Chapter 11: Behaviorism

Megan Davis, Nicole Pelley and Stephanie Quinlan

Behaviorism (1892-1956)

- Psychology has been the study of the mind since the Greeks
  - The definition of the mind has been debated extensively
  - **20th century**: Shift from what the mind was to what it did
    - Mind causes behavior

- **New field of research**
  - Psychology was redefined with help from animal psychology
  - People started believing humans evolved from animal forms
  - Had to rethink Descartes' definition of the mind

New Directions in Animal Psychology

New Directions in Animal Psychology

Animal psychology as Romanes begun it, used 2 methods:

1. Anecdotal Method
   → Collect data
2. Method of Inference
   → Interpret data

Close examination in late 19th, early 20th century.

Anecdote → Experiment

From Anecdote to Experiment

- Experiment replaced anecdotes and informal, naturalistic experiments
- Aim of animal psychology - produce natural science and anecdote not the path to science
- Two important research programs:
  - Thorndike
  - Pavlov

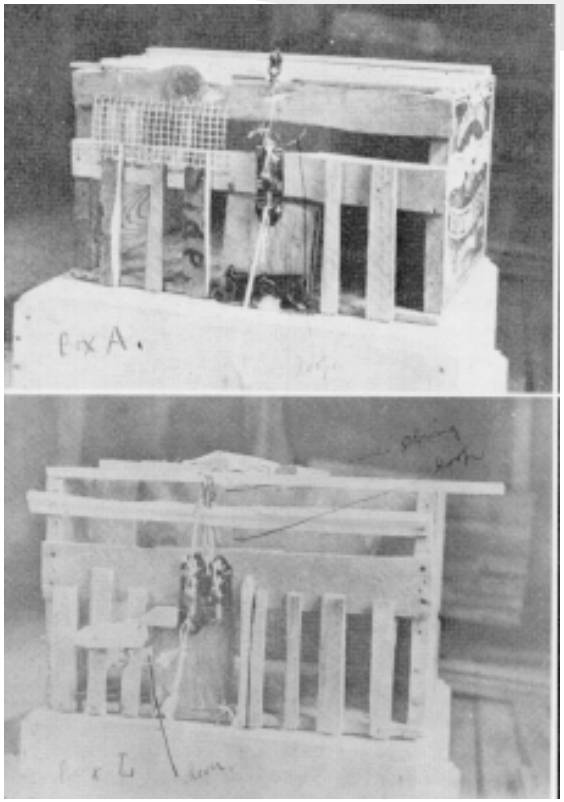
From Anecdote to Experiment

Edward Lee Thorndike (1874-1949):

- Initially wanted to study children
- Not many readily available, took up animals
- Studied with William James
- Developed "connectionism"
  - Methodological and theoretical approach to animal learning
  - Formulation of an S-R psychology he called "*connectionism*"
  - Anecdotal method overestimated animal intelligence

From Anecdote to Experiment

Thorndike's Puzzle Boxes



- Trap cat inside box
- Each box opened by cat in different way
- Rewarded with salmon for escaping
  - Ex. of **instrumental conditioning**
  - If response is rewarded, is learned
  - Not rewarded, gradually disappears

- Animals learn solely by trial and error
  - Reward and punishment
- Issues?
  - Unnatural situations - cats don't get trapped in puzzle boxes

From Anecdote to Experiment

- Thorndike argued that the **purpose of psychology should be the control of behaviour**
- Extended his objective method to humans
  - Humans learn the same way as animals
  - S-R psychology
    - Probability that S will elicit R
    - Conditioning increases probability
    - Learning is increasing S-R probabilities
    - Forgetting is lowering them

- Concluded by forecasting that psychology would become study of behaviour

From Anecdote to Experiment

Thorndike proposed two laws of human and animal behaviour

1. *The law of effect* - actions accompanied or closely followed by satisfaction to the animal will be more firmly connected with the situation, increasing behaviour

→ punishment
→ intensity

Law of effect became basic law of **instrumental conditioning**

From Anecdote to Experiment

2. *Law of exercise* - any response to a situation will be more strongly connected with the situation in proportion to the number of times it has been connected

- Exercise must be meaningful
- Practice leads to improvement only when followed by reward

Thorndike contended that these **two laws** could account for **all behaviour**

- Analyzed language set of vocal responses learned from S-R

From Anecdote to Experiment

Thorndike formulated the basic law of instrumental learning, the law of effect and the doctrine that consciousness is unnecessary for learning

- Practiced purely behavioural psychology without reference to physiology
- Proposed a principle of belongingness that violated a basic principle of conditioning

  → That those elements most closely associated in space and time will be connected in learning

