

APPSC PAPER I: GENERAL STUDIES & MENTAL ABILITY · EDUCATION (B.ED. LEVEL)

Introduction to educational psychology

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1. Psychology and educational psychology: meaning, history, scope and schools
2. Methods of educational psychology

1 Psychology and educational psychology: meaning, history, scope and schools

Psychology began as the "science of the soul" and is now the science of behaviour and mental processes; its laboratory era starts with Wundt at Leipzig in 1879, and educational psychology (Thorndike, its father) applies it to teaching and learning.

Core facts

- **Word:** from two **Greek** words, **psyche** (soul) and **logos** (study, science).
- **First use of the word "psychologia":** **Rudolf Goeckel (Goclenius), 1590**, a German philosopher (APPSC spelt him "Rudolf Geockle").
- **Changing definitions, in order:** science of the **soul** (Plato, Aristotle) → science of the **mind** (Kant, Locke) → science of **consciousness** (Wundt, William James) → science of **behaviour** (Watson, 20th century) → **behaviour and mental processes** (today).
- **Today's definition:** the **scientific study of behaviour and mental processes** of humans and animals (APPSC 2019).
- **Woodworth:** psychology first lost its soul, then its mind, then its consciousness; it still has behaviour.
- **Freud:** psychology is the study of the **unconscious mind** (APPSC 2022).
- **Watson (1913):** psychology is the **science of behaviour** (start of behaviourism).
- **Four goals of psychology:** **describe, explain, predict, control** behaviour.
- **Fechner, 1860:** "Elements of Psychophysics", the first exact measurement of mental quantities; **1860** = birth year of experimental psychology.
- **Wilhelm Wundt: first psychology laboratory, Leipzig, Germany, 1879; father of experimental psychology;** APPSC 2019 keyed him as **father of psychology**; founder of **structuralism**. APPSC prints "William Wundt".
- **William James: The Principles of Psychology (1890)**, the first full textbook (APPSC 2025: "first book of psychology" = **William James**); **father of American psychology; functionalism**; "stream of consciousness".
- **E.L. Thorndike: father of educational psychology** (APPSC 2025); book **Educational Psychology (1903)**.
- **Charles E. Skinner:** educational psychology is the branch of psychology that deals with **teaching and learning** (APPSC 2025 printed "Charles C. Skinner"). Not B.F. Skinner.
- **Crow and Crow:** educational psychology describes and explains the **learning experiences of a person from birth to old age**.
- **Educational psychology helps the teacher** understand **learners' behaviour and needs** and **individual differences** (APPSC 2022, 2025); it is concerned with the **learning process and the learning situation** (APPSC 2025).
- **It does NOT define the goals of education;** philosophy of education does (APPSC 2025 "not a function").

School	Founder / leaders	Key idea	Year / place
Structuralism	Wundt, Titchener (named it)	Break consciousness into elements by introspection	Leipzig 1879; Cornell
Functionalism	William James , Dewey, Angell, Carr	What the mind does: adaptation	USA (purely American)
Behaviourism	J.B. Watson ; later B.F. Skinner	Only observable behaviour; S-R	USA, 1913
Gestalt	Max Wertheimer , Köhler, Koffka	The whole is more than the sum of its parts	Germany, 1912
Psychoanalysis	Sigmund Freud	Unconscious motives and conflicts	Vienna, 1900
Humanistic	Abraham Maslow , Carl Rogers	Self-actualisation; the "third force"	USA, 1950s–60s
Cognitive	Piaget, Bruner; Ulric Neisser (1967)	Thinking, memory, information processing	1960s

Explained

1. How the definition changed and why.

Stage	Definition	Associated with	Why it was dropped
Ancient Greece	Science of the soul	Plato, Aristotle (De Anima)	Soul cannot be observed or defined
17th-18th c.	Science of the mind	Kant, Locke	"Mind" could not be defined or measured either
19th c.	Science of consciousness	Wundt, William James	Leaves out the subconscious and unconscious
20th c.	Science of behaviour	Watson	Leaves out inner mental processes

- **Behaviour** = every activity of an organism: **mental** (thinking, reasoning, imagining) and **bodily** (movements).
- **Stimulus** = whatever in the surroundings arouses an activity; **response** = the activity it arouses.
- **Overt** behaviour can be seen and measured; **covert** behaviour is the hidden mental activity before a response.
- Because it studies behaviour, psychology is a **behavioural science**.
- **Literal meaning**: psyche + logos = **science of the soul**. APPSC 2019 asked "the meaning of the word psychology" with no "soul" option and keyed **science of mind**: pick "mind" when "soul" is absent.

