Methods of Enquiry

Psychology studies experience, behaviour and mental processes.
But HOW do we study them ?

Why methods matter

Like all scientists, psychologists describe, predict, explain and control what they study.
They use formal, ~~systmatic~~ systematic observation to answer questions.

> Methodology makes it a science

Many questions, many tools

One method cannot answer every question about human behaviour.
So psychologists use six methods :

- Observation and Experiment.
- Correlation and Survey.
- Psychological Testing, Case Study.

This chapter covers the goals, the data, the methods, and the ethics of psychological enquiry.

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Goals of Enquiry

Enquiry has five linked goals.

1. Description

Note WHAT the behaviour is,
as accurately as possible.

2. Prediction

Say what is LIKELY to happen,
within a certain margin of error.

3. Explanation

Find WHY it happens : the causal
factors or determinants.

4. Control

Make a behaviour happen, reduce
it, or ~~increase~~ increase it (e.g. therapy).

5. Application

Use the knowledge to improve
the quality of people's lives.

Describe → Predict → Explain → Apply

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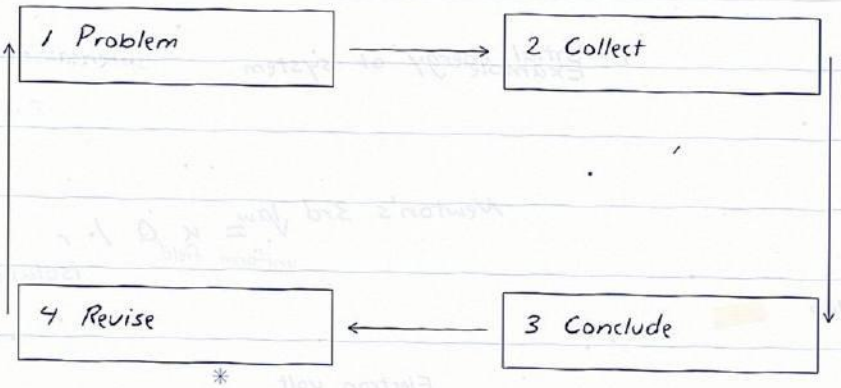
Steps of Scientific Research

Science is defined by HOW it studies : objective, systematic, and testable. It has four steps.



The four steps

1. Conceptualise a problem : pick a topic, form a hypothesis.
2. Collect data : choose people, method, tools and procedure.
3. Draw conclusions : analyse data with statistics, test it.
4. Revise conclusions : confirm or restate the hypothesis.

A ~~hypothsis~~ hypothesis is a tentative answer.

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Two Research Paradigms

There are two ways of enquiry.

Scientific (positivist)

Behaviour can be observed,
measured and controlled.
It focused only on overt behaviour
for most of the 20th century.

Interpretive

It stresses understanding over
explanation and prediction.
Human meaning-making matters.
e.g. suffering after a tsunami
cannot be measured ~~obective~~ objectively.

Studying the self

Why am I feeling sad today ?
Why can I not control my diet ?
Enquiry also aims at knowing the
self by reflecting on one's own
experiences and insights.

So both outer and inner worlds
are open to psychological study.

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Nature of Data

Data (one = datum) is the information we collect in a study.

Key features

- Data help verify or falsify ideas.
- Data are NOT independent : they sit in a context.
- Tied to the method and theory used to collect them.

We behave differently alone vs in a group, at home vs office.

Data do not speak alone

Data by itself says nothing.
We must draw ~~infrences~~ inferences from it.
The researcher gives it meaning by placing it in its context.

Crude forms of data

Data may be categories (high/low), ranks (1st, 2nd), or scores.
Also diaries, field notes, verbal reports and archival records, analysed by qualitative methods.

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Types of Data

Four broad types are collected.

1. Demographic

Personal facts : name, age, gender, education, occupation, income.

2. Physical

Ecology, housing, facilities at home and mode of transport.

3. Physiological

Body signs : height, weight, heart rate, GSR, EEG, reaction time.

4. Psychological

Intelligence, personality, interest, values, emotions, motivation and thought ~~processs~~ processes.

Remember

The method (survey, interview) and the respondents (young/old, rural/urban) both shape the quality of the data collected.

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Which Method When ?

Each method suits a purpose.

Method	Best for
Observation	Describe
Experiment	Cause-effect
Correlation	Predict
Survey	Opinions
Test	Differences

Examples

- Observe fans at a football match.
- Experiment on exam room effect.
- Correlate IQ with self-esteem.
- Survey views on privatisation.
- Case study of a child's language.

Choose the method that fits the research question. A mix of methods often gives the truest picture.

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Observational Method

A powerful tool to DESCRIBE behaviour. 'We see but do not observe.' Science is different.