From Anecdote to Experiment

- Important **new experimental approach to animal psychology**
- Grew from Russian objective psychology
  - Ivan Meikhailovitch Sechenov
    - Believed psychology could be scientific only if completely taken over by physiology and adopted physiology's objective methods
    - Dismissed introspective psychology
    - Sechenov - Reflexes of the brain
- Sechenov's objectivism was popularized by Vladimir Michailovitch Bechterev
  - Called his system reflexology
    - greatest follower - Ivan Pavlov

From Anecdote to Experiment

Ivan Petrovich Pavlov (1849-1936)

- Objective and materialistic
- He had positivists faith in objective method as the touchstone of natural science and consequently rejected reference to mind
- Pavlov rejected any appeal to an active inner-agency or mind in favour of an analysis of environment
- Possible to explain behaviour without reference to fantastic internal world
- Analysis of thinking was atomistic and reflexive

From Anecdote to Experiment

- Pavlov discovered classical conditioning and inaugurated a systematic research program to discover it mechanisms

- Observed salivation could later be elicited by stimuli present at time food was presented to an animal

- Called these learned reactions psychical secretions and later called them conditional responses

The Problem of Animal Mind

Finding a Criterion for Consciousness

- Still faced Descartes' problem: If they were going to attribute mental processes to animals, they had to come up with some criterion of the mental.

- Descartes' solution relating Christian theology: The soul thinks; so language (expression of thought) indicated theis the mental

- Comparative psychologists thought this was no longer plausible because they disposed of the soul

Robert Yerkes (1876-1956)

- The criteria of the mind can be divided into two categories

1. Structural Criteria: To have a mind= sophisticated nervous system

2. Functional Criteria: Behaviors that indicated presence of the mind

-Most investigators took learning to be the mark of the mind - functional criteria

- Search for single criterion is too simple and he proposed three grades/levels

1. Discriminative consciousness
2. Intelligent consciousness- learning
3. Rational consciousness- initiate behaviors

John B. Watson (1878-1958)

- Rejected introspection and took up animal psychology

  -Trying to find a physiological basis of learning

  -Criteria of the mental were useless in animal and human psychology.

- Starting to abandon introspection and seeing an emergence of behaviorism

Discarding Consciousness

- 1910: Movement from mentalism to behaviorism increased
- The mind is problematic and unnecessary
- The study of psychology was unclear
- Psychology needed a general shift in attitudes and methods away from philosophical ideals

Discarding Consciousness

- APA convention 1911

  -discussed the place of consciousness in psychology

Angell (1911): consciousness is at risk for extinction- psychology on the move toward the study of behavior

Dunlap (1912): Introspection is not the central method of psychology- it should be restricted to reporting internal stimuli

Frost & European Physiologists (1912): psychological concepts are “superstitions”. Mental concepts can be replaced by behavioral ones.

Discarding Consciousness

- APA convention 1912
  -Final transition of psychology
  -Introspection offers no adequate approach

- Angell: didn't want to abandon introspection completely- it retains an important role in providing data not otherwise obtainable (but still not the center focus)

- **Psychology was now the study of behavior**

The Rise of Behaviorism

The Behaviorist Manifesto

- **John Broadus Watson (1878-1958)**
  - Defined a fully behavioral approach to animal psychology by 1908
  - **"Psychology as the Behaviorist Views It"**
    - A lecture he did at Columbia University in 1913
      - Editor of *Psychological Review* encouraged him to publish his lecture
    - **1943**: Rated most important paper the *Review* had ever published

J. B. Watson, Modernism in Person

- Completed undergrad at Furman University
  - A Baptist college that turned to science

- Started graduate study at University of Chicago in 1900
  - Studied under supervision of J. R. Angell
    - Leader of psychological functionalism
    - Later became President of Yale
      - Used social science to solve social problems at Institute for Human Relations (IHR)

- Watson had a nervous breakdown and lost his faith
  - Found faith in behavioristic psychology

J. B. Watson, Modernism in Person

- **Watson's Utopia**
  - Government officials & the law replaced by behaviorists
  - Use preventive psychology to detect & treat social issues

- **B. F. Skinner**
  - Used Watson's ideas as inspiration
  - Wrote about his own state-less Utopia and deterministic view of the human condition

- Obvious that Watson was declaring a manifesto for a new kind of psychology: Behaviorism

Critique of Mentalistic Psychology

- **Watson's manifesto**
  - Rejected psychology as it was before him
  - He saw no differences between structuralism & functionalism

- Watson felt restricted by requirement to discuss subjects' minds
  - Introspection not possible in animals
  - Psychologists must "construct" animals' conscious contents
  - Traditional psychology = *anthropocentric*
  - **1908**: Study of animal behavior = independence of animal psychology

Critique of Mentalistic Psychology

- Watson ridiculed introspection on 3 grounds
  - **Empirically**
    - It didn't describe questions it could actually answer
  - **Philosophically**
    - He criticized mentalistic psychology for using introspection
  - **Practically**
    - It required animal Psychologists to find a behavioral criterion of consciousness

