# Behaviourism and Animal Psychology

Chung & Hyland (2012) *History and Philosophy of Psychology*. **Chapter 7.**

# Before behaviourism

- During the 19th century animals were studied in their own right
    - George Romanes - published *Animal Intelligence* in 1881
        - 'I thought it desirable that there should be something resembling a text-book of the facts of comparative psychology. Romanes
        - 'The archetypal purveyor of anecdotes about animals (Boakes 1984)

- Animals can't introspect

# Thorndike 1874-1949

- Poorly supported by biology departments
- Not supported at Harvard, so used James' basement as laboratory
- Due to lack of support, moved from animal psychology to educational psychology
- Published *Animal Intelligence* in 1911
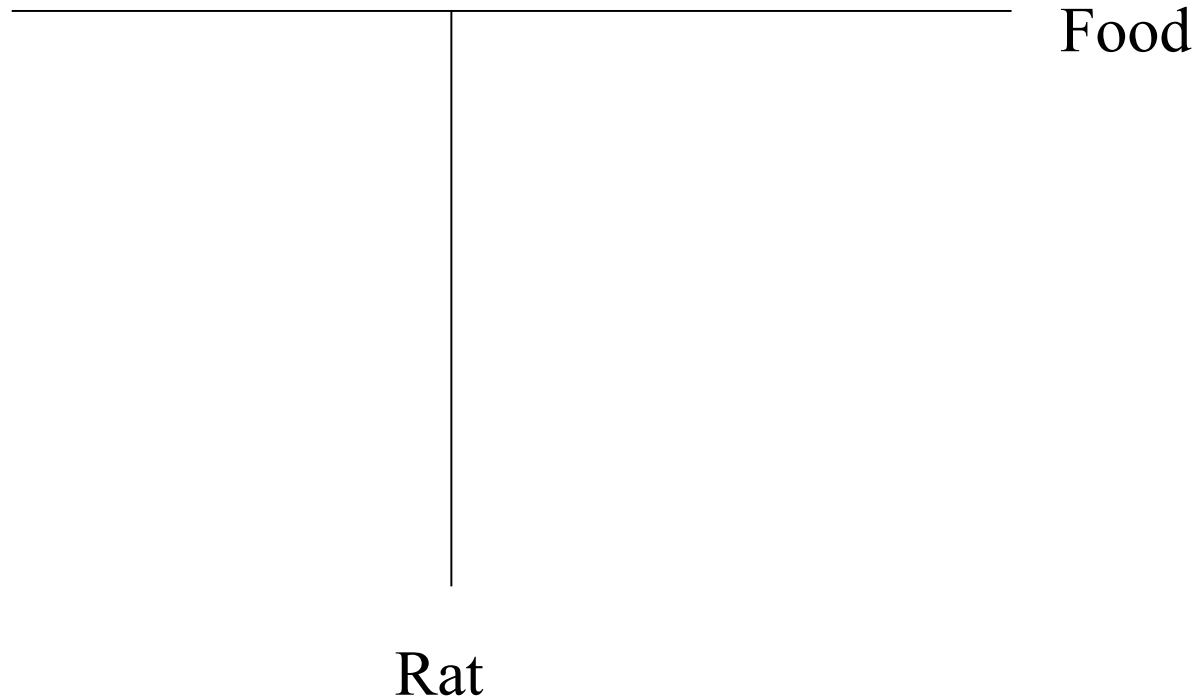- his 'few short years of animal work'

# Thorndike's law of effect

- Of several responses made to the same situation, those that are accompanied or closely followed by satisfaction to the animal will, other things being equal, be more firmly connected with the situation, so that, when it recurs, they will be more likely to recur' those which are accompanied or closely followed by discomfort to the animal will, other things being equal, have their connections with that situation weakened, so that, when it recurs, they will be less likely to recur.

# Thorndike's law of exercise

- Any response to a situation will, other things being equal, be more strongly connected with the situation in proportion to the number of times it has been connected with that situation and to the average vigor and duration of the connections.

# Reactive inhibition and the spontaneous alternation of behaviour

Food

Rat

# Pavlov  1849-1936

- Experiments on sham feeding - release of gastric juices in the stomach even though no food present
- Called these 'psychical secretions'

# Pavlov and the conditioned reflex

- An UCS (unconditioned stimulus) gives an unconditioned response (UCR)

- CS (conditioned stimulus ) paired with UCS (unconditioned stimulus)

- After a while the CS gives a CR (conditioned response

# Phenomena worked on by Pavlov

- Extinction
  - present CS without UCS

- Spontaneous recovery
  - after a rest following extinction, the is a spontaneous recovery of the CR

- higher order conditioning
  - associating the CS with some other stimulus

- experimental neurosis
  - dogs become disturbed if discrimination tasks become too difficult

# J. B. Watson 1878-1958

- Didn't enjoy introspection tasks
- Developed his manifesto for Behaviourism in Psychological Review 1913.
  - Psychology as the behaviourist views it is a purely objective experimental branch of natural science. Its theoretical goal is the prediction and control of behavior. Introspection forms no essential part of its methods, nor is the scientific value of its data dependent upon the readiness with which they lend themselves to interpretation in terms of consciousness.

