

## Aristotle's 4 causes

- **-material cause:** central nervous system (biological).
- **-formal cause:** definitions of the parts of the models and descriptions of how they work together in the system. Mathematical formula approach. Psychophysics
- **-efficient cause:** (proximal cause)- the event that immediately preceded the event e.g. if I push someone and they fall over, I am the efficient cause – environmental factors, behavioural
- **-final cause** (distal)- what that system is organised to do. What is the function, the aim or purpose being served by it. Evolutionary approach

E.g. material cause of a table is wood, the efficient cause of a table is a carpenter. The formal cause is the form of an object- formal cause of wood is a tree or table. Final cause of a sailboat is sailing.

**Materialism:** imply the cause of psychological phenomena is the stuff that generates it i.e. the central nervous system. Look at aspects of biology to explain psychological states.

- Assumes measuring/manipulating CNS biology= measure/manipulating mental states. Physical disease that can be treated/cured. E.g. Paul Broca, Wilder Penfield correlated brain stimulation to behaviours/emotions/thoughts.

Problems: mind-brain dualism and the problem of agency.

- The dualism states that, while the brain and the mind are clearly connected, the two are separate entities. It is usually conceptualized as the consciousness, the "I" of a person.
- The mereological fallacy of neuroscience: "it believes, it remembers" To attribute such capacities to brains is to commit the fallacy of attributing to parts of an animal attributes that are properties of the whole being. Are we reducing a concept that is applied to a person to a particular part of a person? Brain thinks or person thinks?
- Strict material determinism- complete predictability of events and only one possible future/- If mental processes are determined only by physical aspects then do we have legal responsibility? Free will? We have no choice in our behaviour, its

just genetic/biological. Is the mind an agent that can cause change in the nervous system?

- Gustav Fechner- psychophysical approach: relationship between physical stimulus and psychological phenomena: tested mathematical relations between reality and conscious perception (of colour and light). e.g. the Weber-Fechner Law: describes the just noticeable differences between stimuli
- Student was Wilhelm Wundt. Conscious perception of the world vs physical manipulation of world.
- Edward Titchener- structuralism (the structure of the mind), wanted to determine the elements of experience and how they combine. How do you measure our perception of an intensity of light? Introspection- analysis of one's own conscious experience of stimuli (subjective).
- Watson- consciousness cannot be used in psych. How can you measure something which you cannot directly observe?  
Behaviorist, purely objective, goal is the prediction and control of behaviour

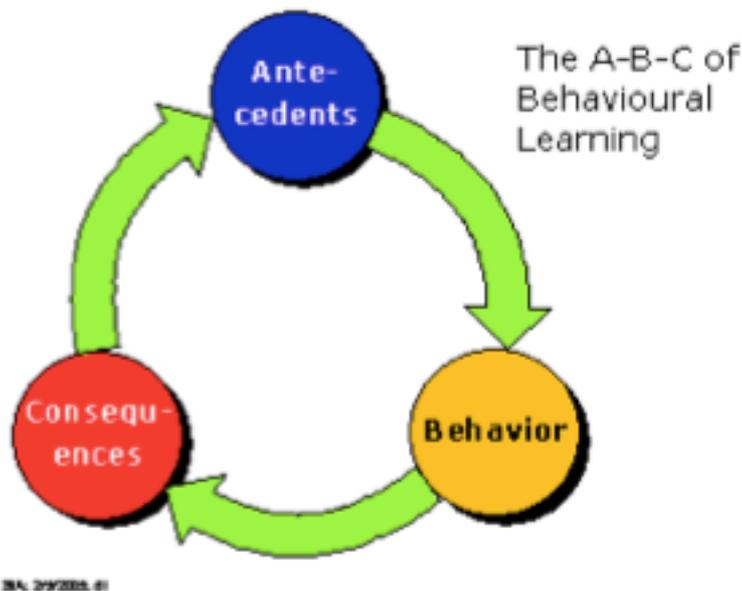
## **BEHAVIOURISM**

- Rejection of introspective methods.
- **Objectivism:** objects are real and exist independently of mind- the behaviour of an individual and the aspects of the environment that preceded the behaviour
- mental states are not objective and cannot be measured
- can only measure physical stimuli and overt behaviour of animal
- Based on experimental analysis of behaviour and behaviour modification techniques

Skinner:

Tripartite contingencies in behaviour:

- – Antecedent (Discriminative Stimulus)
- – Behaviour (Response/ Respondent/Operant)
  - Consequence (Reinforcing/Punishing Stimulus)



Operant learning calls it discriminative stimulus → response → reinforcer.

Black box psychology: ignored the organism except for the behaviour.

(ignored mental events, psychobiology, evolutionary history)

- wanted objective stance
- Theories are only needed when there is insufficient data or experimental control- given enough data we can predict exactly what a person is going to do based on how they have responded in the past
- Refusal to engage in reductionism, should be able to explain behaviour at the level of behaviour (don't need to go into the biology of it).

**Central problem of neuroscience:**

→ how does biology relate to psychological states?

-agency of behaviour, cognitions, affect/emotions, consciousness  
(linking neuroscience and psychology)

**Modern psychophysics**: investigates the relationship between physical stimuli and the sensations and perceptions they affect.

- Methodology for determining when physical stimuli are consciously perceived (detection thresholds).
- When different stimuli are consciously perceived as being different (discrimination thresholds)