- Watson thought introspective psychology was not supported at all
  - Thought that psychology should discard the idea of consciousness and be defined as the science of behavior

The Behaviorist Program

- **Watson's new psychology**
  - The study of adjustive behavior, with no reference to consciousness

- Prediction of behavior could be made in terms of stimulus and response, which predict one another

- Watson wanted to find techniques to control behavior so data could be used practically in society

- **Watson's new program for behaviorism**
  - Describe, predict, & control observable behavior
    - It followed positivist traditions of Comte

The Behaviorist Program

- Watson's manifesto was not clear about the methods for achieving psychology's new goals
  - **Exception:** Behaviorists could compare humans to their work on animals

- Watson claimed that the brain is not involved in thinking
  - **Motor theory of consciousness**
    - Consciousness only records our behavior
      - Doesn't affect it
    - He claimed that thinking involved "motor habits in the larynx"

The Behaviorist Program

- **"Image and Affection in Behavior" -** 1913 (Extremely radical!)
  - Watson argued more against mental content
  - Thinking = "implicit behavior"
    - Can occur between a stimulus and the resulting "explicit behavior"
  - Hypothesized that the larynx is where most implicit behavior occurs
    - Could be observed
  - Claimed that there are only chains of behavior
    - No functional mental processes involved
  - Said we don't know anything about the cortex and those who believe in centrally initiated processes are actually believing in the soul

The Initial Response, 1913-1918

- Few responses to Watson's manifesto in 1913
  - Angell recognized it as logical development of his own views
    - Didn't agree that introspection could be removed from psychology
  - M. E. Haggerty agreed that behavior could be described in "physical terms" ⟶ Thinking doesn't need to be explained by consciousness
  - Robert Yerkes criticized the abandonment of self-observation
    - Leaves psychology as a "fragment of physiology"
  - Henry Marshall claimed that the behavioral *Zeitgeist* had value
    - But consciousness is a necessary part of psychology
  - Mary Calkins proposed her self-psychology as a mediator between behaviorism and mentalism

The Initial Response, 1913-1918

- Other responses to Watson's manifesto before WWI were similar to those before them
  - Acknowledged issues of structuralism and benefits of studying behavior
  - But introspection = *sine qua non* of psychology

- Titchner (1914) believed that without introspection, it is viewed more as biology than psychology

- McComas (1916) viewed it as natural extension of motor theory of consciousness
  - Watson's idea that thinking involved muscle movements in the larynx was wrong
  - People who lost their larynxes could still think
  - Exception to the common response to Watson's manifesto

The Initial Response, 1913-1918

- Watson became president of APA for 1916
  - In presidential address, discussed method and theory to study and explain behavior
  - **Tried** for years to show that thinking = implicit speech
  - Presented work on conditioned reflex as substance of behaviorism (apply Pavlov's method to humans too)

- Watson was a bold voice for the theory and named it *behaviorism*

- Watson's manifesto did not receive much attention
  - Older psychologists had said that psychology needed to pay attention to behavior
  - Younger psychologists had already accepted behaviorism

The Initial Response, 1913-1918

- **“Psychology as the Behaviorist Views It”**
  - Marked the point in history when behaviorism became influential and self-conscious
  - Gave the history of psychology a secure anchoring point
  - But even if Watson hadn’t become a psychologist, these things would have happened anyway

Behaviorism Defined

The First World War

- War changed psychology
- Interrupted discussion of Behaviourism
- Psychological tests used to classify soldier
    - Value of objective psychology proved

- When resumed, larger audience
- No longer questioning behaviorism's legitimacy
    - "What form should it take?"

Behaviorism Defined

Varieties of Behaviourism

Watson's views:

- Definition of psychology as the **study of stimulus and response relations**
- Hunter tried to delude the issue by defining a new science anthroponomy - the science of human behaviour
  - Never caught on
  - Psychologists redefined psychology in new behaviouristic way

Behaviorism Defined

Karl Lashley (1890-1958)

- Wrote behaviorism had become an accredited system of psychology
- Emphasis on experimental method failed to give any departure from tradition
- Clearer formulation of behaviourism was needed

→ Three forms of behaviourism had been advanced:

- First two acknowledged existence of consciousness
- Strict behaviourism (later named radical behaviourism)
  → Facts and consciousness do not exist

Behaviorism Defined

Lashley said ultimately:

- Choice between behaviourism and traditional psychology comes down to a choice between two incompatible world views
  - Scientific vs. Humanistic Study
    - Psychology must leave room for human ideals and aspirins but other sciences have escaped
    - Psychology must turn to physiology

Behaviorism Defined

Opposing Views to Lashley:

Neorealist R B Perry (1921)