# Watson's life

- "I never wanted to use human subjects.  I hated to serve as a subject…I was always uncomfortable and acted unnaturally.  With animals I was at home". 1936
- Divorced in 1920, and married his assistant, Raynor – and dismissed from the university

# Methodological behaviourism

- Believed that psychology had failed *as a science*
- introspection worthless
- behaviour can be studied in animals
- study humans like animals using only objective observation

# Main ideas of Watson's behaviourism

- Stimulis response bond

   S  ----------- R


- some innate and some learned


- Associationist - but never developed an entirely satisfactory theory of learning

# The case of little Albert

- Wanted to show that phobias were learned - in contrast to Freud (see later lecture)

- The story of little Albert (ethical?)
    - Albert - aged 11 months was afraid only of loud noises
    - white rat placed in front of Albert - when Albert reaches out loud noise
    - After 7 noise-rat presentations Albert cried at seeing rat.
    - Later reports say fear generalised to rabbit, dog, fur coat - but not cotton wool (!!)
    - Still cried 5 days later (but response needed to be 'freshened up'!)

# B.F. Skinner 1904-1990

- Radical behaviourism

- rejected 'theoretical terms because they are superfluous

    S-------O--------R

    S-----------------R

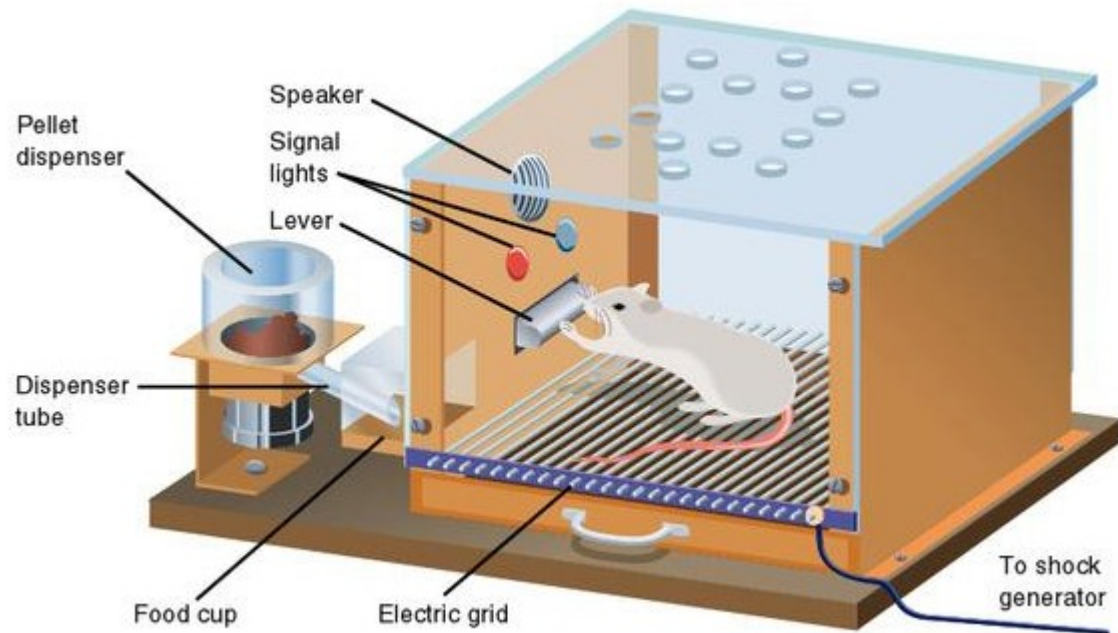# Skinner - the myth of internal causes

- People no  longer believe in demons that cause people to do things
      - but they still believe in indwelling agents that cause people to do things

