Hypotheses

H0: Null Hypothesis	the H0 of a test always predicts no effect or no relationship between variables
H1: Alternative Hypothesis	H1 states your research prediction of an effect or realtionship

Research Design

experimental design	you can assess a cause-and-effect using statistical tests of comparison or regression.
	e.g., the effect of meditation on test scores
correlational design	you can explore relationships between variables without any assumption of causality using correlation coefficients and significance tests.
	e.g., parental income and GPA
descriptive design	you can study the characteristics of a population or phenomenon using statistical tests to draw inferences from sample data.
	e.g., the prevalence of anxiety in U.S. college students

Between/Within - subject Design

between-subject design	individuals receive only one of the possible levels of an experimental treatment
	e.g., subjects are randomly assigned a level of phone use and follow that level of phone use throughout the experiment

Research Design (cont)

within-subject design	every individual receives each of the experimental treatments consecutively, and their responses to each treatment are measured
	e.g., subjects are assigned consecutively to zero, low, and high levels of phone use throughout the experiment, and the order in which they follow these treatments is randomized

Randomisation

completely randomized design	every subject is assigned to a treatment group at random
randomized block design	subjects are first grouped according to a characteristic they share, and then randomly assigned to a treatment within those groups

Measuring Variables

Dependent Variable	Variable that represents the outcome
Independent Variable	Variables you manipulate in order to affect the outcome of an experiement
Controlled Variable	Variables that are held constant throughout the experiment

Measuring Variables (cont)

Confounding Variable	Variables that hides the true effect of another variable in your experiment. This can happen when another variable is closely related to a variable you are interested in, but you have not controlled it in your experiment
Latent Variable	Variables that cannot be directly measured, but that you represent via a proxy
Composite Variable	Variables that are made by combining multiple variables in an experiment. These variables are created when you analyze date, not when you measure it

Quantitative Variables

Discrete/integer Variable	counts of individual items or values
Continuous/ratio Variable	measurements of continuous or non-finite values

Categorial Variables

Binary/dichotomous Variable	Yes / No Outcome
Nominal Variable	groups with no rank or order between them
Ordinal Variables	groups that are ranked in a specific order