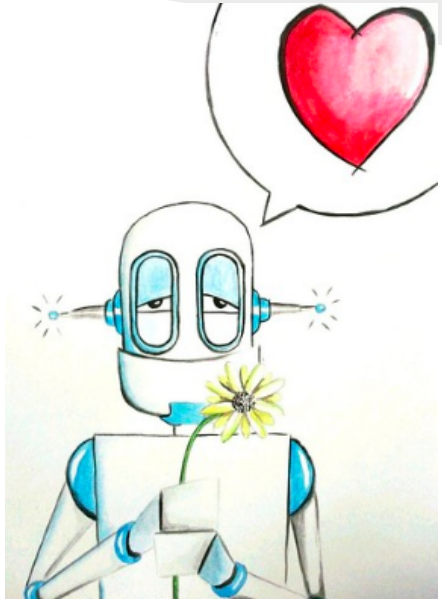
- Behaviourism not new
- Aristotelian view
    - “Mind and body are related as activity and organ”
- Adopting behaviourism did not mean denying the role mind has in behaviour

Jastrow (1927)

- Watson’s radical behaviourism not the same as moderate American behaviourism
- Mind as something that intervenes in determining behaviour
- Behaviourism was viewed in many different ways

Behaviorism Defined

Human or Robot?



- James' "automatic sweetheart"
  - Contrasting behaviourism with humanism
- Behaviourism eliminates emotion
- James - one's beloved is an automaton, and can one love a machine?
- BH Bode (1918)
  - Defending behaviourist - no meaningful difference between a human and a machine
- William McDougall (1925)
  - Claim that humans are just machines is unproven

Behaviorism Defined

The Second World War

- Development of computers
  - Posed the question: “Can machine be said to think if one can talk to it and believe one is talking to another human?”
    - Bode
      - If you cannot tell it’s a machine, then we are just machines too

Behaviorism Defined

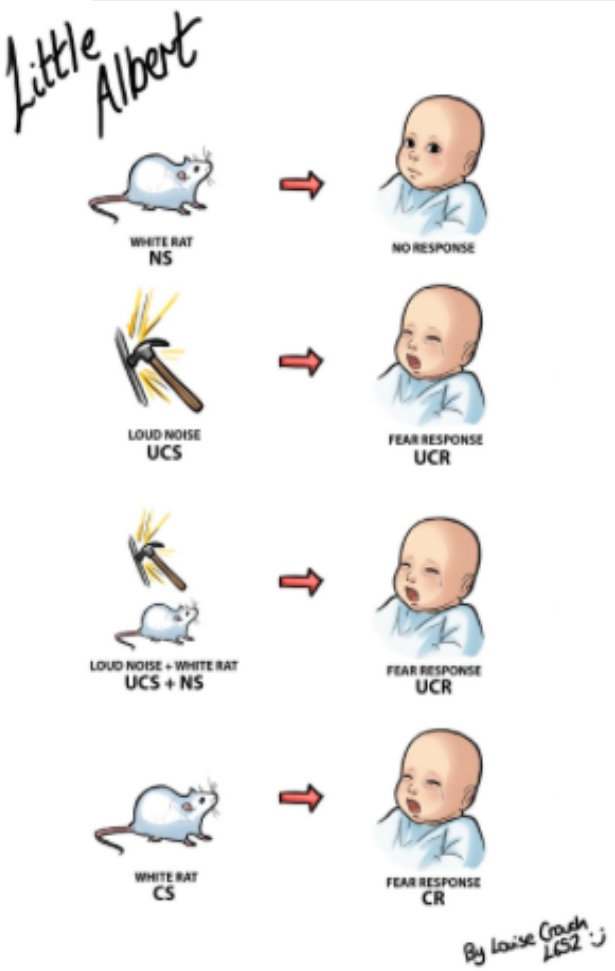
Later Watsonian Behaviourism

- Watson believed complex behaviour of adults might be explained as simply acquisition of conditioned reflexes over years of Pavlovian conditioning
- Turned to nursery to show that humans are no more than plastic material waiting to be molded by society
  - Conditioned reflex in infants
    - Infants have few - fear, rage, sexual response
    - All other emotions conditioned versions of unconditioned ones

- Humans are **blank slates**
  - No inheritance of traits of personality

Behaviorism Defined

- Little Albert
  - Conditioned emotional response
  - Conditioned fear
    - US produce loud noise metal bar struck by hammer
    - Paired noise with CS of a white rat
    - When Albert touched rat, hit hammer
  - Watson claimed rich emotional life of adult no more than many conditioned reponses



Behaviorism Defined

Watson said mentalism remained mythical

- Behaviorism substituted positivistic, scientific psychology of:
  - description, prediction and control (of behavior)

- In place of fantastic secretly religious traditional mentalistic psychology

- Rejected religion and moral control of behaviour

The Golden Age of Theory

The Golden Age of Theory

- By 1930, behaviorism was well established as the dominant viewpoint in experimental psychology.

- Theories for learning rather than perception, thinking, group dynamics etc..

