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# Research Design



## Contributors

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# Design Characteristics

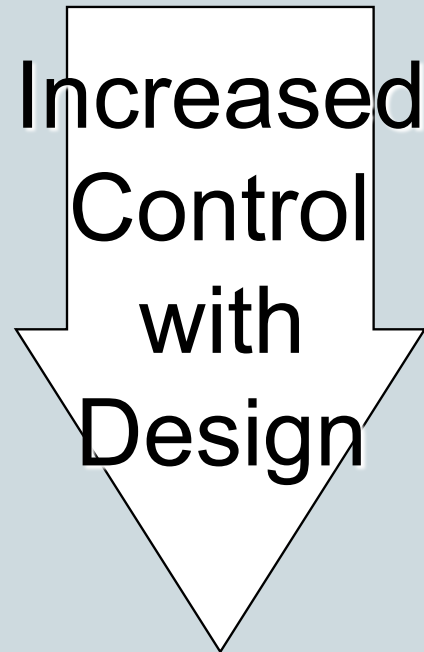


- Maximizes control over factors to increase the validity of the findings
- Guides the researcher in planning and implementing a study

## Level of Control: Quantitative Research



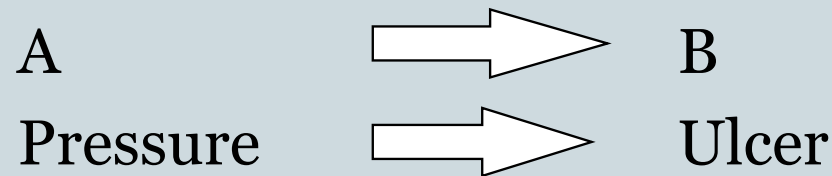
- Descriptive
- Correlational
- Quasi-experimental
- Experimental



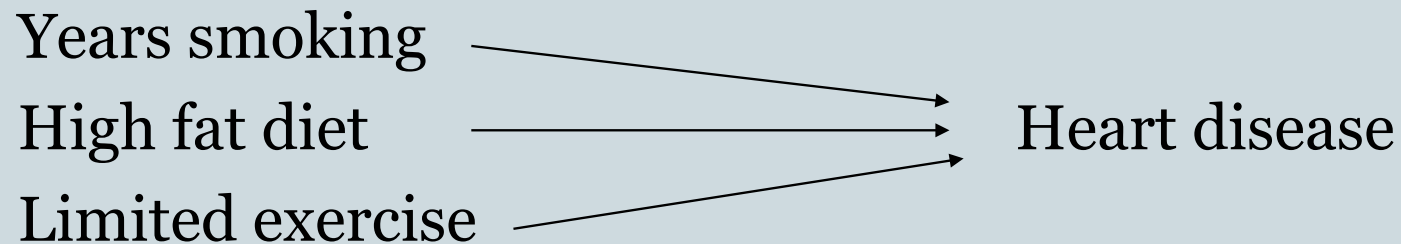
# Concepts Relevant to Research Design (1)



## Causality



## Multicausality



## Concepts Relevant to Research Design (2)



- **Probability:** Likelihood of an outcome
- **Bias:** Slanting findings
- **Manipulation:** Treatment
- **Control:** All phases of design

# Design Validity



- Measure of accuracy of a study
- Examined with critique of the following dimensions:
  - Statistical conclusion validity
  - Internal validity
  - Construct validity
  - External validity

# Elements of a Strong Research Design (1)



- Controlling the environment of the study setting
- Levels of controlling:
  - Natural setting
  - Partially controlled setting: e.g., clinics
  - Highly controlled setting: e.g., laboratory



## Elements of a Strong Research Design (2)



- **Controlling the equivalence of subjects and groups**
  - Random subject selection
  - Random assignment to groups

# Elements of a Strong Research Design (3)



- **Controlling the treatment**
  - Choose a treatment based on research and practice
  - Develop a protocol for implementation
  - Document the implemented treatment
  - Use a check-list to determine the extent of completeness to which the treatment was implemented
  - Evaluate the treatment during the study

# Elements of a Strong Research Design (4)



- **Controlling measurement**
  - Reliability
  - Validity
  - Number of measurement methods
  - Types of instruments

