The Nature of Psychology

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The Nature of Psychology

- Psychology
  - Can be defined as the *scientific study* of *behavior and mental processes*
- Psychology is very *broad in its scope*
  - Topics include face recognition, social judgements, memory, obesity, violence and many more
- Psychologists may disagree
  - Research is conducted to increase our knowledge about *how people think and behave*, and different *studies* may find *different things*

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The Historical Origins of Psychology

- The roots of psychology date back to *4th & 5th centuries BC* and the *great philosophers of ancient Greece*
- Nature-nurture debate
  - One of the earliest debates focused on whether *human capabilities* are *inborn (nature)* or acquired through *experience (nurture)*
  - Most psychologists these days take an integrated approach and look at how *nature and nurture combine* to shape human psychology

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The Historical Origins of Psychology

- Scientific psychology
  - The idea that the *mind and behavior* could be the subject of scientific study developed in the late 19th Century
- Early "schools" of psychology included:
  - *Structuralism*: analysis of *mental structures*
  - *Functionalism*: study of mental adaptation
  - *Behaviorism*: *thoughts* cannot be observed, only actions
  - *Gestalt Psychology*: *experience shapes perception*
  - *Psychoanalysis*: the *unconscious shapes* the *conscious*

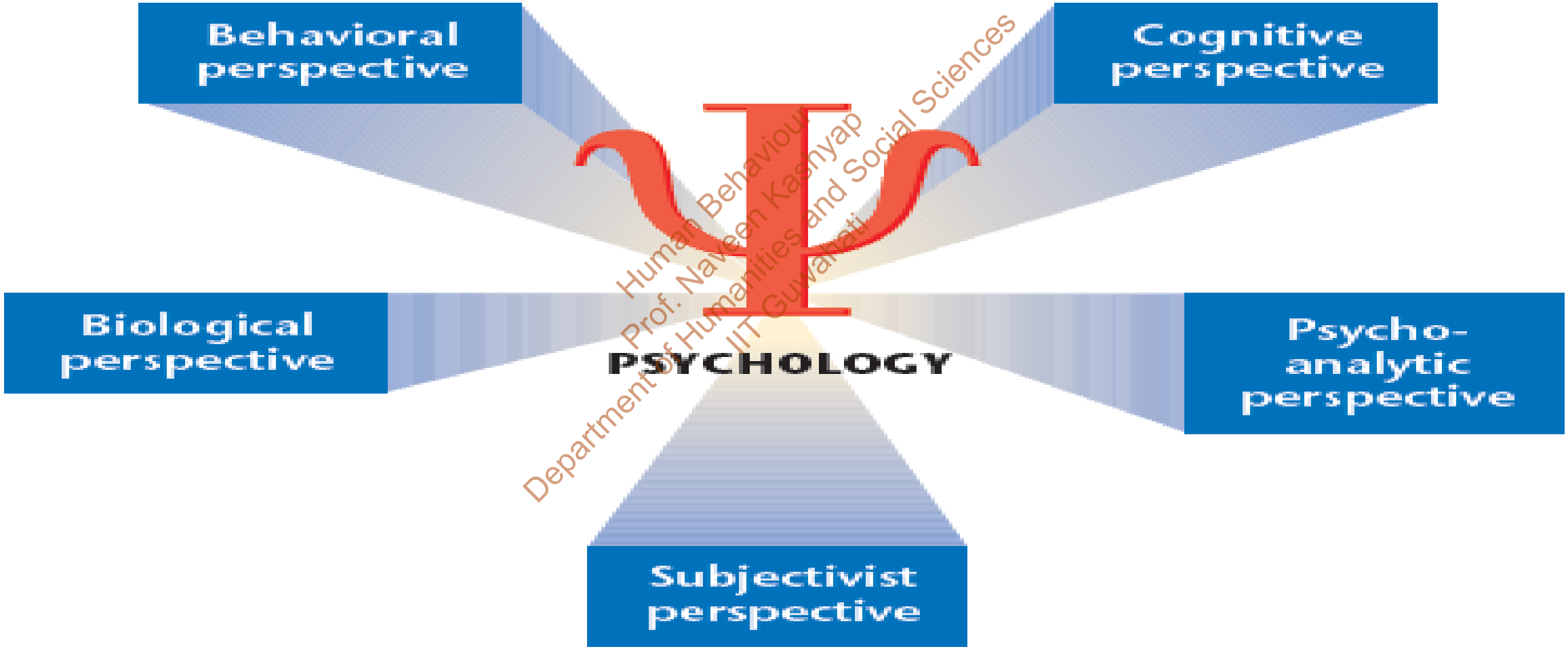
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The Historical Origins of Psychology

- Twentieth Century Developments
  - *Information-processing models*:
    study of humans as processors of information
  - *Psycholinguistics*:
    study of mental structures associated with language
  - *Neuropsychology*:
    study of relationship between neurological events and mental processes

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Contemporary Psychological Perspectives



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Contemporary Psychological Perspectives