- Learning: process by which humans and animals adjust to their environment

- Increasing self-consciousness of proper scientific method

  -Introspection is unscientific

  -Needed to be objective (animal study)

The beginnings of logical positivism

Psychology and the Science of Science

- By early twentieth century, emphasis on what can be directly observed, excluding science concepts such as “atom” and “electron” could not be sustained

- Positivism began to change into *logical positivism*

- Two main aspects of logical positivism:

1. Formal axiomatization of theories
2. The operational definition of theoretical terms

Operational Definitions

- The scientific language contains two things:

1. Observational terms: referring to directly observable properties in nature (red, weight, height, length)

2. Theoretical terms: : providing explanations in addition to descriptions of natural phenomena. Should be understood to consist in procedures linking it to observation terms (not religion)

-terms like ‘force’ and ‘mass’

Operational Definitions

- Make theoretical terms legitimate by tying them to observational terms.
  -Mass= object's weight at sea level

- Scientific theories consisted of theoretical axioms relating theoretical terms to one another

  -$F = M \times A$

- Theories explained because they could predict

- The laws of science were no more than summary statements of experience- If you can't be related to observation it is considered meaningless.

Logical Positivism Recipe

1. Operationally define one's theoretical terms

2. State one's theory as a set of theoretical axioms from which predictions can be drawn

3. Carry out experiments to test predictions, using operational definitions to link theory and observations

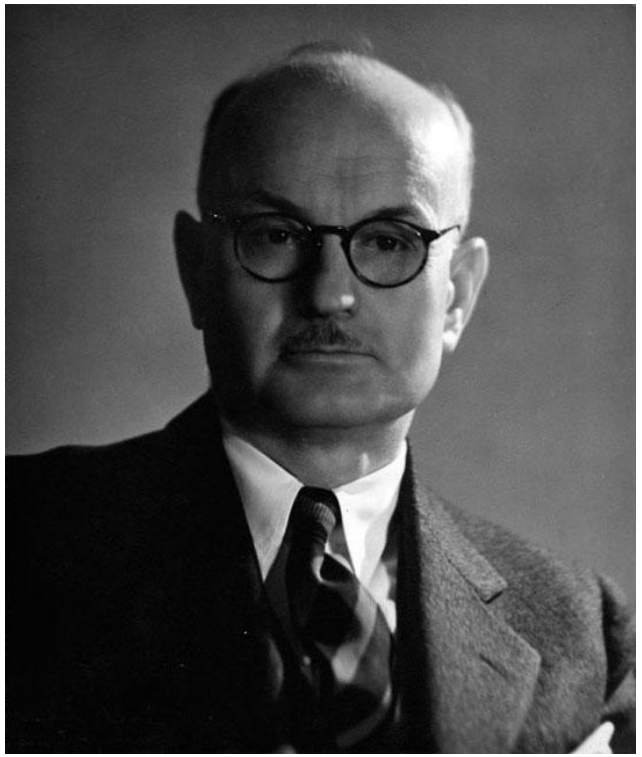
4. Revise one's theory as observations warrant

Operational Definitions

- S. S. Stevens (1939) brought the term to psychology and called it "the Science of Science"
- Its goal was to make psychology an undisputed natural science
- What cannot be defined operationally is scientifically meaningless
- Confirmed behaviorism's claim to be the only scientific psychology because it was compatible with the demand of terminology.
- Mentalistic psych is unscientific and had to be replaced by behaviorism

Edward Chace Tolman (1886-1959)

- Studied with leading philosophers and psychologists (Perry and Holt, Munsterberg and Yerkes).



- Took courses with Munsterberg:

-Noticed that his lab was objective in nature & little could be made of introspective results in experimental papers

- Read Watson's *Behaviorism* &

concluded behaviorism is the method of psychology.

-Neorealism was the foundation of his psychology

Edward Chace Tolman (1886-1959)

- Evidence supported that the mind was of two sorts:

1. Introspective awareness of consciousness
2. The apparent intelligence and purposefulness of behavior

Toleman thought that Watson's "muscle-twitchims" was too simple to account for this evidence

- Neorealism suggests there is no such thing as introspection
  - -No mental objects to observe
  - -Artificially close scrutiny of an objects in one's environment and attributes great detail

Edward Chace Tolman (1886-1959)

- Tolman's neorealism:

The Motor Theory of Consciousness: Introspection of internal states such as emotions was just the "back action" of behavior on awareness.

