

Types of Research Questions



OPT0571
Lecture Five

Research Questions

Descriptive Questions

To describe phenomena



Difference Questions

To make comparisons



Relationship Questions

To investigate the degree of association
between two or more variables

Descriptive Questions

Purpose of Descriptive Questions

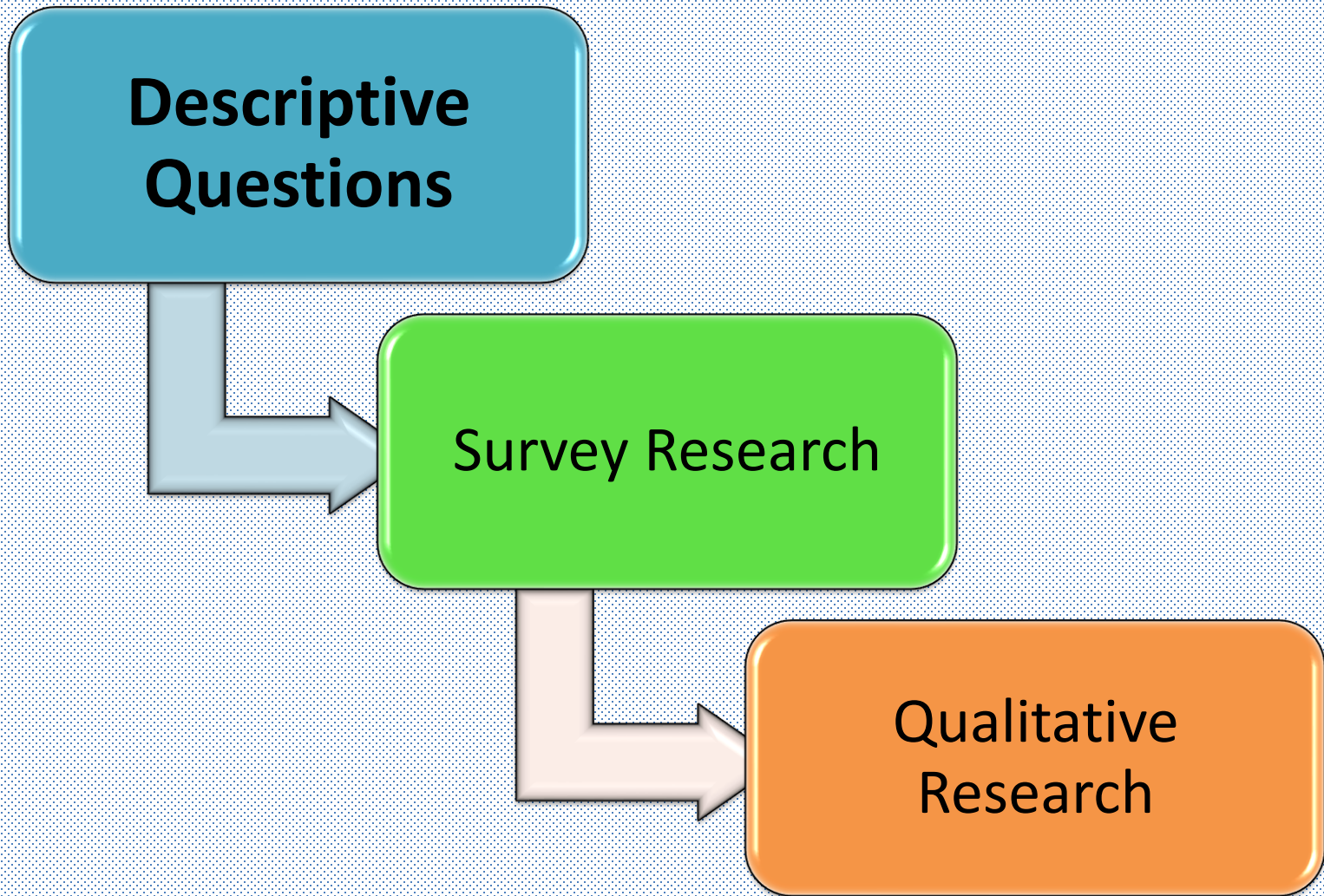
To describe phenomena

To characterized a particular group of subjects being studied

A research study can simply be an observation of something

The researcher takes the effective role of “**witness**”, answering the basic question of “**what happened?**”