# Elements of a Strong Research Design (5)



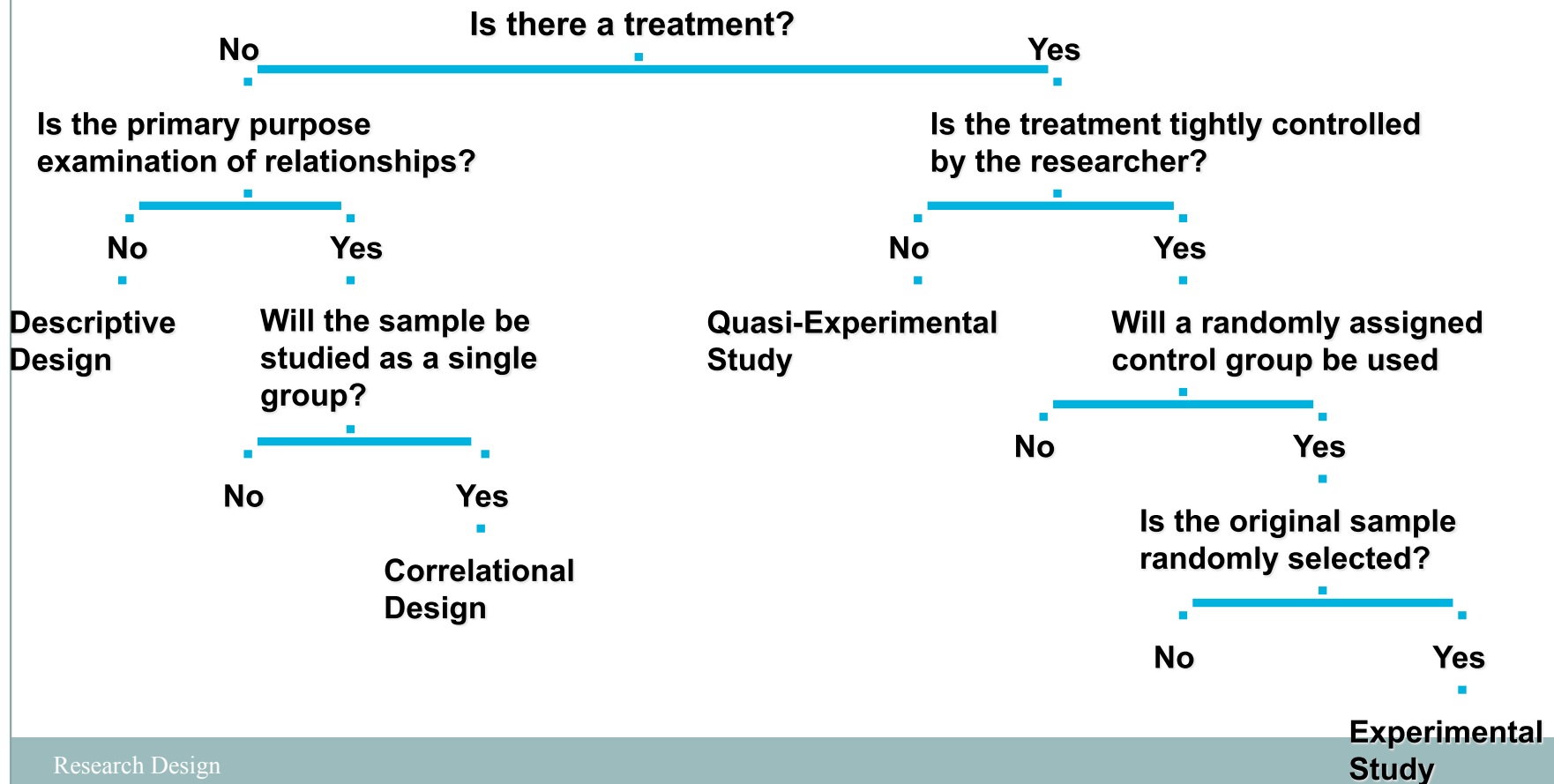
- **Controlling extraneous variables**
  - Identify and eliminate extraneous variables via sample criteria, choice of settings, or research design
  - Random sampling
  - Sample: Heterogenous, homogeneous, or matching
  - Statistical control