- His methodological behaviorism stated that awareness existed, but is not the center of study

  -Didn't deny the existence of awareness and cognition

Edward Chace Tolman (1886-1959)

- Disagreed with Watson's theory and retained purpose and cognition
  - -Objective and observable
  - -Rejected purpose resulting from behavior
  - -Purpose is an aspect of behavior (persistence toward a goal)

In summary: he excised consciousness and mind but retained purpose and cognition

- Molar behaviorism

Molar v. s. Molecular

- Molar Behaviorism

-Toleman

-Whole integrated acts

-Approach, avoidance

- Molecular Behaviorism

-Watson

-Automatic muscular response (S-R)

-Broken down into small components

Molar v.s. Molecular

Learning to withdraw finger from electrode when signal precedes shock:

- Molecular

-Learned a trained, conditioned muscular response

-hand turned over, will need to learn a new CR

- Molar

-Learned a global avoidance response of shock

-hand turned over, will generalize avoidance response

Edward Chace Tolman (1886-1959)

- Tolman's mentalistic approach:

-Thoughts can be conceived from an objective point of view

-Consciousness provides representations that guide behavior

Edward Chace Tolman (1886-1959)

- Enduring contributions of psychology:

Dependant variable: behavior

Independent variable: environmental or internal (not mental) stimuli

Intervening variable: connect the DV and IV. Provides equations for prediction.

Edward Chace Tolman (1886-1959)

- Toleman redefined his behaviorism as operational behaviorism.

-defined intervening variables operationally

-emphasized that behavior operates on its environment

- Two main principles:

1. It asserts that the ultimate interest of psychology is solely the prediction and control of behavior

2. This interest is to be achieved by functional analysis of behavior that can be objectively defined

Clark Leonard Hull's Mechanistic Behaviorism

- **Clark Leonard Hull (1884-1952)**
  - Lost religious faith as teenager and tried to find substitute faith
    - Found his faith in math & science
  - Believed cognition was mechanical and could be described and understood using math
  - Had special requirements for the career he wanted → Psychology

Clark Leonard Hull's Mechanistic Behaviorism

- Eventually his theory & research on learning helped him leave his mark
  - Used math during undergrad and doctoral dissertation to formulate various concepts
  - Then had to spend a few years doing unrelated research that began his reputation in psychology

- Originally agreed with Watson's attacks on introspection
  - But thought Watson's dogmatism may lead young people to embrace his manifesto more like a religion than science
  - Kurt Koffka convinced Hull that Watson's behaviorism needed improvement

- **1929**: Hull moved to Yale University and started a very influential career as the prominent experimental psychologist of his day

Clark Leonard Hull's Mechanistic Behaviorism

- **Hull's plan had 2 components**
  - Tried building machines that could think and learn
    - For mental phenomena & behavior
  - Extended geometric spirit of Hobbes & association of Hume
    - Around 1930, said "psychology is a true natural science"

- **Mid-1930s**: Hull became influenced by logical positivism
  - **1936:** Began pursuing formal theories alone, without the added pursuit of "psychic machines"
    - Happened while he was president of APA and described his ambitions for theoretical psychology
    - Central problem of behaviorism = accounting for mind
      - Proposed to use a scientific mechanistic approach

Clark Leonard Hull's Mechanistic Behaviorism

- Attempted to demonstrate that purposive behavior could be accounted for mechanistically
  - Formed his own version of methodological behaviorism
  - Decided that psychology could discard consciousness

- Mechanical simulation was central to Hull's thesis
  - Gone unnoticed or dismissed because he rarely mentioned his "psychic machines" after his presentation to APA

- **After 1937:** Identified his system with "logical empiricism"
  - Focused on the creation of a formal, deductive, quantitative theory of learning
  - His realism was overshadowed by his adoption of positivist language

- *Principles of Behavior* by Hull = "one of the most important books published in the twentieth century"

Tolman vs. Hull

Battling Theories

- Tolman's purposive behaviorism conflicted with Hull's mechanistic behaviorism

- **1930s & 1940s:** Intellectual "tennis match"
  - Tolman tried to show that purpose & cognition were real
  - Hull (and followers) tried to fix the theory or show that Tolman's demonstrations were weak
    - S-R view

- **In 1930, before the Hull-Tolman debates:** A simple experiment meant to support Tolman's theory
  - Figure 11-1