Descriptive Questions



Descriptive Questions

Survey Research

- A survey will give you simple data about the proportion of a population who have dry eyes

Qualitative Research

- The critical activity here is to describe completely and accurately what is observed, no more, no less

Descriptive Questions

Advantages of Survey Research



High representativeness



Low costs and convenient data gathering



Good statistical significance



Little or no observer subjectivity

Descriptive Questions

Disadvantages of Survey Research

Inflexible design

Not ideal for controversial issues

Possible inappropriateness of questions

Could be misleading

Descriptive Questions

Advantages of Qualitative Research

Provides depth and detail

Creates openness

Simulates people's individual experiences

Attempts to avoid pre-judgements

Descriptive Questions

Disadvantages of Qualitative Research

Usually fewer people studied

Less easy to generalise

Difficult to make systematic comparisons

Dependent on skills of the researcher

Difference Questions

Purpose of difference questions is to make comparisons between or within groups.
Is there a significant difference?

**Difference
Questions**

Experimental
Research

Non-
Experimental
Research

Difference Questions

Experimental Research

- There is time priority in a causal relationship
- There is consistency in a causal relationship
- The magnitude of the correlation is great, *e.g.* treatment vs. control

Non-Experimental Research

- Is about a single variable rather than a relationship between two variables
- Is about a relationship, but the independent variable cannot be manipulated
- The question can be broad

Relationship Questions

Purpose of Relationship Questions

Investigate the degree to which two or more variables are associated with each other

It considers how individual items relate to one another (or not)

The researcher asking the question
“How are these connected?”

It requires more than one object and one or more variables that describe the relationship between them

Relationship Questions

Examples of Relationship Questions

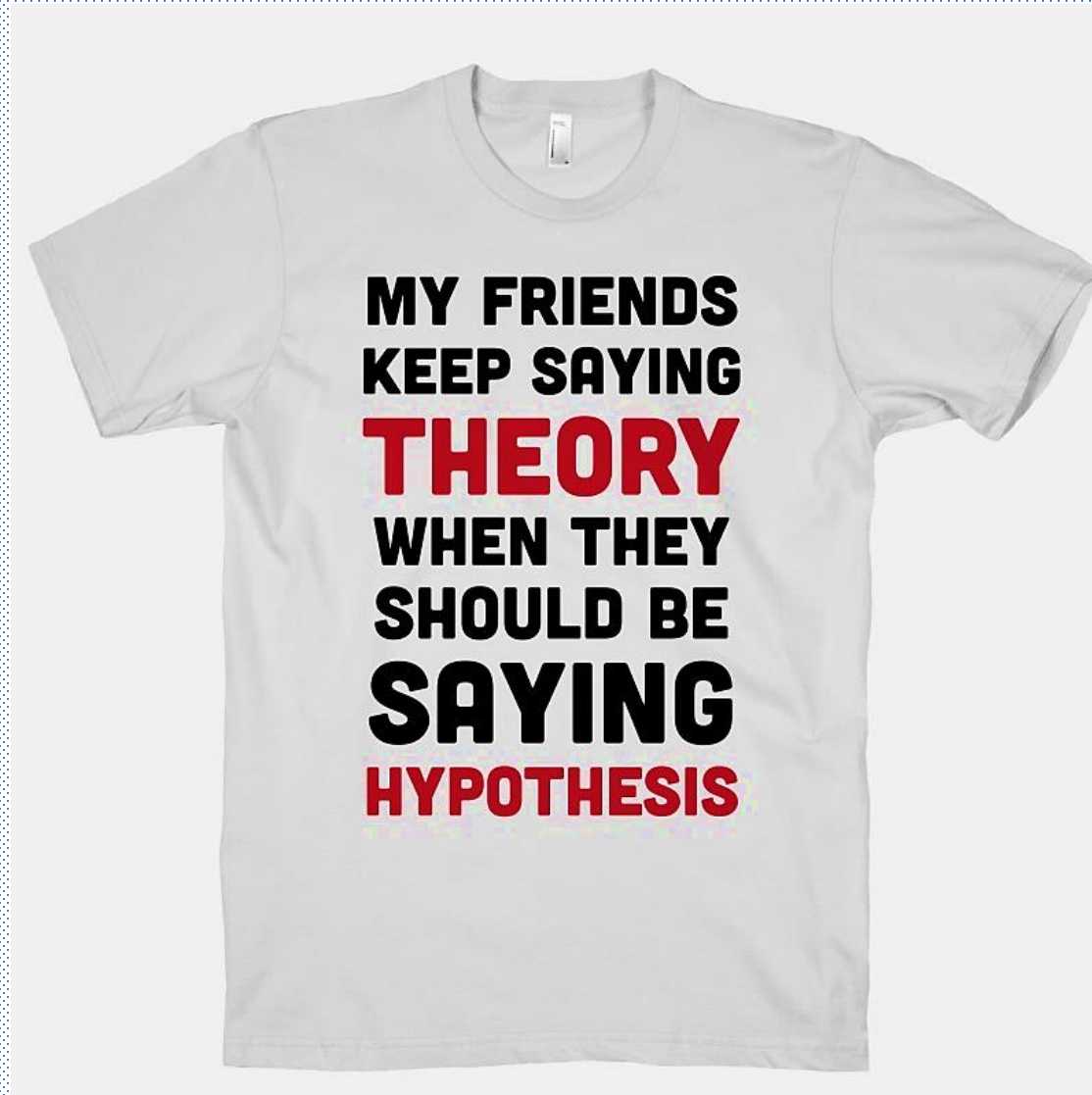
Rather than analyzing the differences between groups, researchers characterize the relationships among them