- *Biological Perspective*
  - Seeks to understand the *relationship between behavior and neurobiological processes*
- *Behavioral Perspective*
  - Regards nearly *all behavior* as the result of *conditioning and reinforcement*

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Contemporary Psychological Perspectives

- *Cognitive Perspective*
  - Behavior understood by study of *mental processes* including perceiving, remembering, reasoning, deciding and problem solving

- *Psychoanalytic Perspective*
  - Behavior is the result of *unconscious processes*, including desires, fears and beliefs

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Contemporary Psychological Perspectives

- *Subjectivist perspective*
  - Behavior is understood in *relation to people's subjective experience* and construction of the world around them

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Relationships between psychological and biological perspectives

Biological perspective differs from these other perspectives in that its principles are partly *drawn from biology*

Contemporary Psychological Perspectives

- ...Relationships between psychological and biological perspectives
  - *Reductionism*: oversimplifying complex psycho-social phenomena, e.g., in terms of biological principles
  - *Psychological findings*, concepts and principles can direct focus of biological research
  - *Biology alone insufficient* as it acts in concert with past circumstances and current environment

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Contemporary Psychological Perspectives

- Twenty-first century psychology
  - *Cognitive neuroscience*: focuses on *understanding cognitive processes* using new techniques including neuroimaging and brain-scanning
  - *Evolutionary psychology*: studies the *biological origins of psychological mechanisms*. It also incorporates ideas from anthropology and psychiatry
  - *Cultural psychology*: studies how *culture influences mental representations* and psychological processes
  - *Positive psychology*: seeks to understand *human flourishing using empirical methods*

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How Psychological Research is Done

- **Generating hypotheses**
  - First step in research is to *decide a hypothesis* – a statement that can be tested
  - *Source for hypothesis* is often scientific theory – an inter-related set of propositions about a particular phenomenon
  - Testing hypotheses based on *competing theories* is a good way to advance scientific knowledge
  - Scientific methods are *unbiased* (do not favor either hypothesis) and *reliable* (same results would be found by research being repeated)

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How Psychological Research is Done

- **Experiments**
  - *Scientific method* where *conditions controlled* in order to discover *cause and effect relationships* between variables (variable = something measurable that can occur with different values)
  - Independent variable: *hypothesised "cause";* variable precisely controlled by experimenter (e.g., lectures)
  - Dependent variable: *hypothesised "effect";* variable influenced by independent variable (e.g., test scores)

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How Psychological Research is Done

- ...**Experiments**
  - Experimental group (hypothesized cause present) and control group (hypothesized cause absent). Control group provides baseline for comparison
  - Random assignment: allocating participants to groups so that each participant has an equal chance of being placed in any group
  - Measurement: system for assigning numbers to variables
  - Statistics: mathematical discipline that enables summarizing and interpreting results

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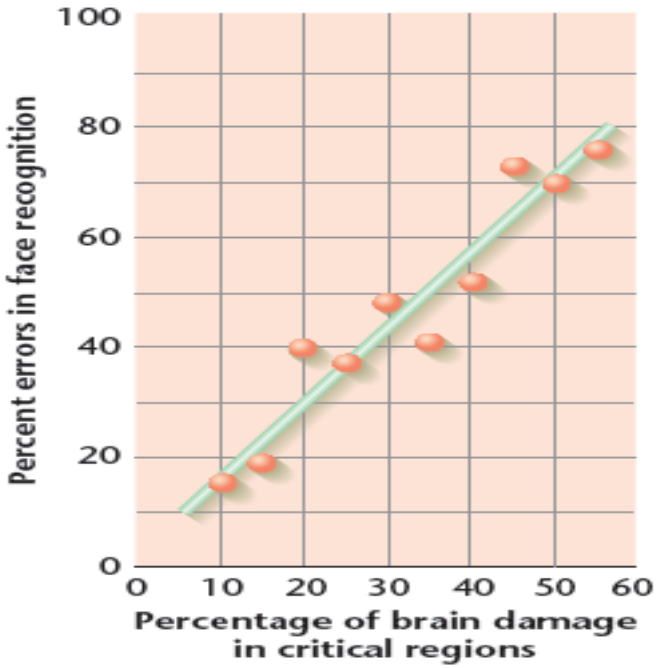
How Psychological Research is Done

- **Correlation**
  - Method used for situations where *experiments are not feasible*
  - Correlation is used to determine *whether a naturally occurring variable is associated (correlated) with another variable of interest*
  - Statistic used is correlation coefficient (symbolized by *r*), which estimates degree to which two variables are related (*between -1.00 and +1.00*)