Battling Theories

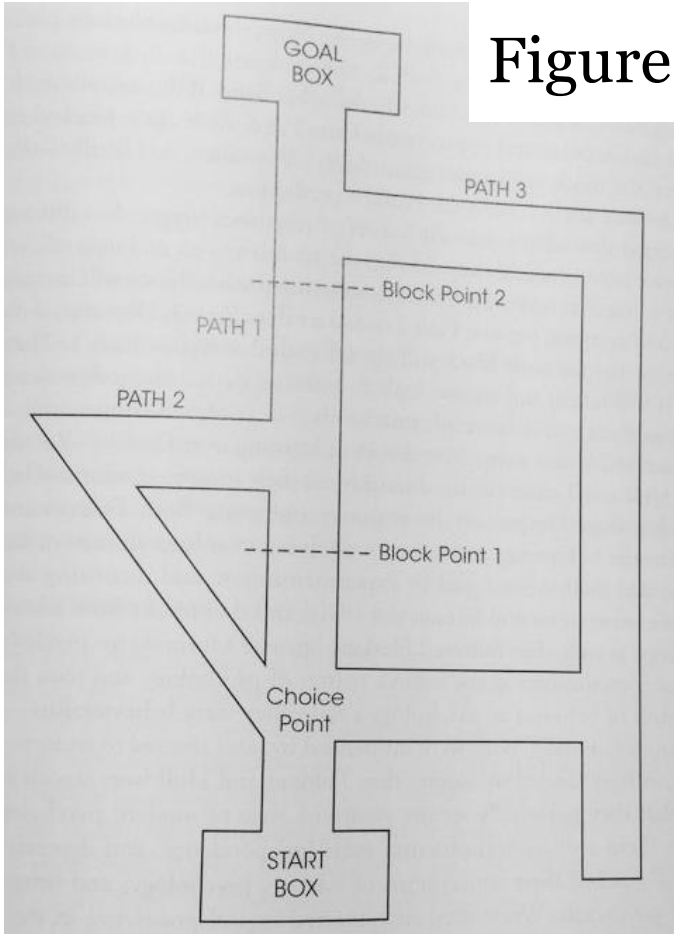
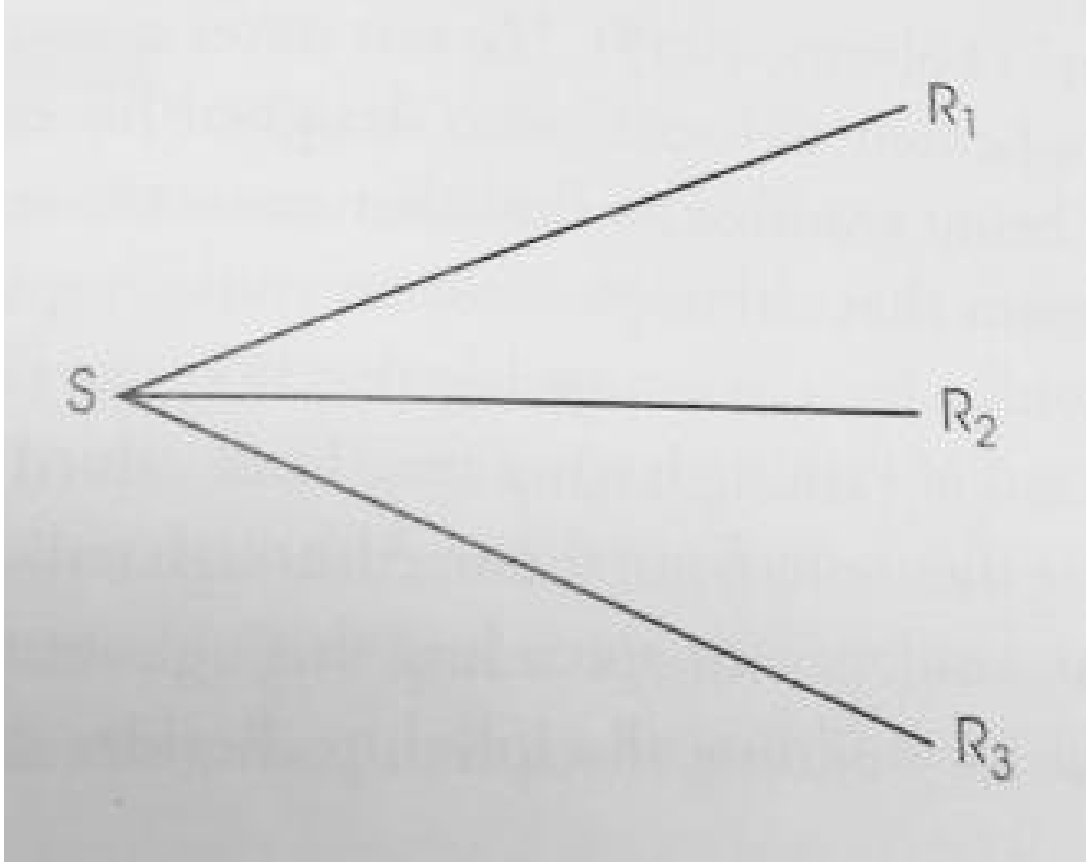


Figure 11-1

Battling Theories

Hullian Analysis



Battling Theories

- Tolman & Hull did share important goals and assumptions
  - Wanted to write scientific theories of learning & behavior for all mammals
  - Experimented on & theorized about rats to generalize to humans
    - Assumed lab results represented naturalistic behavior
  - Methodological behaviorists who rejected consciousness
    - Took the description, prediction, & control of behavior as psychology's tasks
  - Influenced by logical positivism
    - But for the most part, reached their conceptions of science, psychology, & behavior independently of it

Relative Influence

- Both Tolman & Hull were honored and influential
  - Hull was **more** influential

- Tolman took a "fun" approach to science
  - Never a systematic theorist
  - Inspired students, but couldn't teach them a systematic viewpoint → No disciples

- Hull had disciples at Yale's IRH
  - Valued long, difficult labour of constructing postulates & deriving theorems from them
  - Explicit set of ideas to teach
  - Got Kenneth Spence (1907-1967) to continue his program

Tolman vs. Hull

Hull had a greater impact on psychology than Tolman.