2. The four goals of psychology.

Goal	Question it answers	Classroom example
Describe	What happens?	Record how often a pupil disturbs the class
Explain	Why does it happen?	The pupil seeks attention
Predict	What will happen next?	Praise today, he will volunteer again tomorrow
Control	How can we change it?	Praise quiet work, ignore the chatter

3. Psychology and its neighbours.

- **Philosophy:** psychology grew out of it; linked to **epistemology** (nature of knowing).
- **Logic:** psychology is a **positive** science (how we actually think); logic is a **normative** science (how we ought to think). Psychology studies mental **processes**; logic studies mental **products** (concepts, judgements, inferences).
- **Sociology:** **social psychology** is the meeting ground.
- **Physiology:** psychology and physiology both left their mark; psychology broke away from **philosophy and physiology** in the last quarter of the 19th century.
- Because it applies to almost every field, one BRAOU book calls psychology the "**psychotic octopus**".
- **Classic issues: nature vs nurture** (heredity vs environment), conscious vs unconscious, observable behaviour vs inner processes, free will vs determinism, individual differences vs universal laws.

4. Branches (fields) of psychology. APPSC 2019 asked two of these.

Branch	Studies	Remember
General	Basic laws of behaviour of normal adults	The base of all others
Experimental	Behaviour under controlled laboratory conditions	Wundt, Fechner
Physiological	Bodily and brain basis of behaviour (sleep, dreams, hormones)	Biological base
Comparative	Animal behaviour compared with human	Roots in Darwin, Romanes
Developmental	Changes over the whole life span, infancy to old age	Child psychology is a part
Social	How groups and institutions influence the individual	APPSC 2019
Abnormal	Unusual behaviour and mental disorders	Causes and kinds
Clinical	Diagnose, treat and research mental disorders	APPSC 2019
Counselling	Everyday adjustment problems, not severe disorders	Schools, colleges
Educational	Behaviour of the learner in teaching and learning	Thorndike
School	Pupils with learning or behaviour problems; advise parents and staff	Works inside schools
Industrial-organisational	Workers, selection, morale, productivity	Industry

Branch	Studies	Remember
Health	Mind and physical health, stress	Hospitals
Environmental	Effect of surroundings, crowding, space	Office and city design
Consumer	Buying behaviour, advertising	Marketing
Rehabilitation	Helping people with disabilities return to normal life	Disability
Forensic	Psychology in law: fitness to stand trial, witnesses	Courts
Sports	Performance and motivation of athletes	Games
Psychometrics	Making and revising tests	Intelligence, aptitude tests
Ergonomics (human factors)	Fitting machines to people; Greek "laws of work"	Engineering link
Geropsychology	Ageing and the elderly	Old age

5. History in dates.

Year	Event
c. 400 BC	Socrates, Plato, Aristotle; Socrates' dialectic method (question and answer, deductive reasoning)
1590	Goclenius uses the word "psychologia"
1859	Darwin, "Origin of Species": evolution shapes psychology (functionalism)
1860	Fechner, "Elements of Psychophysics"
1879	Wundt's laboratory, Leipzig: psychology becomes a separate science
1890	William James, "The Principles of Psychology"
1900	Freud, "The Interpretation of Dreams"
1903	Thorndike, "Educational Psychology"
1910	"Journal of Educational Psychology" begins
1912	Wertheimer's phi phenomenon: Gestalt school
1913	Watson's behaviourist manifesto

- **Ebbinghaus:** psychology has a **long past but only a short history**.
- **Aristotle's De Anima** ("On the soul") is the oldest treatise on psychology; he also first stated the laws of **association** (contiguity).
- **Roots of the new psychology:** three philosophical trends, **critical empiricism** (Locke, Berkeley, Hume, Kant), **associationism** and **scientific materialism** (La Mettrie, "L'Homme machine": man as a machine); plus physiology, evolution, measurement and laboratories.
- **Nativism vs empiricism:** are some ideas inborn, or do all come from experience?

- After the Renaissance, science replaced **extensive inquiry** with **intensive inquiry** (study each small part in detail).
- Around **1900** the centre of psychology moved from **Europe to the USA**.

6. The schools in more detail. A **school** is a group of psychologists sharing a leader and a common view, usually formed in protest against an earlier view.