# Problems with Study Designs

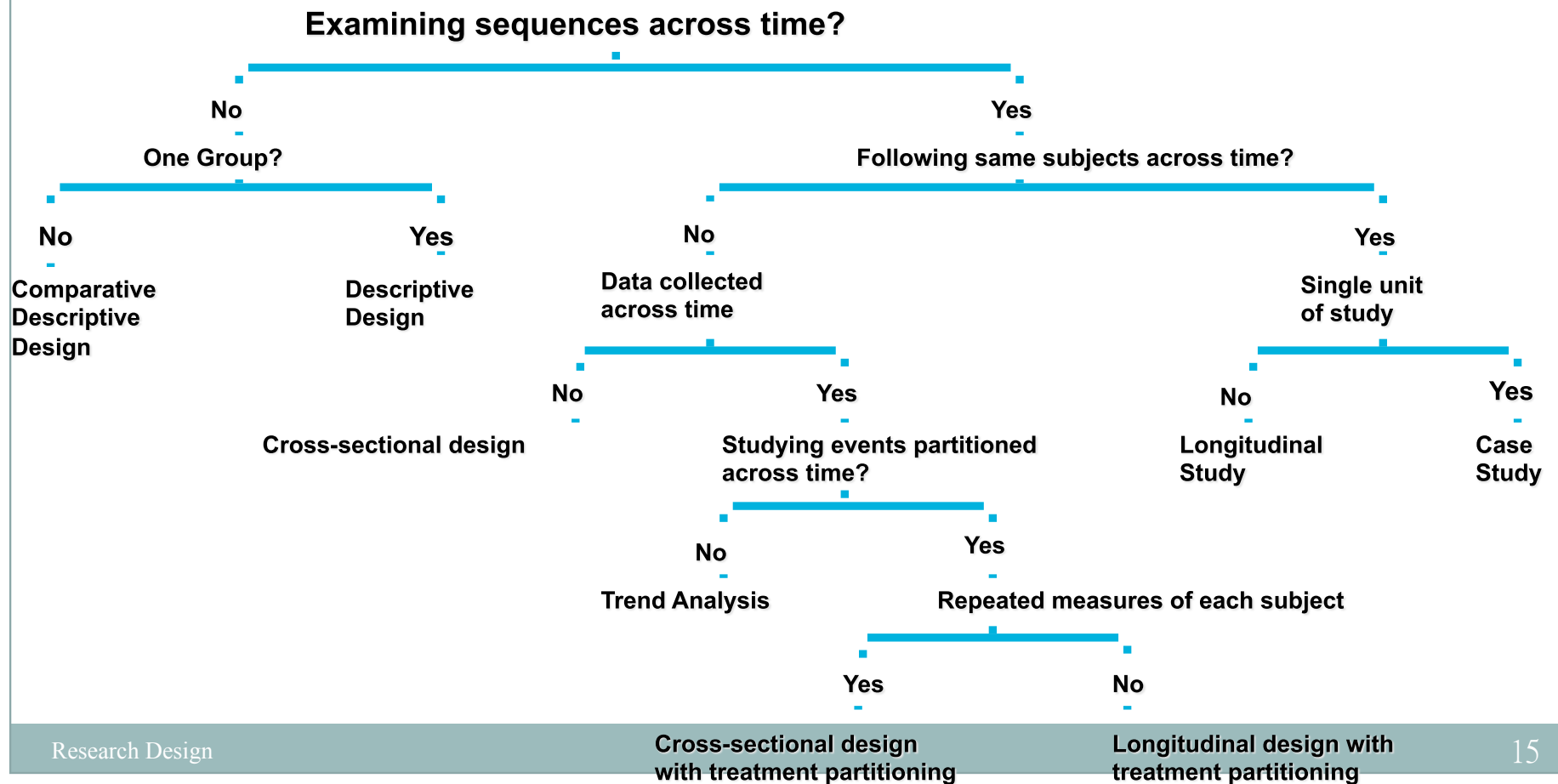


- Inappropriate for the study purpose or the research framework
- Poorly developed designs
- The research methods were poorly implemented
- Inadequate treatment, sample, or measurement methods

