WHAT MAKES A THEORY SCIENTIFIC?

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SUPPORTED BY EMPIRICAL EVIDENCE

FASIFIABLE (CAN BE PROVEN WRONG)

REPLICABLE

Falsifiability: The proper way to test a theory is to find one case that contradicts it, so the theory can be rejected/ modified, and this is how science develops, Karl Popper

SAMPLING

CREDIBILITY

GENERALIZABILITY

BIAS

RESEARCH METHODOLOGY

CHARACTERISTICS OF A QUALITY RESEARCH STUDY

SAMPLING

- Sample = individuals taking part in study
- Sampling = process of recruiting individuals for the study

Types:

Quantitative
- Random
- Stratified
- Self-selected
- Opportunity

Qualitative
- Snowball
- Convenience
- Quota

Sampling method are chosen based on efficiency/ time/ cost

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CREDIBILITY

- Credibility = trustworthy, ie. do results reflect reality?
- Internal validity: what extent is DV influenced by IV and not some other variable?

Quantitative
- Strengthen credibility by: controlling confounding variables, keeping constant in all conditions

Qualitative
- Triangulation
- Establishing rapport
- Iterative questionings
- Rich descriptions

GENERALIZABILITY

- Generalizability = can results apply to a wider context? If yes, that's **high external validity**
- If results can be generalized to wider population that's **high population validity**

(if participants sampled were all of the same race, results are **ethnocentric**
if only males were sampled, results are **androcentric**)

- If study proximate real-world settings, that's **high ecological validity**
- If research measures accurately assesses what it's supposed to, it's **high construct validity**
- **Internal validity** is high if confounding variables have been controlled and changes to the DV is definitely caused by change in IV

BIAS

Quantitative
Threats to internal validity:
- Selection
- Testing effect
- Regression to the mean
- Experimenter bias
- Demand characteristics

Qualitative
Participant bias
- Social desirability

ie. misreporting smoking frequency to look good to others
- Dominant respondent

Researcher bias
- Confirmation bias

Tendency to seek/ interpret, info in a way that supports your own thesis
- Leading questions

ie. Framing questions in a way to throw off participants

RESEARCH METHODOLOGY P9-19

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CONFOUNDING VARIABLES

- Confounding variables distort the relationship between the IV and the DV
- These variables need to be controlled, ie. eliminate or kept constant in all groups so that they do not affect the comparison of results
- ie. if there's stress caused by unfamiliar environment, researcher can test all groups at comfort of own homes, instead of group I at home group II at lab

PARTICIPANT CHARACTERISTICS

- Socio economic background
- Culture

RANDOM SAMPLING

- Ideal approach for a representative sample
- Every member of the target population has an equal chance of becoming part of the sample
- However not always possible for practical reasons, ie. if target population is large, for example, all teenagers in the world, you cannot ensure that each member of this population gets an equal chance to enter your sample

STRATIFIED SAMPLING

- Researchers divide subjects into subgroups called strata based on characteristics that they share (ie. race, gender, age)
- Once divided, each subgroup is randomly sampled using another probability sampling method
- Similar to weighted average, captures key population characteristics in the sample
- Time and effort

CONVENIENCE/ OPPORTUNITY SAMPLING

- Recruit participants that are more easily available
- When you're time pressed/ resource scarce

SELF-SELECTED SAMPLING

- Ie. advertising, maybe on a notice board and sampling those who responded
- Quick, easy way to recruit
- But generalizability questionable:
- People who volunteer to participate may be more motivated than the general population, or they may be looking for the incentives

EXPERIMENTAL DESIGN©EASYREVISING.COM

INDEPENDENT MEASURES DESIGN

- Using diff participants for each condition of the experiment
- No order effect where participants behave differently due to the order of conditions performed, ie. boredom, fatigue, guessing the objectives of the study

MATCHED PAIRS DESIGN

- Matched pairs design is an experimental design where pairs of participants are matched in terms of key variables, such as age and IQ

REPEATED MEASURES DESIGN

- To compare conditions rather than groups of participants
- The same group of participants is exposed to two/more conditions, and the results from the diff conditions are compared
- Can lead to fatigue/ practice - affecting validity of results

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OVERCOMING ORDER EFFECTS

- Counterbalancing
- Use other groups of participants where the order of the conditions is reversed.

EXPERIMENTAL MORTALITY/ ATTRITION

- Participants frequently drop out of experiments whilst they are taking place/before they finish due to
- Death (most extreme)
- No longer willing to take part
- No longer available

QUASI-EXPERIMENT

- Contains naturally occurring IV
- Researcher examines the effect of this variable on the dependent variable (DV)
- Example, thesis = anxiety affects performance. to manipulate anxiety, research can split participants randomly into 2 groups, tell one group they can expect college apps results later. Anticipation of these results would probably increase anxiety in the experimental group

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FIELD EXPERIMENT

- Conducted in real-life settings
- +ve: high eco validity vs lab experiments
- -ve: less control over potentially confounding variables so there is lower internal validity

NATURAL EXPERIMENT

- Conducted in participants' natural environment
- Researcher has no control over the naturally-occurring IV
- High eco validity
- But low internal validity is a disadvantage owing to there being less control over confounding variables

QUANTITATIVE RESEARCH P 20-23

CORRELATION

- A measure of linear relationship between two variables.
- Positive correlation = when IV increases, DV increases

LIMITATIONS

- Correlation=/= causation
- Curvilinear Relationship both variables increase in tandem, but only up to a certain point, after which, as one variable continues to increase, the other decreases, ie. arousal and performance

- Using diff participants for each condition of the experiment
- No order effect where participants behave differently due to the order of conditions performed, ie. boredom, fatigue, guessing the objectives of the study

QUALITATIVE RESEARCH P 24-36

TYPES OF OBSERVATION

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NATURALISTIC OBSERVATION

- Carried out in naturally occurring settings
- May be considered ethical/ non-disruptive, ie. if you wanted to study inter-group discrimination/ violence, it would be unethical to encourage violence in a research setting. However, you may observe naturally occurring violence.