- **Structuralism (Wundt, Titchener):** the **structure** of consciousness; three elements, **sensations, images, feelings**; only method **introspection** by trained subjects; dominant about **1890-1920**; failed because introspection was subjective and the scope narrow.
- **Functionalism (William James, Dewey, Angell, Carr):** the **function** of the mind, how it helps us **adapt**; mind is a continuous **stream of consciousness**; influenced by **Darwin**; Carr added **motivation**; Dewey linked it to education.
- **Behaviourism (Watson):** rejected consciousness and introspection; studies only **observable stimulus-response** behaviour, so its followers are **S-R psychologists**; the mind is a "**black box**"; model: **Pavlov's** conditioned reflex; uses animals and measurement; Watson claimed that, given healthy infants, training alone could make any of them any kind of specialist (environment is everything); B.F. Skinner took it further (operant conditioning).
- **Gestalt (Wertheimer, Köhler, Koffka; APPSC 2019: "all of the given options"):** German word for **whole, form or pattern**; the whole is more than the sum of its parts; also called **holistic** psychology; learning by **insight**; greatest influence on **perception** and personality.
- **Psychoanalysis (Freud):** most of the mind is **unconscious**, like an **iceberg**; behaviour comes from **unconscious motives and conflicts** (APPSC 2019) and early childhood experience; methods **free association** and **dream analysis**; id, ego, superego; **neo-Freudians** who broke away: **Jung, Adler, Karen Horney**. Thinkers who spoke of the unconscious before Freud: Aquinas, Schopenhauer, Herbart.
- **Humanistic (Maslow, Rogers):** the **third force** after behaviourism and psychoanalysis; human nature is good, people have **free will**; highest need **self-actualisation** (Maslow's hierarchy of needs); Rogers: **client-centred therapy**.
- **Cognitive (Ebbinghaus, Bartlett, Piaget, Neisser):** how we perceive, remember and think; the mind compared to a **computer** (information processing).
- **Hormic (William McDougall):** behaviour is purposive, driven by **instincts**.
- **Today:** most psychologists are **eclectic** (take the best from every school). **Positive psychology** (Martin Seligman) studies strengths such as optimism.

Modern perspective	Explains behaviour through
Biological	Brain, nervous system, hormones, heredity
Psychoanalytic	Unconscious motives, early experience
Behaviouristic	Environment, reinforcement
Cognitive	Perceiving, remembering, thinking
Humanistic	Free choice, self-actualisation
Socio-cultural	Culture: West stresses individualism , East Asia interdependence

7. Educational psychology: meaning and definitions. The applied branch of psychology that studies the behaviour of the learner in relation to the **teaching–learning process**; called "**the science and technology of education**".

Author	Definition (gist)
Charles E. Skinner	Deals with teaching and learning
Crow and Crow	Learning experiences from birth to old age
Trow	Psychological aspects of educational situations
Stephen	Educational growth and development of a child
F.A. Peel	The science of education
Walter B. Kolesnik	Facts and principles of psychology that explain and improve education
Judd	Changes in individuals as they pass through stages of development
Anderson	General psychology is pure; educational psychology is its application to education
Kurt Koffka	Psychology: behaviour of living creatures in contact with the outer world

8. Nature of educational psychology (BRAOU lists six).

- A **science**: uses objective methods.
- A **natural science**: collects data and reaches conclusions like the physical and biological sciences.
- A **social science**: studies people in groups.
- A **positive** science, not a **normative** one: describes what is, does not lay down what ought to be.
- An **applied** science: applies general psychology to education.
- A **developing (growing)** science: knowledge keeps expanding with research.
- **Aims**: to **understand, predict and control** behaviour in learning situations.
- **W.A. Kelly (1941)** listed nine functions: knowing the child, the aims, scientific methods, principles of learning and teaching, measurement, growth, adjustment, emotions, training.

9. Scope of educational psychology. Five key factors: **the learner, learning experiences, the learning process, the learning situation, the teacher**. Also: growth and development, heredity and environment, individual differences, intelligence, personality, measurement and evaluation, guidance and counselling, mental health, special learners. It is **narrower** than general psychology (behaviour in educational settings only).

10. Education and psychology.

- Education (philosophy) sets the **aims**; psychology shows whether they can be reached and **how** (methods, stages, motivation).
- Its biggest discovery for schools: **individual differences**, which ended teaching all pupils in one uniform way.
- **Contributions**: a **child-centred, flexible curriculum**; play-way, project, heuristic and Montessori methods; graded textbooks; a timetable that puts **difficult subjects early**, before fatigue; discipline for problem and gifted children; new evaluation tools; helping **adjustment** and preventing maladjustment.