Extent to which variables are related to each other

Not to establish cause-and-effect

e.g. In a survey, the variables of “income” and “gender” may be explored in relation to health care

Theory vs. Hypothesis



Theory vs. Hypothesis

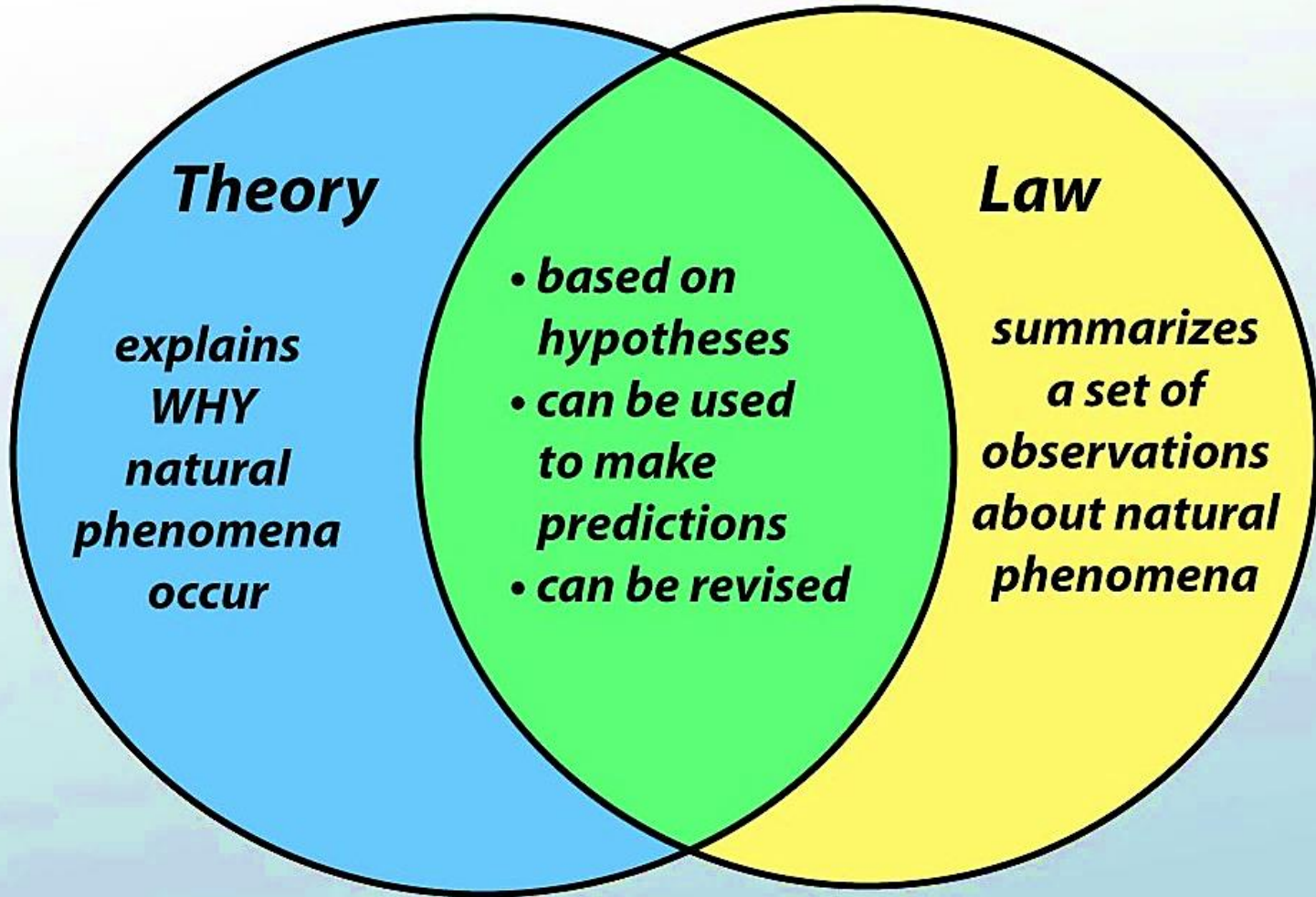
Hypothesis

- Educated guess
- Not tested yet or not tested much

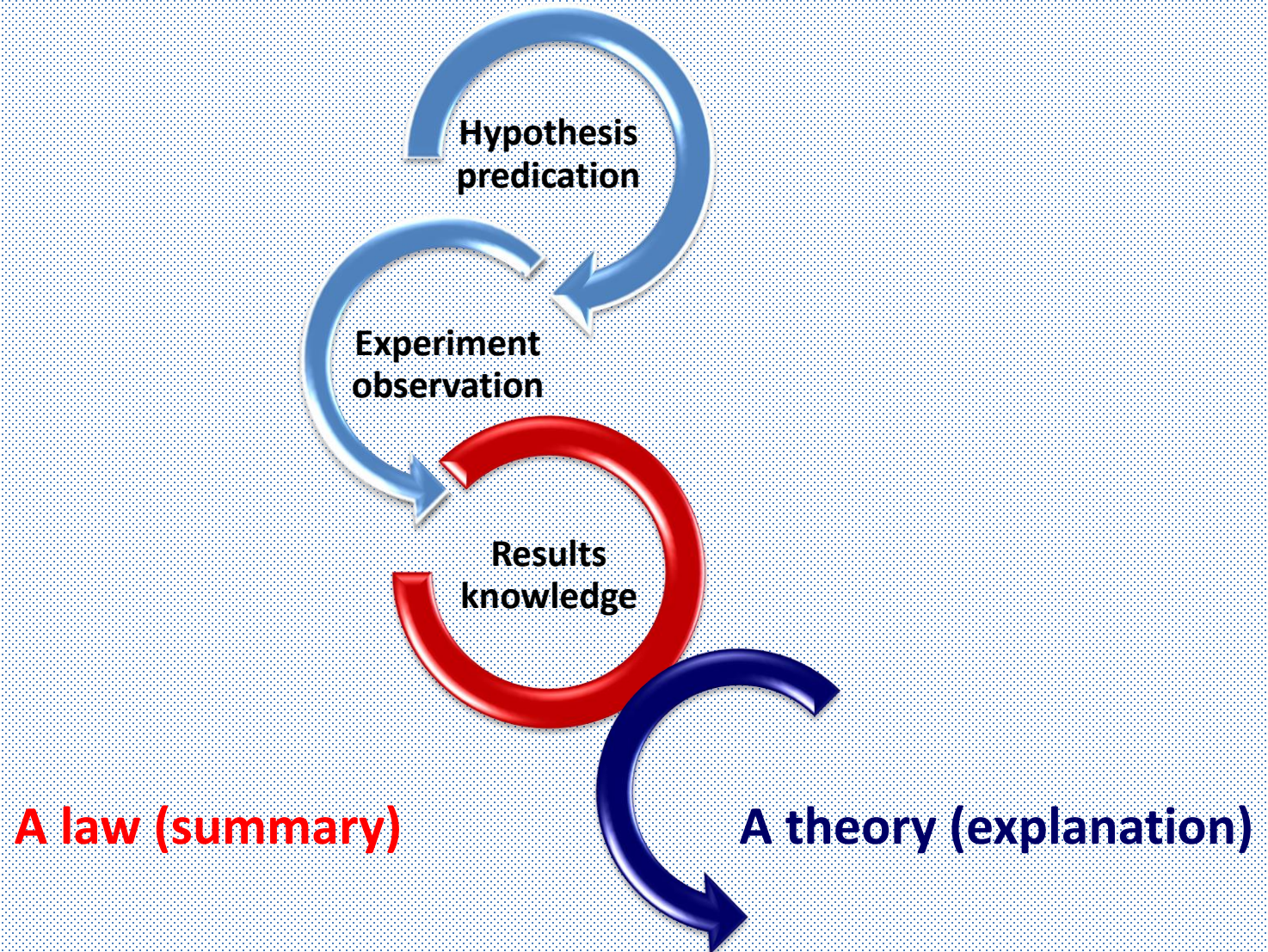
Theory

- Well accepted answer
- Well tested
- Supported by experiments