Three features

- Selection : pick one behaviour, not everything you encounter.
- Recording : tallies, notes, video, photographs, short-hand symbols.
- Analysis : derive meaning from what was recorded.

A skill

A good observer knows WHAT, WHOM, WHEN and WHERE to observe, and ~~how~~ how to record it.

Merits and limits

- Merit : studies real, natural life.
- Limit : slow and labour intensive.
- Limit : open to observer's bias.

Record behaviour as it happens ; do not interpret it on the spot.

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Types of Observation

Naturalistic vs Controlled

Naturalistic : in a real setting (school, home, hospital). No control over the situation.

Controlled : in a lab, where some factors are held constant.

Participant vs Non-participant

Non-participant : watch from a distance, e.g.. a hidden camera. The ~~subjects~~ subjects may not know.

Participant : observer joins the group and builds rapport first.

Box 2.1 : Latane and Darley

1970 smoke study, Columbia.

Smoke filled a waiting room.

- Alone : 75% reported the smoke.
- In a group of three : only 38%.
- With calm actors : only 10%.

So the presence of other people lowered how often each student reported the emergency.

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Experimental Method

It establishes CAUSE and EFFECT in a controlled setting.

Cause and effect

Cause = the factor we change.

Effect = the behaviour that changes because of it.

What is a variable ?

Anything that varies and can be measured. An object is NOT a variable, but its attributes are.

e.g. a pen is not ; its ~~color~~ colour is.

Two key variables

- Independent (IV) : the cause, changed by the researcher.
- Dependent (DV) : the effect, the behaviour we measure.

IV (cause) → DV (effect)

Extraneous variables must be controlled so only the IV acts.

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Experimental & Control Groups

Experiments use two kinds of groups to compare results.

The two groups

- Experimental : gets the IV manipulation.
- Control : treated the same way but WITHOUT the manipulation.

The control group is the baseline we compare against.

In the smoke study

Room alone = control group.
Two rooms with others seated = the two experimental groups.
Control ~~group~~ group reported the most.

Random assignment

Each person has an equal chance to be put in any group.
This removes hidden differences, like all males in one group.

All other conditions stay equal.

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Controlling Variables

Relevant variables can spoil the result. Three types to control :

Three types

- Organismic : anxiety, IQ, mood.
- Situational : noise, heat, humidity.
- Sequential : fatigue, practice from doing many conditions in a row.

Control techniques

- Elimination : remove them, e.g. a sound-proof room for noise.
- Hold constant : keep them the same throughout, if not removable.
- Matching : equate groups on the relevant variable using pairs.
- Counter-balancing : swap the order of tasks (A,B then B,A).
- Random assignment : cancels out systematic group differences.

These keep the ~~expriment~~ experiment fair, so only the IV can explain the change seen in the DV.

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Field & Quasi Experiments

Field experiment

Done in a natural setting, like a school, for high generalisability.
e.g. lecture vs demonstration method of teaching.
Control is less than in a lab. It is also costly and slow.

Quasi experiment

Quasi means 'as if'. The IV is selected, NOT manipulated.
It uses naturally formed groups.
e.g. children who lost parents in an earthquake vs those who did not.

Limits of lab experiments

- Low external validity : results may not apply to real life.
- Some studies are not ethical, e.g. starving a child.
- Hard to control all variables.

A lab only ~~simulats~~ simulates the real world, so findings must be checked.

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Correlational Research

It finds the RELATIONSHIP between two variables, for prediction.
Here we do NOT manipulate ; we just see if the two covary.

Correlation coefficient

A number showing strength and direction of the link.

Range : plus 1.0 ... 0.0 ... minus 1.0

Three kinds

- Positive : X up, Y up together.
  e.g. study time and marks.
- Negative : X up, Y down.
  e.g. study hours and play hours.
- Zero : no real link (e.g. +.03).

Key point

Correlation is ~~nat~~ not the same as cause.
Two things can move together without one causing the other.
The closer to 1.0 (plus or minus), the stronger the association.

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Survey Research

It studies opinions, attitudes and social facts (the existing reality).
e.g. election voting surveys.

Techniques

- Personal interviews.
- Questionnaires.
- Telephone surveys.
- Controlled observation.

Questionnaire

Simple, cheap, self-report set of written questions. Open-ended or closed-ended. Poor ~~respons~~ response by mail.

Telephone survey

Saves time, but answers can be shallow and reluctant.

Merits and limits

- Merit : quick data from thousands.
- Limit : memory lapses, or people say what they think you want to hear.

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The Interview

Two or more people, face to face.
One asks, the other answers.
The list of questions asked is
called an interview schedule.

Two broad types

- Structured : fixed wording and order ; close-ended answers.
- Unstructured : flexible wording, order ; open-ended answers.

