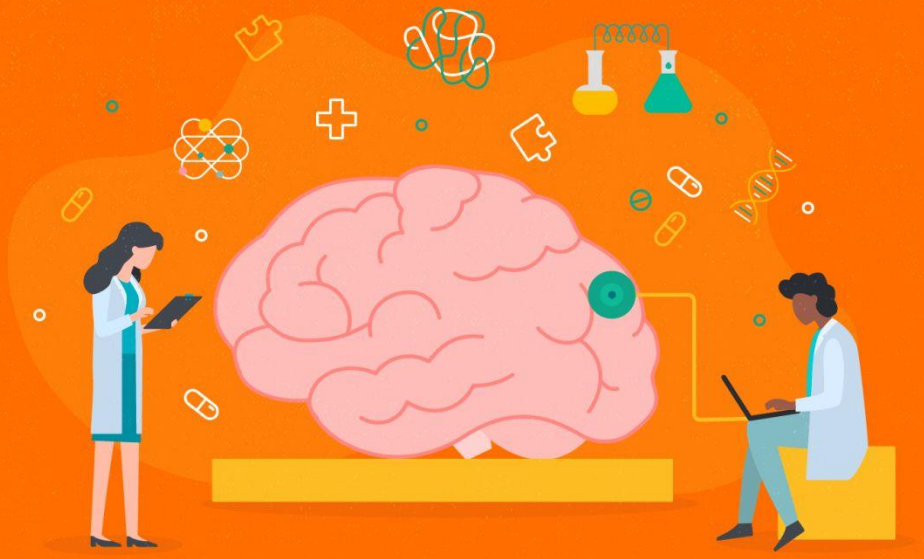


PSY 205- RESEARCH METHODS- I

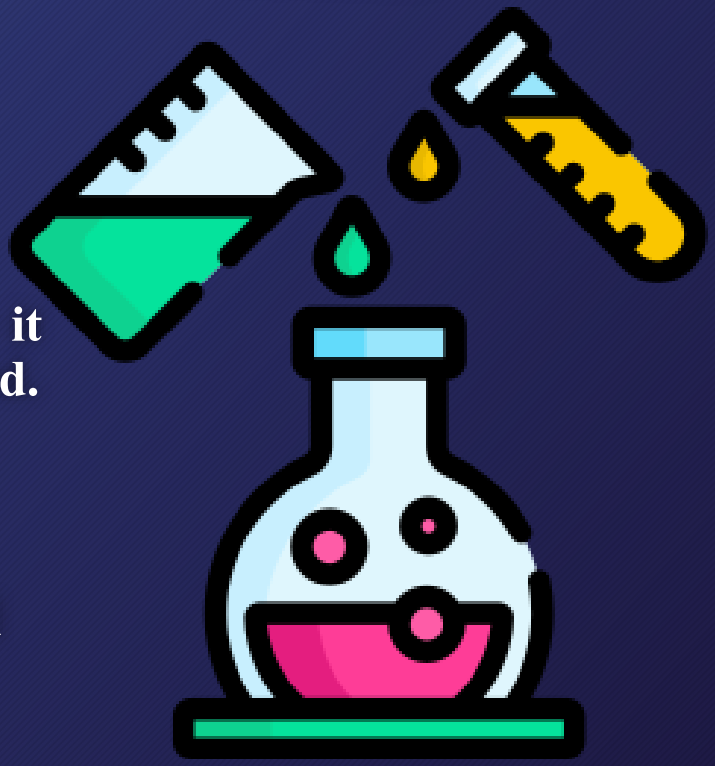
EXPERIMENTAL RESEARCH DESIGN

Research Design

Introduction:

- A research design is the frame work or guide used for the planning, implementation, and analysis of a study.
  - Systematic plan of **what is to be done, how it will be done, how the data will be analyzed.**

