiment can be generalized or not.
Identifies	How strong the research methods are?	Can the outcome of the research be applied to the real world?
Describes	Degree to which the conclusion is warranted.	Degree to which the study is warranted to generalize the result to other context.
Used to	Address or eliminate alternative explanation for the result.	Generalize the outcome.