Innovation	Credited to
Micro-teaching	Dwight W. Allen
Programmed instruction	B.F. Skinner
Interaction analysis	Ned A. Flanders
Project method	W.H. Kilpatrick

11. Titles at a glance.

Title	Person
Father of psychology (APPSC 2019 key)	Wilhelm Wundt
Father of experimental psychology	Wilhelm Wundt
Father of American psychology	William James
Father of educational psychology	E.L. Thorndike
Father of behaviourism	J.B. Watson
Father of psychoanalysis	Sigmund Freud
Father of humanistic psychology	Abraham Maslow
Father of cognitive psychology	Ulric Neisser

12. Neurotransmitters (APPSC 2025). **Dopamine:** pleasure and reward; **serotonin:** mood and sleep; **endorphins:** relieve pain; **GABA:** calms (inhibits) nerve activity; **acetylcholine:** memory and muscle movement.

Common traps

✗ "Psychology comes from Latin words." ✓ From **Greek:** psyche + logos.

✗ "The word psychology was first used in 1879 (or 1890)." ✓ **1590**, Goclenius; 1879 is Wundt's laboratory, 1890 James's book.

✗ "Literal meaning: science of the mind." ✓ Strictly **science of the soul**; APPSC 2019 keyed "science of mind" because "soul" was not an option.

✗ "Father of psychology: Freud or William James." ✓ APPSC 2019 key: **Wundt** (Aristotle is sometimes called the classical father).

✗ "The first laboratory was in Berlin, Boston or Frankfurt." ✓ **Leipzig**, Germany.

✗ "The first book of psychology was Plato's." ✓ APPSC 2025 key: **William James** (Principles of Psychology, 1890).

✗ "Wundt is the father of educational psychology." ✓ **Thorndike**; Wundt is the father of **experimental** psychology.

✗ "The teaching-and-learning definition is B.F. Skinner's (or Kolesnik's)." ✓ **Charles E. Skinner**.

✗ "Educational psychology fixes the aims of education." ✓ **Philosophy** fixes the aims; psychology gives the means.

✗ "Clinical and counselling psychology are the same." ✓ Clinical: **disorders**; counselling: **adjustment** problems.

✗ "William James founded structuralism; Watson founded Gestalt." ✓ James: **functionalism**; Watson: **behaviourism**; Gestalt: **Wertheimer, Köhler, Koffka**.

✗ "Educational psychology is a normative science." ✓ It is a **positive** science; logic and ethics are normative.

Quick revision

- Psyche (soul) + logos (science): Greek; Goclenius, 1590.
- Soul → mind → consciousness → behaviour → behaviour and mental processes.
- Wundt: Leipzig 1879; father of (experimental) psychology; structuralism.
- James: Principles of Psychology 1890, first book; functionalism.
- Thorndike: father of educational psychology (1903).
- Charles E. Skinner: teaching and learning; Crow and Crow: birth to old age.
- Freud: unconscious; Watson 1913: behaviour; Gestalt: Wertheimer, Köhler, Koffka.
- Social psychology: influence of groups; clinical: diagnose and treat disorders.
- Scope: learner, learning experiences, process, situation, teacher.
- Educational psychology gives the means, not the aims; dopamine = pleasure and reward.

2 Methods of educational psychology

Educational psychology studies behaviour by introspection (looking within), observation (watching from outside), the experiment (the most scientific: cause and effect under control), and by survey, case study, clinical and correlation methods; research rests on a representative sample and a hypothesis that is tested.

Core facts

- **Good research is objective** (free of personal bias), **testable**, **replicable** (others get the same result) and **self-correcting**.
- **Introspection** = Latin **intro** (within) + **spection** (looking) = **self-observation**; the person reports his own mental state; subject and investigator are the **same person**. Main method of the **structuralists** (Wundt, Titchener; APPSC 2025). BRAOU and standard texts: the **oldest method**.
- **Observation** = watching and recording another person's **overt behaviour**; in APPSC's words, the learner's behaviour **seen under natural conditions by others** (APPSC 2022); best for **children**.
- **Experimental method** = observation under **controlled conditions**; finds **cause and effect**; the **most scientific** method, the one that **most advances educational psychology as a science** (APPSC 2025, asked twice); the "**cornerstone** of scientific psychology".
- **Independent variable (IV)**: what the experimenter **changes**. **Dependent variable (DV)**: what he **measures**. **Extraneous variables**: others that may affect the result and must be **controlled**.
- **Experimental group** gets the treatment; **control group** does not.
- **Intelligence and personality** = **psychological** (organismic) variables (APPSC 2022).
- **Hypothesis** = a **tentative idea (statement) to account for some facts**, to be tested (APPSC 2019).
- **Sample** = a group drawn from a **population** to estimate the population's characteristics (APPSC 2019). Results are accurate when the sample is **representative of the population** (APPSC 2019).
- **Survey**: opinions, attitudes, beliefs of **large groups**, through questionnaires and interviews.
- **Case study**: in-depth study of **one individual** (or one unit): a "**scientific biography**".
- **Clinical method: diagnosis and treatment**; **Lightner Witmer**, first psychological clinic, **University of Pennsylvania, 1896**.
- **Correlation method**: how two variables vary together, without changing either; **r** runs from **-1 to +1**; correlation does **not** prove cause.