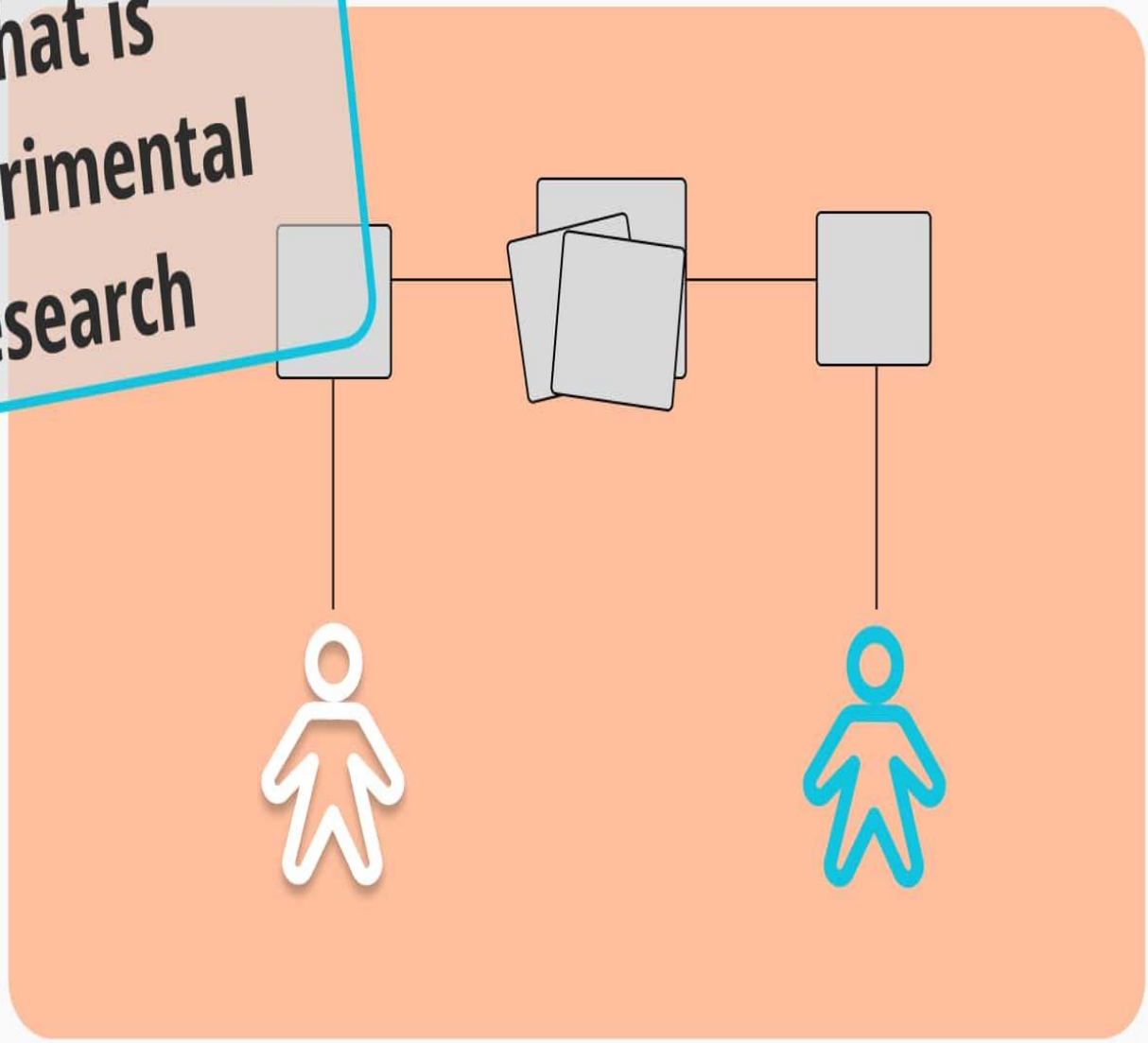
- Research design basically provides an outline of how the research will be carried out and methods that will be used.



"**Experimental Research** is the description and analysis of what will be or what will occur, under carefully controlled conditions."

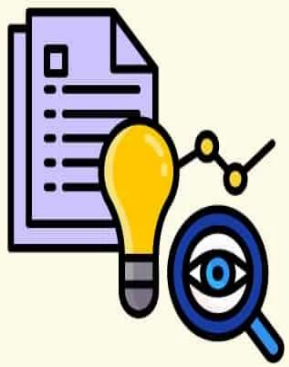
J.W. Best

What is experimental research



What is experimental research?

- Experimental research is defined as "OBSERVATIONS UNDER CONTROLLED CONDITIONS"
- The researcher is active agent rather than a passive observer.



What is experimental research?

- **Experimental design is a powerful design for testing hypotheses of causal relationship among variables.**

Classified as;

1. **True experimental design**
2. **Quasi-experimental design**
3. **Pre-experimental design**

Purpose of Experimental Research

- The purpose of a research design is to provide a plan of study that permits accurate assessment of **CAUSE-EFFECT** relationships between independent and dependent variables.

- The **classic controlled experiment** is an ideal example of good research design.

Variables

Independent variable

- This variable is the “cause” - T**he predictor variable.**

Dependent variable

- This variable is the “effect”- should vary only in the response of independent variable.