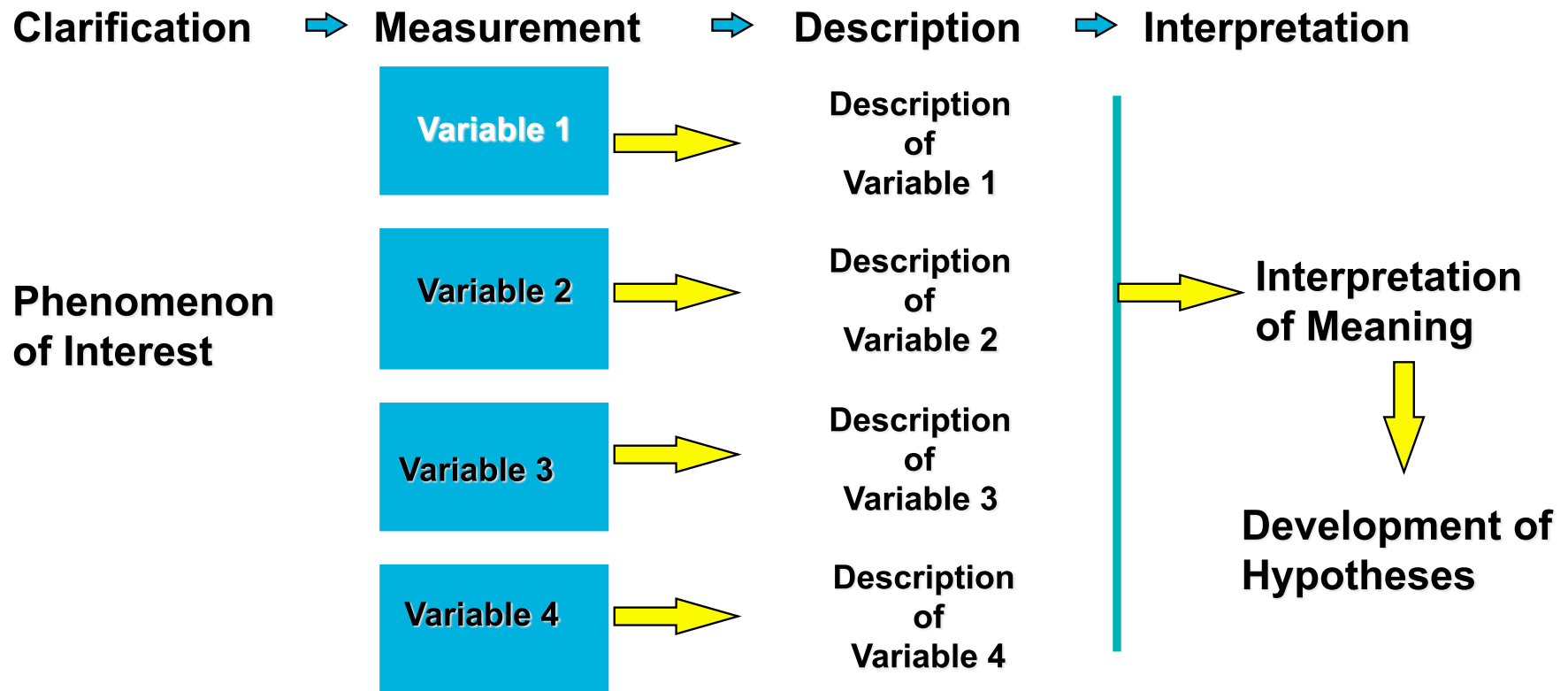
# Selecting a Design



# Selecting a Descriptive Design

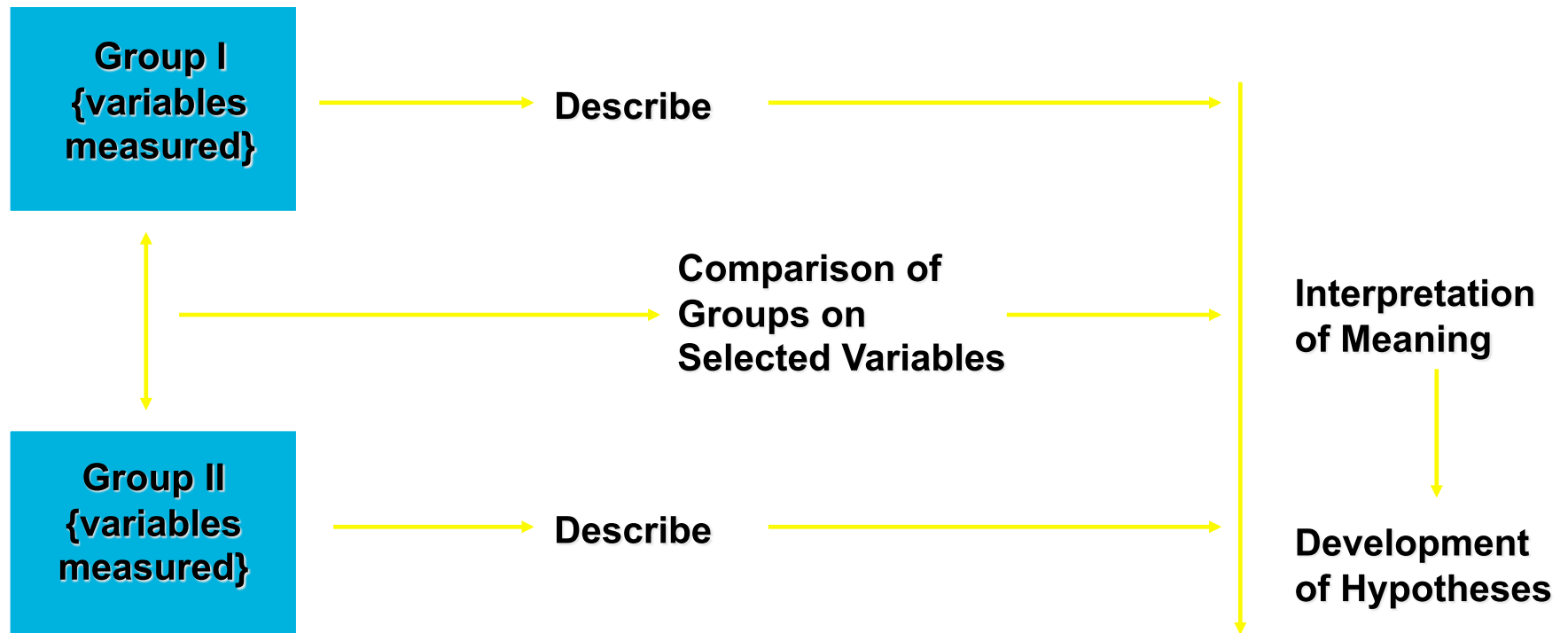


# A Typical Descriptive Design





# A Comparative Descriptive Design