Question	Answer
Oldest method	Introspection (standard texts); APPSC 2025 key: observation
Most scientific / advances it most as a science	Experimental
Best for small children and animals	Observation

Question	Answer
Used mainly by structuralists	Introspection
One problem child in depth	Case study
Diagnosis and treatment	Clinical
Opinions of a large population	Survey
Relation of two variables without changing them	Correlation

Explained

1. Introspection.

- **Meaning:** a person looks into his own mind and describes what he feels, thinks or perceives (Morgan: the subject describes his own mental reaction to a stimulus).
- **Views:** William James: psychologists must rely on it first and always; Stout: it shows the nature of experience and the laws of mental process; **Kant** objected that consciousness cannot be both the subject matter and the method.
- **Merits:** the **easiest** and **most economical** method; needs no apparatus or laboratory; the only direct access to one's own feelings; trained introspectors give more objective reports.
- **Limits:** **subjective**, cannot be checked by others (low reliability and validity); **not possible with children, animals, the mentally ill or the illiterate**; the mental state changes when observed (anger fades the moment we study it), so it is really **retrospection**; needs trained introspectors. **Behaviourists rejected it.**

2. Observation.

- **Meaning:** the observer watches and records another person's behaviour as it happens, assuming that **outward behaviour reflects inner states.**
- **Kinds:**

Kind	Feature
Naturalistic	Real-life setting (home, school, playground); no control
Controlled (laboratory)	Unwanted factors are controlled
Participant	Observer joins the group after building rapport
Non-participant	Observer watches from outside (one-way window, video)

- **Rules:** observe the whole situation; plan aims and recording tools; a manageable number of subjects; fixed time; a skilled observer; observe several times in different situations.
- **Tools:** checklists, **rating scales** (always, often, sometimes, rarely, never), **anecdotal records** (short factual note of a significant incident written soon after), diaries, audio and video recording.

- **Merits:** objective; natural behaviour; usable with **all ages, animals and the abnormal**; simple or advanced tools.
- **Limits:** shows only **overt** behaviour, not thoughts; **observer bias**; behaviour changes when people know they are watched; behaviour varies with time and place; observers interpret differently (define categories and record in numbers to reduce this).

3. Experimental method.

- **Meaning:** change one factor (IV) under controlled conditions and measure its effect (DV).
- **Stages (BRAOU, seven):** state the **problem** → form a **hypothesis** → make a **prediction** → **test** (experiment) → **analyse** results → **discussion** → **report** writing.
- **Hypothesis** comes from **inductive** reasoning (from facts to a general idea); a **prediction** is drawn from it by **deductive** reasoning. A good hypothesis is **tentative, simple, testable and falsifiable** (can be shown wrong).
- **Example:** does praise raise homework completion? IV = praise; DV = rate of homework completion; controlled: age, intelligence, time.
- **Kinds of variables:**

Variable	Examples
Organismic (participant)	Age, sex, intelligence, personality, mood, anxiety
Situational	Room temperature, humidity, noise, light
Sequential	Practice or fatigue across conditions
Confounding	An extraneous variable left uncontrolled

- **Operational definition:** saying exactly how a variable is measured ("sleep-deprived = under five hours of sleep").
- **Controlling extraneous variables:**

Technique	How
Elimination	Remove it (noise); simplest and most direct
Constancy	Same instructions, room, time for all
Control group (balancing)	Experimental and control groups compared
Matching / matched pairs	Pair subjects on IQ or age, then assign; most accurate but laborious
Random assignment	Every subject has an equal chance of either group
Counterbalancing	Group A does task 1 then 2; group B, 2 then 1

- **Designs:** single-group (before and after); parallel (equivalent) groups; rotation. **Field experiment** = in a real classroom; **quasi-experiment** = uses existing groups without random assignment.
- **Merits:** cause and effect; objective; replicable; precise.
- **Limits:** artificial setting; costly and slow; human behaviour hard to control; ethical limits; animal findings do not always apply to humans.