Confounding variable

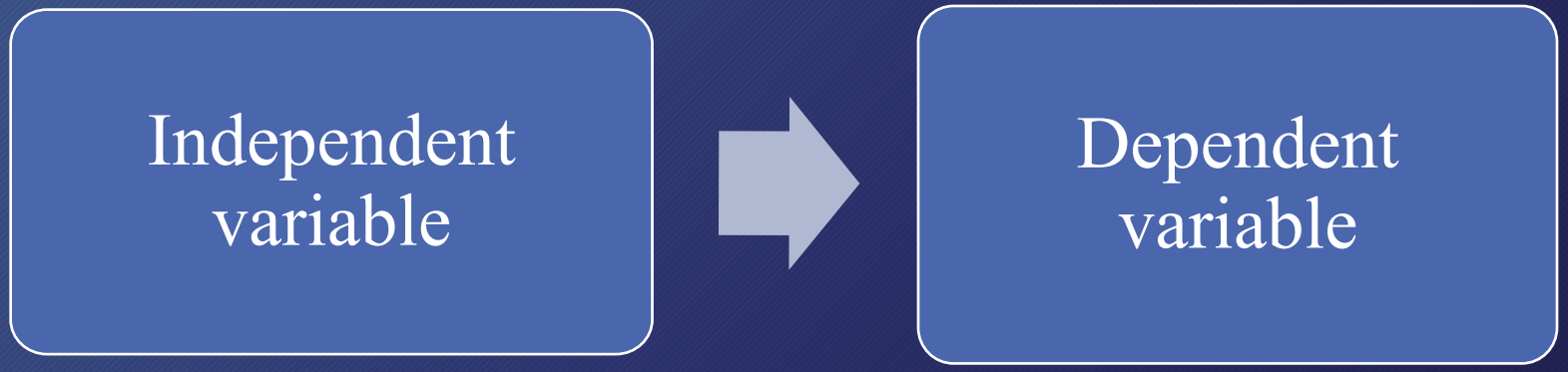
Independent variables that are not related to the purpose of study, but may affect the dependent variable.

EXPERIMENTAL RESEARCH DESIGN

Experimental Research

- Scientific approach to research, where **one or more independent variables** are **manipulated** and applied to one or more dependent variables to measure their effect.
- Experimental research involves a **direct assessment of how one variable influences other.**
- It is defined as "**observation under controlled condition**".

Experimental Research



Experimental or treatment variable

Criteria or outcome variable

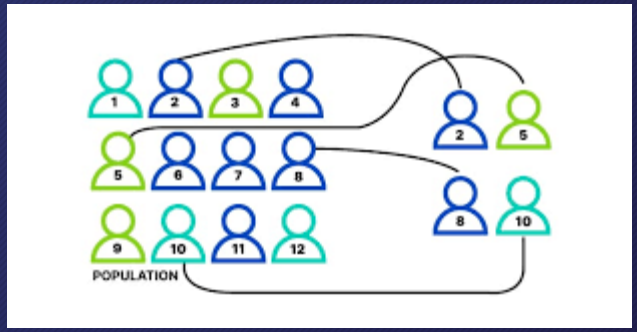
Principles of Experimental Research

1. RANDOMIZATION
2. MANIPULATION
3. CONTROL

RANDOMIZATION

Definition: Randomization is the process of **randomly assigning** participants to experimental and control groups.
- Each participant has an equal chance of being assigned to either the experimental group or the control group.

Purpose:
•Random assignment helps **minimize pre-existing differences** between groups, ensuring that any differences observed in the dependent variable are due to the independent variable and not other factors.
•It reduces the impact of **confounding variables**, making the groups comparable at the start of the experiment.

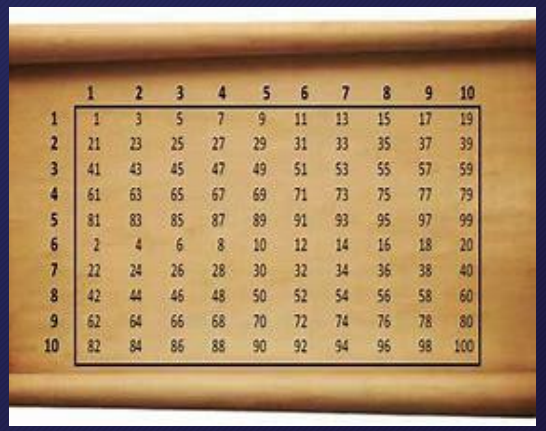


Example: In a drug trial, participants are randomly assigned to either the **treatment group** (receiving the drug) or the **control group** (receiving a placebo).
- This ensures that both groups are **similar at the start of the experiment.**

RANDOMIZATION

Methods used for randomization are:

- Lottery method/Slip of paper
- Flip a coin/Tossing a coin
- Random table

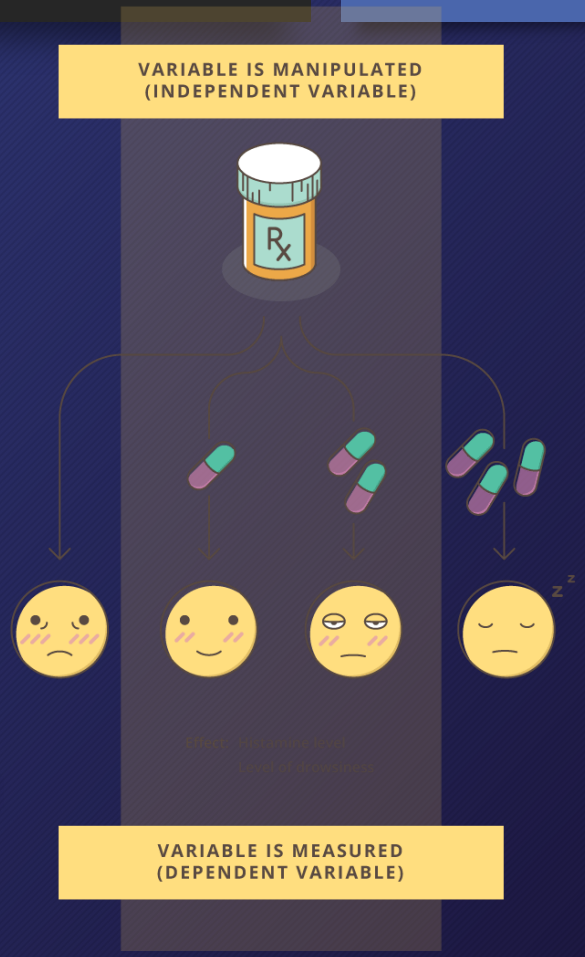


	1	2	3	4	5	6	7	8	9	10
1	1	3	5	7	9	11	13	15	17	19
2	21	23	25	27	29	31	33	35	37	39
3	41	43	45	47	49	51	53	55	57	59
4	61	63	65	67	69	71	73	75	77	79
5	81	83	85	87	89	91	93	95	97	99
6	2	4	6	8	10	12	14	16	18	20
7	22	24	26	28	30	32	34	36	38	40
8	42	44	46	48	50	52	54	56	58	60
9	62	64	66	68	70	72	74	76	78	80
10	82	84	86	88	90	92	94	96	98	100

MANIPULATION

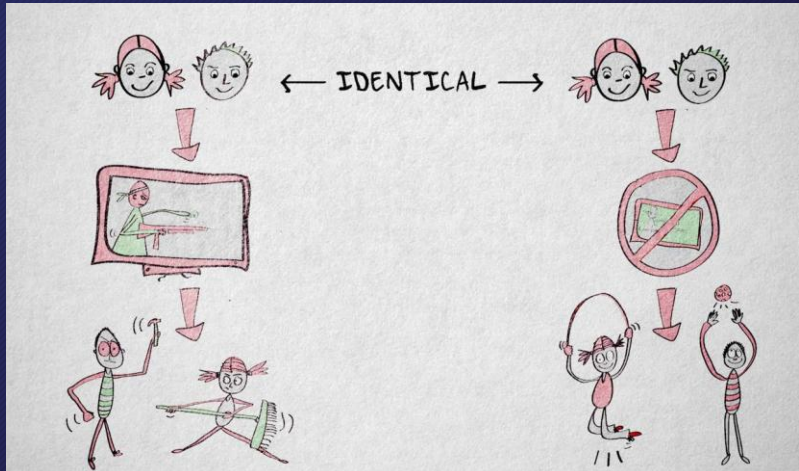
- **Definition:** Manipulation refers to the **deliberate alteration of the independent variable** (IV) by the researcher to observe its effects on the dependent variable (DV).
- **Purpose:** **To examine the effect of the independent variable on the dependent variable**, measuring how a change in the independent variable influences the outcome.

  -Manipulation is necessary to establish a cause-and-effect relationship between variables.
- **Example:** In a study examining the effectiveness of a teaching method, the researcher applies the new teaching method (independent variable) to one group of students while using traditional methods (control group) for another group. The researcher then measures the impact on student performance.



CONTROL

- **Definition:** Control refers to the process of standardizing the environment and conditions to minimize the influence of confounding factors.
- **Purpose:** To control for external variables, ensuring that only the independent variable affects the dependent variable. **To minimize the influence of confounding variable**s by maintaining consistent conditions across all groups.
- **Example:** In a study, the control group receives a placebo, while the experimental group receives the actual medicine. Both groups are tested in the same environment (temperature, lighting, etc.), and they follow the same daily schedule, ensuring that any effects are due to the medicine and not other environmental factors.



Any questions??