# Selecting the Type of Correlational Design



**Describe relationships between/among variables?**



**Descriptive correlational design**

**Predict relationships between/among variables?**



**Predictive correlational design**

**Test theoretically proposed Relationships?**

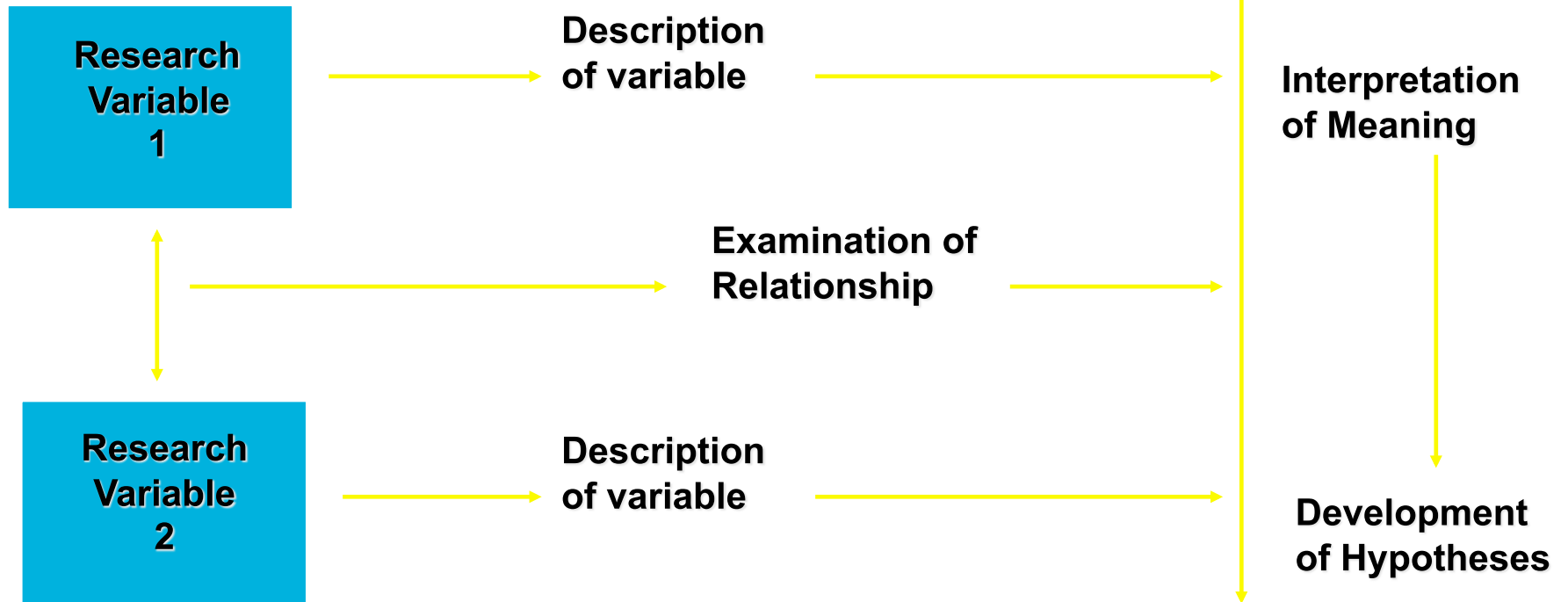


**Model testing design**

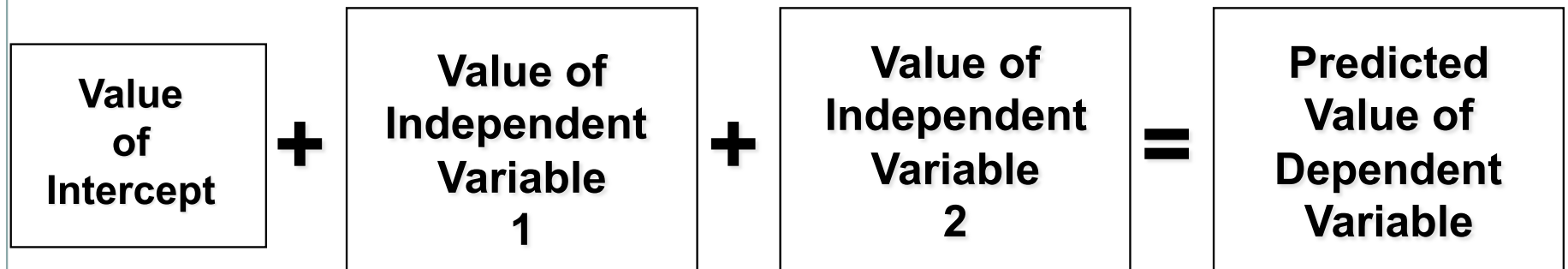
# A Descriptive Correlational Design