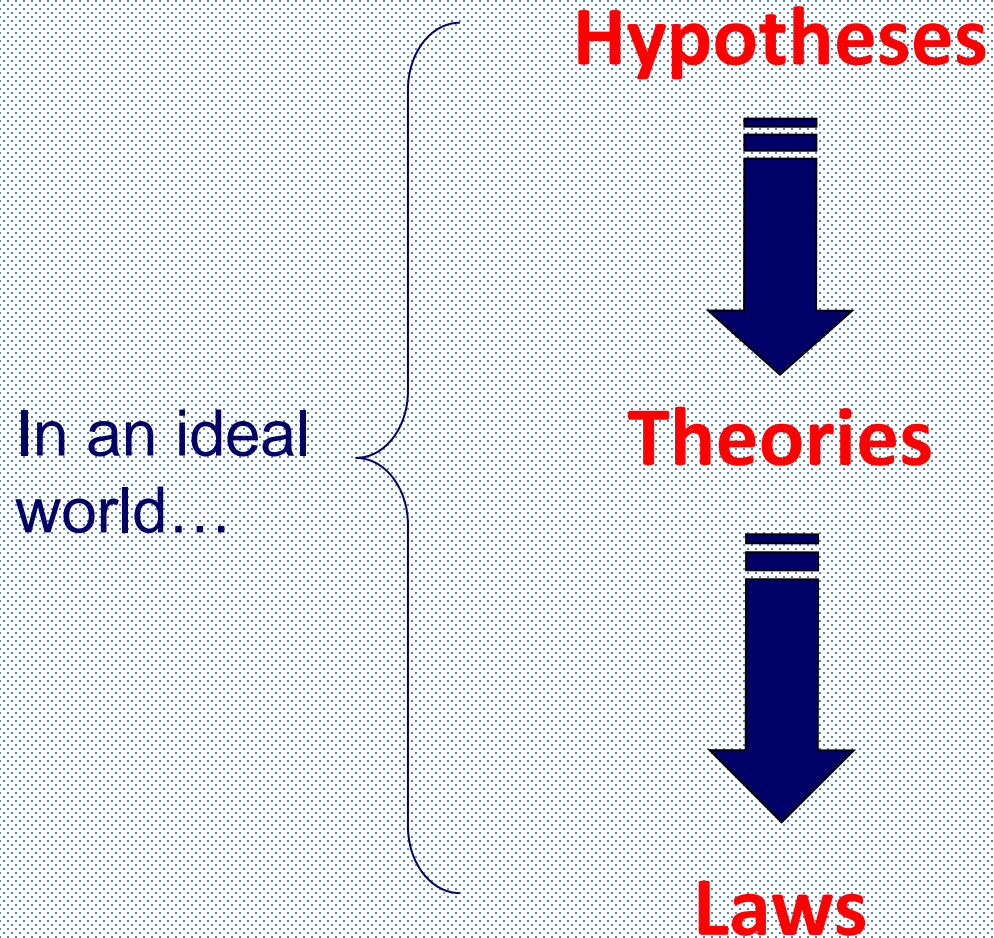
Theory vs. Hypothesis



Theory vs. Hypothesis



Theory vs. Hypothesis



Theory vs. Hypothesis

In science, a theory is a tested, well-substantiated, unifying explanation for a set of verified, proven hypotheses