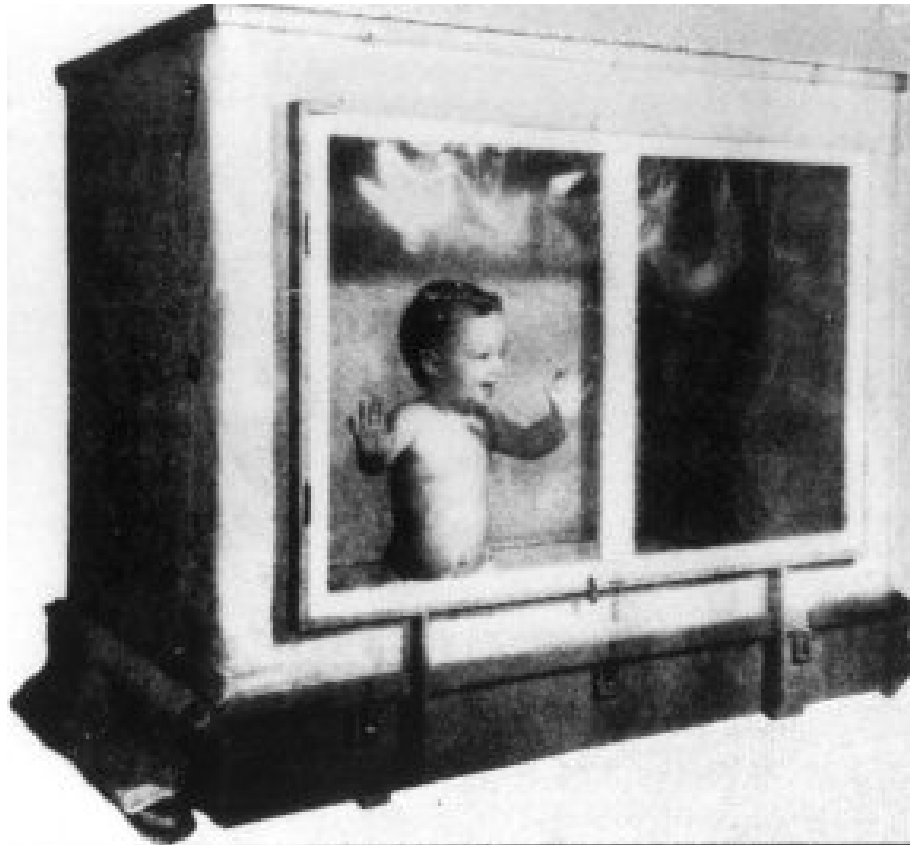- The only causes in psychology are those that are observable

# Skinner's achievements

- *The behaviour of organisms*
- Classical versus operant conditioning
- Influenced behavioural techniques of therapy

# The Skinner box

# The air-crib – baby in a box

# Skinner's achievements

- *Walden Two* (1948), *Beyond Freedom and Dignity* (1971) - Skinners writings on Utopia based on operant conditioning
  - freedom and dignity are subjective impressions that have no basis in objective reality

# Noam Chomsky

- "In a well-functioning capitalist society, everything becomes a commodity including freedom; one can have as much as one can buy, and those who can buy a lot have every reason to preserve an ample supply."

# Watson, in 1926

- Give me a dozen healthy infants, well-formed, and my own specified world to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select – a doctor, lawyer, artist, merchant-chief and, yes, even into beggarman and thief, regardless of his talents, penchants, tendencies, abilities, vocations and race of his ancestors. P 10.

# Neobehaviourism

- Unobservables are OK as long as they are objectively defined

- eg., Hull, Tolman Guthrie

S--------O-----------R

# Reasons why the neobehaviourists wanted to include theoretical terms

- Rats behave differently depending on past experiences

- e.g., depending on whether they have eaten or prior experience

- Needs to be some way of representing these prior experiences

  - How would Skinner deal with this problem?

# Clark Hull  (1884-1952)

- Sympathetic to Watson's rejection of introspection but felt that something needed to be put in its place
    - note : Hull not only developed a learning theory but was also interested in aptitude testing and hypnosis

# Hull's theory

- *Principles of behaviour* 1943
- $_SE_R = D \times H$

- $_SE_R =$ net reaction potential
- D = Drive = number of hours without food
- H = Habit = number of left/right turns in maze

# Some features of Hull's theory

- Never completed - had to add additional terms to explain how rats behaved

- theoretical terms were called intervening variables

- An attempt to make psychology a quantified science

# Intervening variables versus hypothetical constructs

- Intervening variable
  - Intelligence is what intelligence tests measure
  - Concept is defined by its measurement procedure

- Hypothetical construct
  - Intelligence tests measure intelligence
  - Concept exists independently of its measurement

  - MacCorquodale and Meehl in 1948

# Edward Tolman (1886-1959)

- Purposive behaviourism
- thought of behaviour as a molar event
  - 'a rat running in a maze … a man driving home to dinner … my friend and I telling one another our thoughts and feelings - these are behaviours as molar

  - note similarity with Gestalt - Tolman acknowledged this influence
  - Rejected Watson's atomistic approach

# Contributions of Tolman

- Demonstrated latent learning - showed that Thorndike's law of effect was not needed for learning
    - if a rat walks round a maze when not hungry, the rat learns he layout of the mze

    - Rats have a 'cognitive map' of the maze
        - note first use of the term cognitive map

# Contributions of Tolman

- Thought that behaviour was goal oriented
- Rats used cognitive map to reach their goals.

- Tolman uses hypothetical constructs rather than intervening variables
    - and so do later psychologists!

# Final thoughts about behavourism

- The last of the 'grand theories'

- Relied on animals and assumed there was 'no dividing line between man and brute'

- Continued to establish psychology as a science

- In the end, the need for theoretical terms (hypothetical constructs) was recognised