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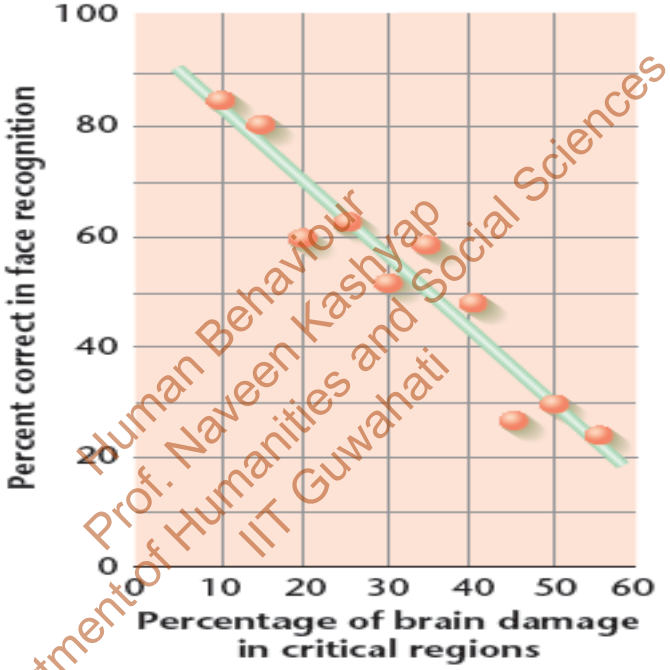
How Psychological Research is Done

a) Positive correlation



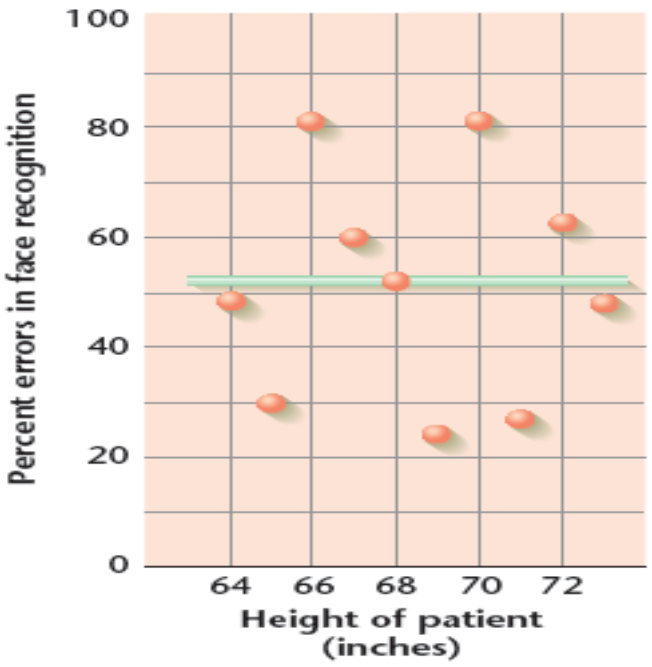
The patients are ordered along the horizontal axis with respect to the amount of brain damage, with the patient represented by the leftmost point having the least brain damage (10%) and the patient represented by the rightmost point having the most brain damage (55%). Each point on the graph represents a single patient's score on a test of face recognition. The correlation is a positive .90.

b) Negative correlation



The same data are depicted, but we now focus on the percentage of correct responses (rather than errors). Now the correlation is a negative .90.

c) Zero correlation



The patients' performance on the face recognition test is graphed as a function of their height. Now the correlation is 0.

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How Psychological Research is Done

- …**Correlation does not mean causation**
  - In experimental study an independent variable is systematically manipulated to determine its effect on a dependent variable – *we cannot infer cause-and-effect relationships from correlational studies because*:
    - It is not possible to say *which variable is independent and which variable is dependent*
    - It may be possible that *two variables can be correlated when neither is the cause of the other*

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How Psychological Research is Done

- **Observation**
  - *Direct observation*: to simply observe the phenomenon under study as it occurs naturally
    - Accuracy in recording behavior is essential to avoid bias
  - *Survey method*: where direct observation difficult, indirect observation survey methods can be used including questionnaires or interviews.
    - Survey method more open to bias, especially social desirability effects
  - *Case histories*: partial biography of a particular individual
    - Major limitation is reliance on people's memories of past events

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How Psychological Research is Done

- *Literature reviews*
  - Scholarly summary of an existing body of research on a particular topic
  - Two forms of literature review
    - *Narrative review*: authors write descriptions of studies previously conducted & discuss strengths of available evidence
      - May be systematic or non-systematic, thorough or selective
    - *Meta-analysis*: statistical techniques used to combine and interpret evidence of studies previously conducted
      - Thorough and systematic

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How Psychological Research is Done

- **Ethics of psychological research**
  - Human research ethics principles include:
    - *Minimal risk*: risks associated with the research should be no greater than those encountered in daily life
    - *Informed consent*: participants should be informed of issues that may affect willingness to take part in a study, must voluntarily participate & be able to withdraw at any time without penalty. Where it is not possible to fully inform participants they must be debriefed as soon as possible afterwards
    - *Right to privacy*: personal information must be kept confidential unless otherwise agreed by a participant's explicit consent

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How Psychological Research is Done

- ...**Ethics of psychological research**
  - Animal research ethics principles include:
    - Two main reasons why animals are used in psychological research include *understanding of animal behavior* in itself and to *gain models for human systems* which could be impossible or unethical to obtain from humans
    - Ethical principles require *thorough justification in terms of knowledge gained* to allow any harmful or painful procedures on animals
    - Researchers required to *treat animals humanely and minimise suffering*

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