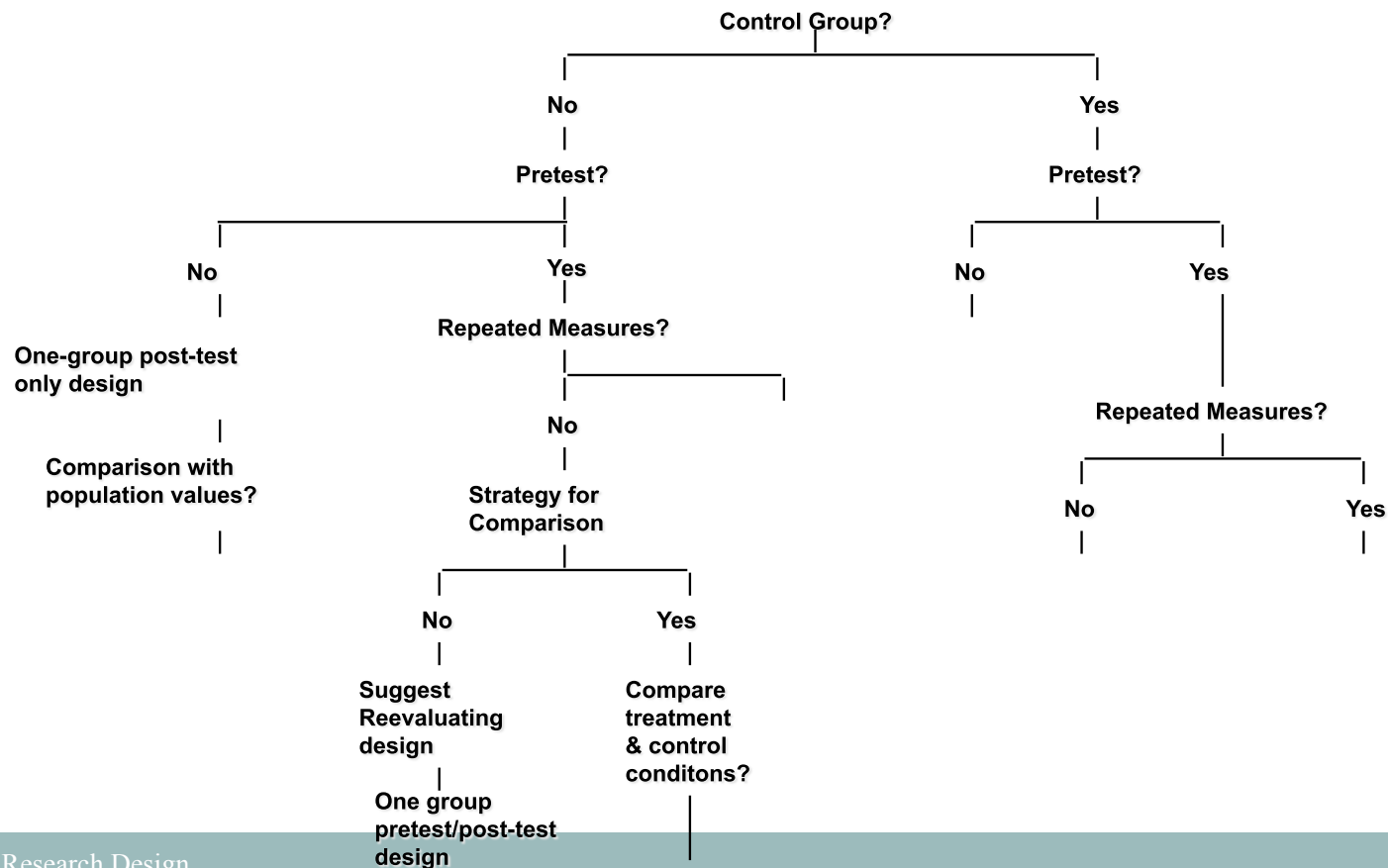
## Measurement



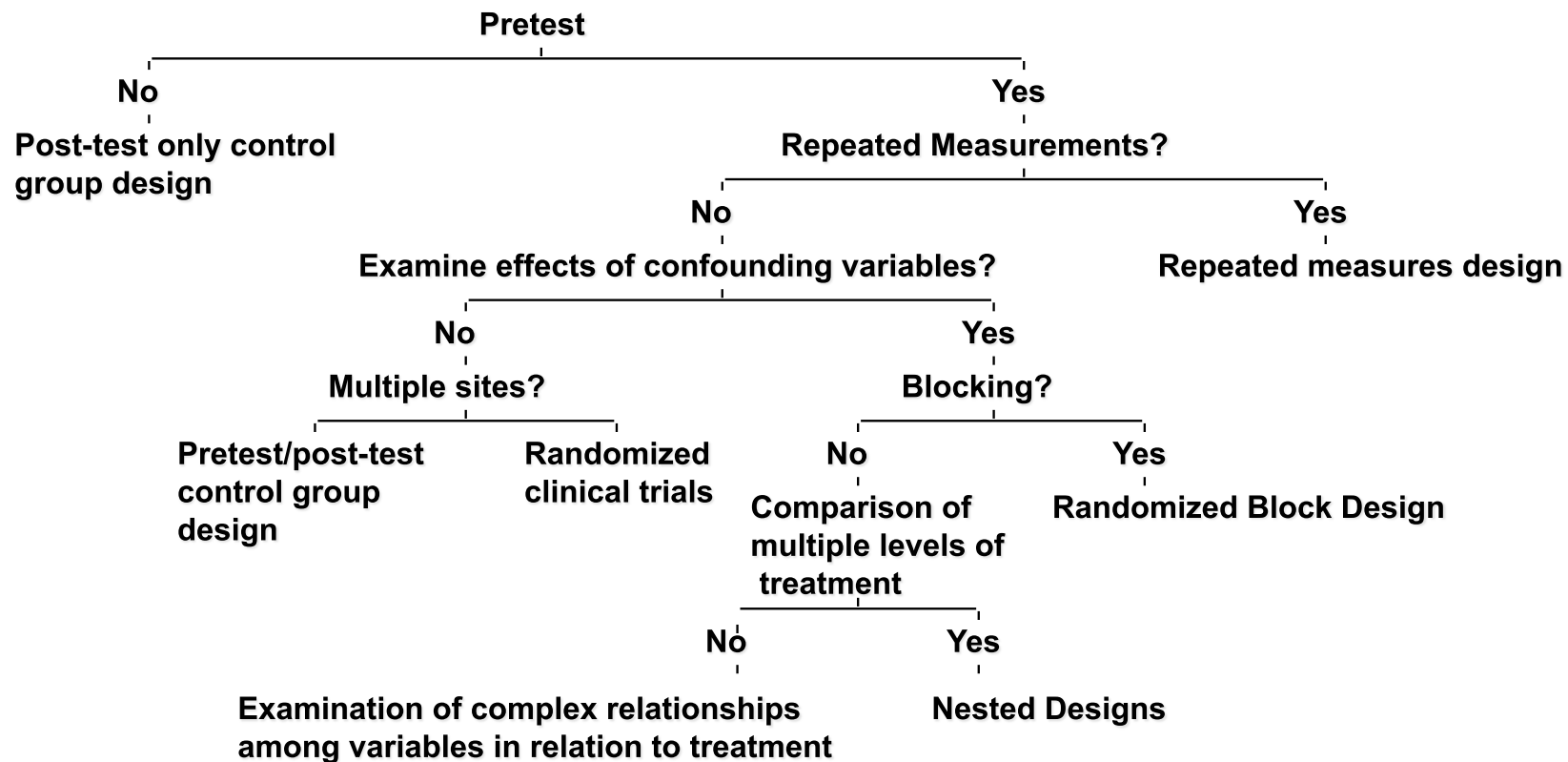
# A Predictive Design



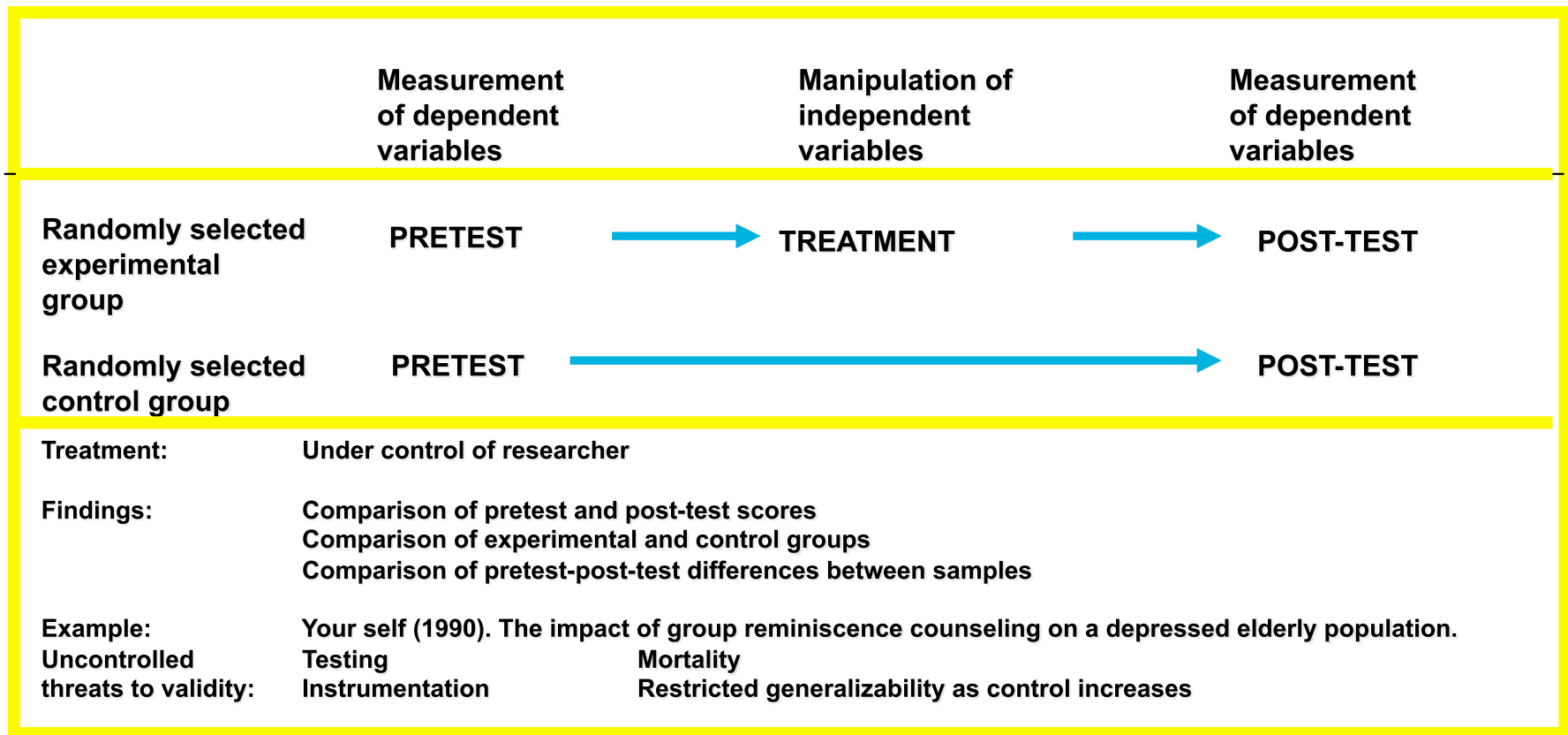
# Selecting The Type of Quasi-Experimental Design