Who meets whom

- Individual to individual.
- Individual to group (or FGD).
- Group to individual (job panel).
- Group to group.

Merits and limits

- Merit : deep, flexible, works even with children and non-literates.
- Limit : needs time and training.

A good ~~interviewer~~ interviewer puts the person at ease and probes gently.

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Psychological Testing

A test measures individual differences. It is standardised and objective, made of items.

Three must-haves

- Reliability : same scores on retest ; test-retest, split-half.
- Validity : does it measure what it claims to measure ?
- Norms : the average standard of a group, to compare scores.

Types by language

- Verbal, non-verbal, performance.

Types by administration

- Individual test or group test.

Types by time

- Speed test : time limit, equal difficulty items.
- Power test : no time limit, rising difficulty.

Never rely on a ~~singet~~ single test alone ; combine it with background data.

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Case Study

An in-depth study of a single case, rich in information.

What is a case ?

- An individual (e.g. a patient).
- A small group (creative writers).
- An institution (a school, office).
- An event (tsunami survivors).

How it works

It uses MANY methods together : interview, observation and tests from several respondents.

Famous cases

- Freud built psychoanalysis from detailed case records.
- Piaget studied his own three children for his theory.

Caution

Hard to ~~generlise~~ generalise from one case. Validity is a challenge, so use many sources and investigators.

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Analysis of Data

After collecting, we analyse to draw conclusions. Two approaches.

Quantitative method

Turns attributes into numbers.
Close-ended items on scales, scored and totalled.

- Central tendency : mean, median, mode.
- Variability : range, SD.
- Correlation coefficients.

Qualitative method

For rich, complex experiences that numbers would lose.

- Narrative analysis (hear the story).
- Content analysis (theme categories).

Uses field notes, diaries, video.

They work together

The two are ~~oposite~~ NOT opposite ; they complement each other.
A good study often uses a mix of both to see the whole picture.

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Limits & Ethics

Limitations of enquiry

- No true zero point : no one has zero intelligence. Scores are relative, not absolute.
- Relative tools : a test made for one context may not fit another.
- Subjective qualitative data : interpretation can vary.

Ethical issues

- Voluntary participation : free to join or withdraw, no coercion.
- Informed consent : Know what will happen before it begins.
- Debriefing : explain fully after, especially if deception was used.
- Sharing results with participants.
- Confidentiality of the data source.

Ethics protect people from ~~harmm~~ harm.
Respect their privacy and choice.

Good research is careful AND
kind to the people it studies.

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Quick Revision Sheet

Goals : describe, predict, explain, control, apply.

4 steps : problem, collect, conclude, revise. Research is continuous.

Hypothesis = tentative answer.

2 paradigms : scientific + interpretive.

Data sit in a context, need inference.

Data types : demographic, physical, physiological, psychological.

6 methods : observe, experiment, correlate, survey, test, case study.

IV = cause, DV = effect.

Control group = no manipulation.

Correlation : +1.0 to -1.0 (not cause).

Test needs reliability, validity, norms.

Analysis : quantitative + qualitative.

Ethics : consent, debrief, confidential.

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Common Mistakes

~~Correlation means one causes the other~~

It only shows they move together.

~~Endependent variable is the effect~~

IV is the cause ; DV is the effect.

~~Control group gets the manipulation~~

It is the group WITHOUT the IV.

~~Zero correlation means a strong link~~

It means no real link (near 0.0).

~~Quasi experiment manipulates the IV~~

The IV is selected, not manipulated.

~~Reliability and validity are the same~~

Reliable = consistent ; valid = true.

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Memory Tricks and Exam Tips

Mnemonics

- Goals = 'D-P-E-C-A' : Describe, Predict, Explain, Control, Apply.
- Steps = 'PCCR' : Problem, Collect, Conclude, Revise.
- 'I cause, D depends' for IV and DV.
- Test = 'RVN' : Reliable, Valid, Norms.
- Correlation range = plus 1 to minus 1.

Frequently asked

- State the goals of enquiry.
- Describe the steps of research.
- How do experimental and control groups differ ? Give an example.
- Interview vs questionnaire.
- Characteristics of a standard test.
- Ethical guidelines for a researcher.

Last tip

Always give a real example for each method in the ~~anser~~ answer.

Learn the Latane-Darley study ; it fits many experiment answers.

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Key Terms

Hypothesis : a tentative answer to test.

Variable : anything that varies, measured.

IV : the cause, changed by researcher.

DV : the effect that is measured.

Control grp : group without the IV.

Correlation : link between two variables.

Reliability : consistency of test scores.

Validity : test measures what it claims.

Debriefing : explaining the study after.

Learn these terms word for word.

A clear term = a clear ~~anser~~ answer.

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