4. Research vocabulary (APPSC 2019).

Term	Meaning
Population (universe)	All the people or units under study
Sample	A part selected to estimate the population
Census	Data from every member of the population
Parameter	A value describing the whole population
Representative sample	Same proportions as the population (boys and girls, rural and urban)
Hypothesis	Tentative idea to be tested

- A sample that is very small, made of volunteers only, or from a single school is **not** representative.
- **Population survey** = census; **sample survey** = a representative part; it saves time and money but always carries some error.

5. Survey, questionnaire and interview.

- **Survey**: quick picture of the present for very large numbers; depends on the honesty and memory of respondents; **social desirability** (answering to look good) distorts it; shallow for complex behaviour; does not show cause.
- **Questionnaire**: written list answered by the respondent; **closed** (yes/no, choices) or **open**; cheap, reaches many, anonymous; needs **literate** respondents, low return; closed items are weak for feelings. **G. Stanley Hall** used questionnaires widely (child-study movement).
- **Interview**: face to face; **structured** (same questions in fixed order) or **unstructured**; works with **illiterate** people and children; slow, interviewer bias.

6. Case study and clinical method.

- **Case study**: collects everything about one person or one unit (a family, a school): family, educational, medical and social **history**, tests, observation, interviews with parents and teachers. Used most in **clinical** and life-span **developmental** psychology; good for a pupil's **adjustment and emotional problems**; **holistic**; a rich **source of hypotheses**. Limits: time, money and effort; findings **cannot be generalised**; depends on informants' memory and honesty.
- **Clinical method**: goes from diagnosis to **treatment** and follow-up; used by counsellors and clinical psychologists. **Piaget** used a **clinical interview** (flexible questions, following the child's answers).

7. Correlation method.

- **Positive**: both rise together (class attendance and marks). **Negative**: one rises as the other falls (hours of TV and marks). **Zero**: no relation.
- Useful when variables **cannot be changed** for ethical or practical reasons. Chief limit: **no proof of cause**.

8. Other methods named in textbooks.

Method	Key point
Developmental (genetic)	Longitudinal : same children over years (slow, drop-outs); cross-sectional : different ages at one time (quick)
Differential / psychometric	Standard tests of intelligence, aptitude, personality; Francis Galton pioneered mental testing
Sociometry	J.L. Moreno ; choices among group members drawn as a sociogram
Historical	Studies past records

Common traps

✗ "Observation is the oldest method." ✓ Standard texts: **introspection** (APPSC 2025 key said observation; a key doubt).

✗ "Introspection was the behaviourists' (or functionalists') method." ✓ **Structuralists**; behaviourists **rejected** it.

✗ "The dependent variable is the one the experimenter changes." ✓ He changes the **independent** variable and measures the **dependent** one.

✗ "The control group receives the treatment." ✓ The **experimental** group does.

✗ "The survey (or clinical) method is the most scientific." ✓ The **experimental** method.

✗ "A hypothesis is a proven law or a final conclusion." ✓ It is a **tentative** idea to be tested.

✗ "A small, convenient or volunteer sample gives accurate results." ✓ It must be **representative** of the population.

✗ "A census is a sample." ✓ A census covers **everyone**; a **sample** is a part.

✗ "Intelligence and personality are social or physical variables." ✓ **Psychological** variables.

✗ "Correlation proves cause." ✓ Only the **experiment** shows cause.

✗ "A questionnaire works with illiterate people." ✓ Use an **interview**.

Quick revision

- Introspection: self-observation; structuralists; oldest (standard texts); subjective.
- Observation: behaviour under natural conditions, seen by others; best for children.
- Experimental: controlled; most scientific; cause and effect.
- IV changed, DV measured, extraneous variables controlled; experimental group gets treatment.

- Intelligence and personality are psychological variables.
- Hypothesis = tentative idea; sample = part of population, must be representative.
- Case study: one individual in depth; clinical: diagnosis and treatment (Witmer, 1896).
- Survey: large groups; questionnaire needs literates; interview for illiterates.
- Correlation: -1 to $+1$, no proof of cause; sociometry: Moreno, sociogram.
- Longitudinal = same group over years; cross-sectional = many ages at once.