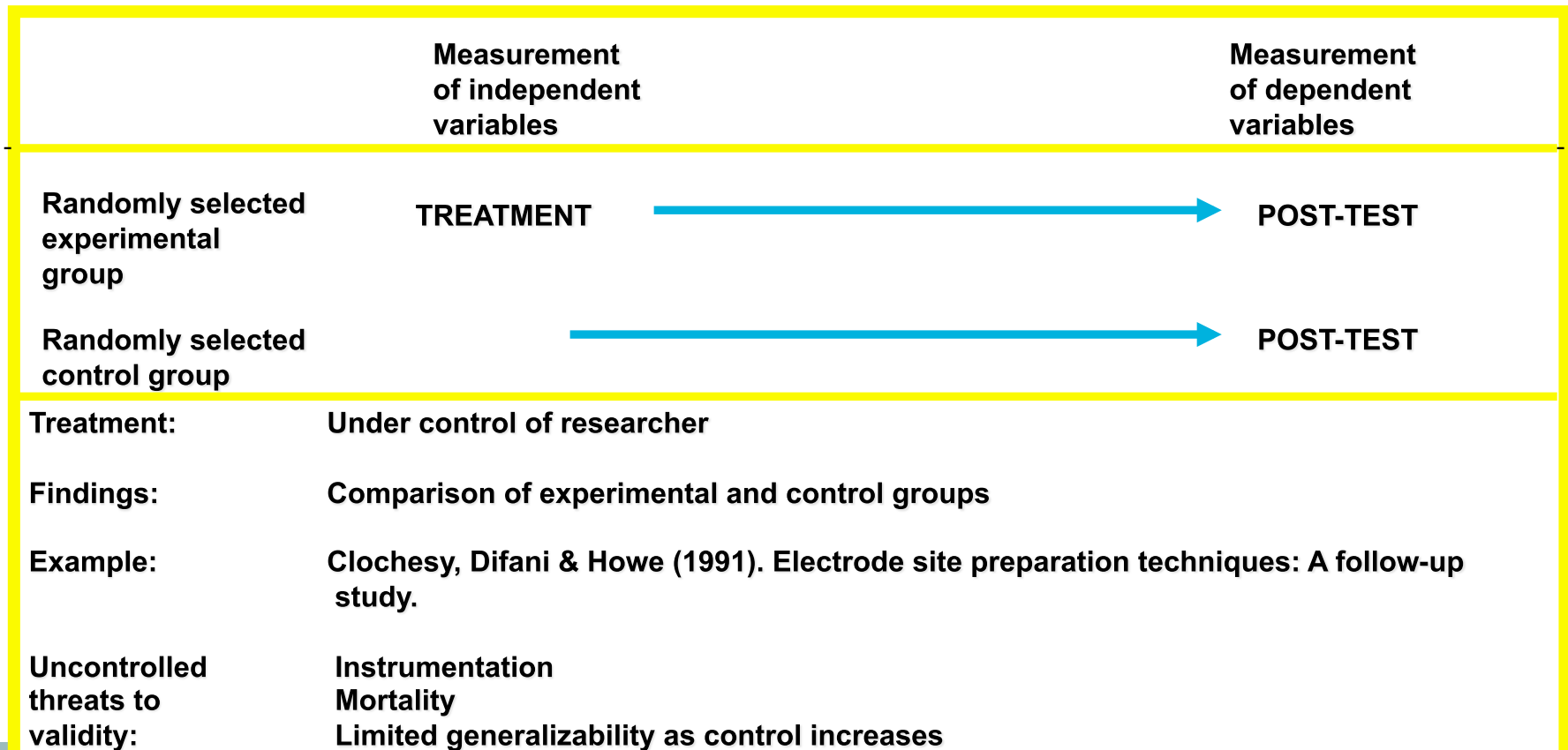
# Selecting The Type of Experimental Design



# Pretest-Post Test, Control Group Designs



# Post-Test-Only Control Group Design





# Nested Design



Pain Control Management		Primary Nursing Care							
		Primary Care				No Primary Care			
		Unit A	Unit B	Unit C	Unit D	Unit E	Unit F	Unit G	Unit H
Traditional care	Unit A								
	Unit B								
PRN Medication	Unit C								
	Unit D								
New approach: "Around the clock" medication	Unit E								
	Unit F								
	Unit G								
	Unit H								

# Advantages of Experimental Designs



- More controls in design and conducting a study
- Increased internally validity
  - Decreased threats to design validity
- Fewer rival hypotheses

# Advantages of Quasi-Experimental Designs



- **More practical**
  - Ease of implementation
- **More feasible**
  - Resources, subjects, time, setting
- **More generalizable**
  - Comparable to practice

# Developing the Design Section of Your Proposal



- Identify the design
  - Name it specifically
- Provide a map of the design
- Discuss your rationale for using this design
- Describe threats to the validity of the chosen design