OVERT VS COVERT

Overt

- Participants are aware of being observed
- +ve informed consent
- -ve people may consciously/ unintentionally change their behavior when they've being observed

Covert

- Researcher does not inform participants about his presence
- +ve subjects unaware of being observed, so behave naturally
- -ve participants do not give their consent to take part in the study

- One way to avoid this issue is to debrief participants after the observation session

PARTICIPANT

- When observer becomes part of the observed group

- +ve allow researcher to gain first-hand experiences
- -ve risk that observer will lose objectivity after becoming too involved/ invested

STRUCTURED/ UNSTRUCTURED

Structured

- Information is recorded systematically and in a standardized way

Unstructured

- do not have pre-defined structure
- observers simply register noteworthy behaviors.

TYPES OF INTERVIEWS, P33

STRUCTURED

- Fixed question list asked in a specific order
- Most useful when the research involves multiple interviewers and all need conduct the sessions in a similar way

SEMI-STRUCTURED

- Certain questions to be asked
- Interviewer can follow-up with questions to get clarification
- Can also change the order of questions to fit flow of conversation

Focus group

- Special type of semi-structured interview
- Participants are encouraged to interact with each other and interviewer serves as a facilitator
- +ve quick way to get info from several participants at the same time
- +ve more natural, comfortable environment than a f2f interview
- +easier to respond to sensitive questions when you are in a group.
- -ve more dominant participant may overpower discussions

UNSTRUCTURED

- Mostly participant-driven
- Next question is determined by the interviewee's answer to the previous one

CONTENT ANALYSIS P34

- Researchers transcribe interviews
- Interpret transcripts from interviews and derive a set of recurring themes
- Prepare summary table of themes

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CASE STUDY

- In-depth investigation of an individual or a group

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LIMITATIONS

- -ve researcher bias can be a problem if they get too involved due to the longitudinal nature of study
- -ve participant bias if participants become susceptible to acquiescence, social desirability etc
- -ve generalization of findings is especially problematic from a single case to other settings or to a wider population. Generalization depends on thickness of descriptions and triangulation (other researchers, other case studies, and so on).

HOW CAN WE DECIDE WHAT IS ETHICAL AND WHAT IS NOT IN PSYCHOLOGY?

CONSIDERATIONS IN CONDUCTING STUDY

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1 INFORMED CONSENT

Voluntary participants who fully understand nature of participation and give informed consent, ie. study objectives, tasks, and data use. Clear, comprehensive information is crucial. Minors need parental or guardian consent

2 PROTECTION FROM HARM

At all times protected from physical and mental harm. Including possible negative long-term consequences.

Ie. Milgram prison experiment

3 ANONYMITY AND CONFIDENTIALITY

Participation in a study is anonymous if no one can trace the results back to a participant's identity because no personal details have been provided

ETHICS
P37

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4 WITHDRAWAL FROM PARTICIPATION

Participants to know they can choose to withdrawal at any time of the experiment, even after, with their data released to them

5 DEBRIEFING

After the study participants must be fully informed about its nature/ true aims/ data usage, storage
Researchers must mitigate possible LT harmful consequences, including providing psychological help

6 DECEPTION

In research where true aims of study cannot be revealed, a degree of deception needs to be used. but must be kept to the necessary minimum

CONSIDERATIONS IN REPORTING RESULTS

1 DATA FABRICATION

If an error is found in already published results, reasonable measures should be taken to correct it, ie. retraction

2 HANDLING OF SENSITIVE PERSONAL INFORMATION

Research into genetic influences on human behaviour, such as twin/ adoption/ family studies. Implying certain requirements in the way results should be relayed to participants

3 PLAGIARISM

Unethical to present parts of another's work or data as one's own

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ETHICS P38

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4 SOCIAL IMPLICATIONS

What are potential effects disclosing research conclusions? ie.imagine a research study supported the idea that homosexuality is inherited. Where can you publish the results?

5 RESULTS INVOLVING MENTAL DISORDER

Some findings may have unwelcome consequences ie. change in self-esteem/ a change in family perceptions and expectations for a child.

In an infamous study, a nine-month-old dubbed "Albert" encountered stimuli including rats and rabbits without fear. Through Pavlovian conditioning, researchers induced fear by pairing a rat with a loud sound. This fear generalized to other objects. Ethical concerns arise due to the distress inflicted and lack of follow-up care for Albert.

Cyril Burt, a renowned psychologist who contributed to intelligence testing, conducted twin studies suggesting strong genetic influence on intelligence. His findings influenced educational policies. However, after his death, allegations of fraud arose, questioning the validity of his work due to suspicious data.