A theory is the establishment of a general principle through multiple tests and experiments



A theory is always backed by evidence



A theory is testable and falsifiable



A theory is based on certainty, evidence, verification, and repeated testing

Theory vs. Hypothesis

A hypothesis is a belief or prediction of the eventual outcome of the research



A concrete, specific statement about the relationships between phenomena based on deductive reasoning



A hypothesis is a suggested explanation for an observable phenomenon



A hypothesis is a reasoned prediction of a possible causal correlation among multiple phenomes testable and falsifiable

Types of Hypotheses

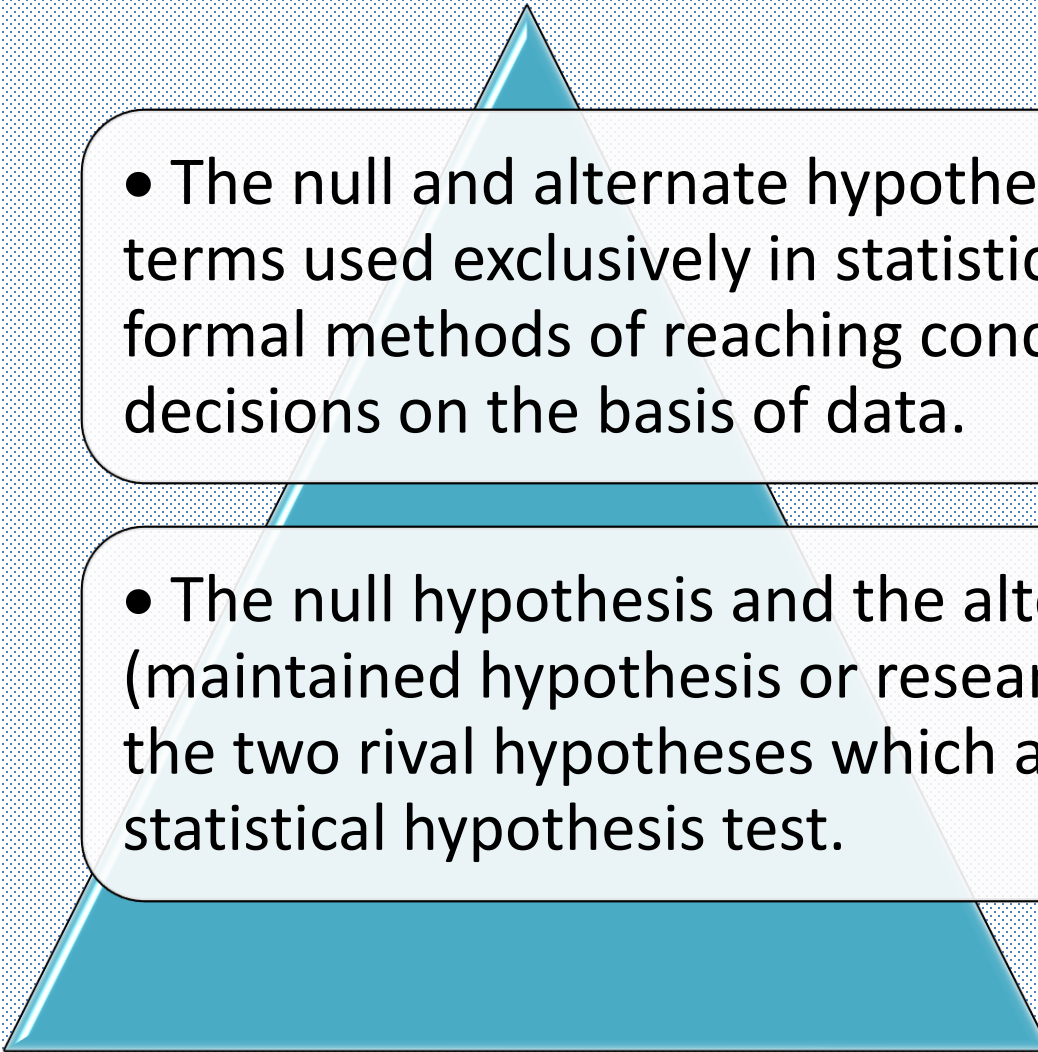


Null hypothesis (H_0)



Alternative hypothesis (H_A)

Theory vs. Hypothesis



- The null and alternate hypotheses are technical terms used exclusively in statistical tests which are formal methods of reaching conclusions or making decisions on the basis of data.

- The null hypothesis and the alternative hypothesis (maintained hypothesis or research hypothesis) are the two rival hypotheses which are compared by a statistical hypothesis test.

Theory vs. Hypothesis

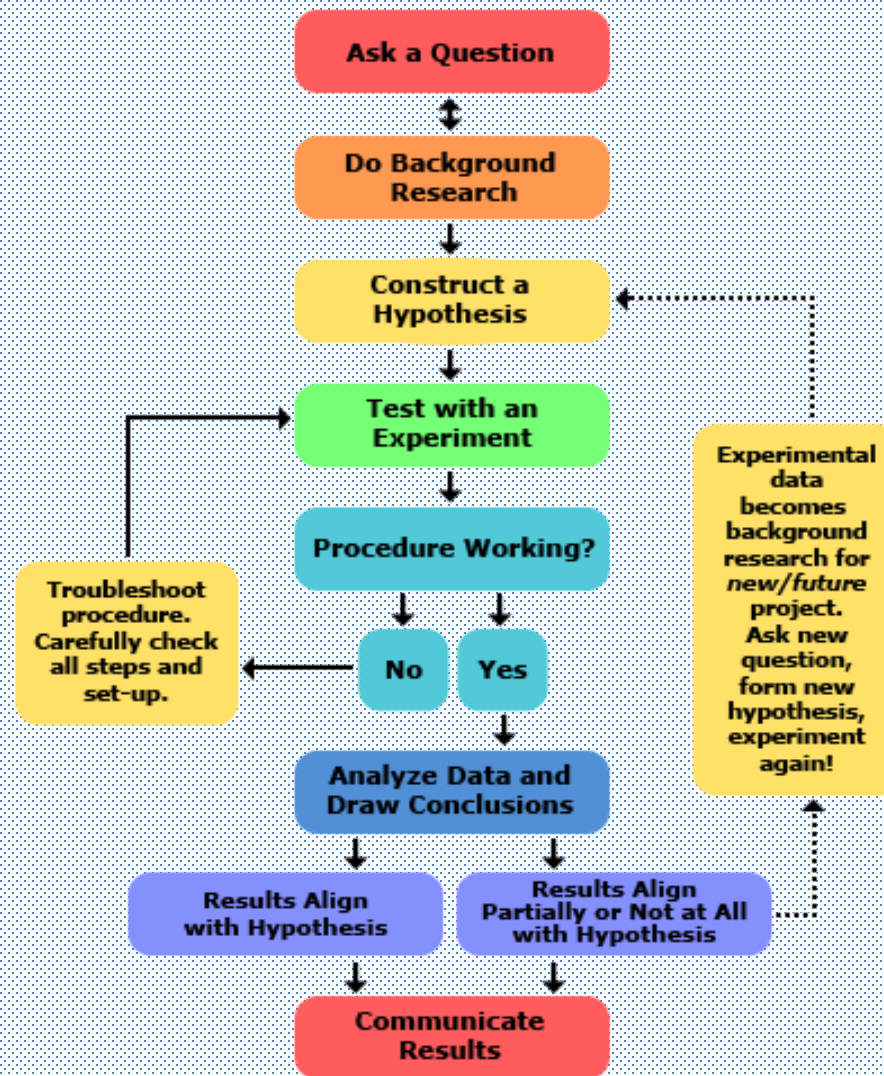
H_0

- H_0 refers to a general statement or default position that there is no relationship between two measured phenomena
- H_0 means that all are equal and no differences exist
- H_0 is generally assumed true until evidence indicates otherwise

H_A

- H_A is usually specific and opposite to the null

Summary of Project Processes



Summary of Project Processes