We're all Behaviorists Now

- **1948**: Spence observed that few psychologists considered themselves behaviorists (with the exception of Tolman)
  - *behaviorism* = vague term; took many forms
  - Behaviorism made some progress
  - Tried to create common beliefs that all behaviorists could agree on

- **B. F. Skinner**
  - **1931:** Began working out a behaviorism in similar spirit as Watson, but with new set of technical concepts
  - *Behavior of Organism* (1938) had a major influence on psychology

After the Golden Age

After the Golden Age

- Most consciously troubled area of psychology after WWII = the study of learning

- **Sigmund Koch** - 1951
  - After WWII, psychology "entered an era of total disorientation"
  - 2 causes of the "crisis" in experimental psychology:
    - Internal
    - External

After the Golden Age

- **Karl Lashley** (one of Watson's students) - 1951
  - Argued S-R chaining of complex behaviors was impossible
  - Organisms have central planning functions
    - Coordinate sets of actions as large units, not as chains
  - Argued that language is organized this way
    - Raised a problem that would increasingly cause issues for behaviorism

- **Frank Beach** (a student of animal behavior) - 1950
  - Questioned whether psychologists were interested in only one topic in only one species, or in a general science of behavior

- Problems of comparative psychology would plague the psychology of learning more and more in the 1950s & 1960s

Formal Behaviorism in Peril

- Generation of experimental psychologists coming into professional maturity after WWII
  - Raised on logical positivism and operationism
  - Many agreed with Koch that problems of the psychology of learning were not being solved

- **Dartmouth Conference on Learning Theory** - 1950
  - New generation evaluated learning theories in terms of logical positivism
  - Hull's theory (closest to positivist standards) got the worst criticism
    - Koch used positivistic criteria to show that it failed
    - It didn't progress from the formulation of 1943 to those of the early 1950s

Formal Behaviorism in Peril

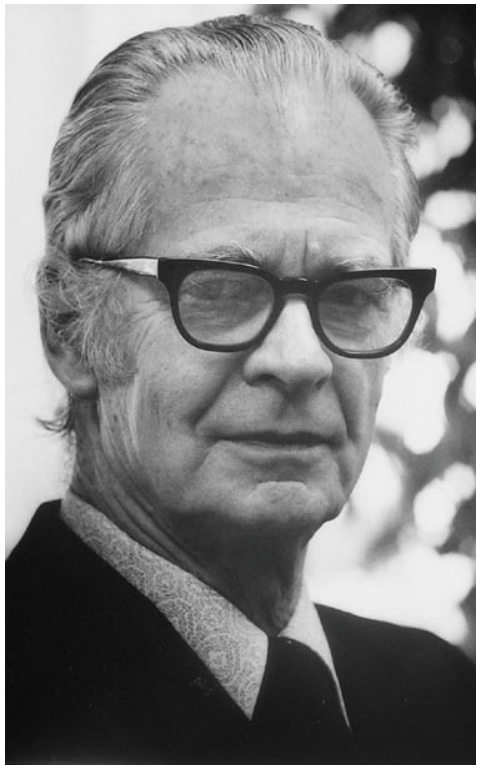
- Other theories received criticism for not meeting positivist criteria for a good theory
  - Tolman
  - B. F. Skinner
    - His brand of behaviorism did not **try** to live up to the criteria
    - Had his own standards under which his theory did well
  - Kurt Lewin
  - Edwin R. Guthrie (another behaviorist)

- Psychologists' goals needed to be changed, instead of their continued pursuit of goals set by abstract philosophy

Radical Behaviorism

Burrhus Frederick Skinner (1904-1990)

- Studied English
- Interest in Pavlov's work and Watson's behaviorism
- Turned to psychology
    - Went from internal processes to external
    - Skinner placed responsibility for behaviour only environment
    - People deserve neither praise or blame for behavior



Radical Behaviorism

Radical Behaviorism as a Philosophy

- Heart of radical behaviourism can be approached by looking at Skinner's analysis of Freud's theory in his paper
  - Freud's discovery - much of human behaviour has unconscious causes
  - Skinner says Freud's mistake inventing a mental apparatus
    - id, ego and superego

- Skinner believed the lesson taught by Freud's concept of the unconscious is that consciousness is irrelevant to behaviour

Radical Behaviorism

Skinner said:

- Mental link adds nothing to an account of behaviour
  - Complicates matters requiring mental link itself be explained
- Extended criticism of mental entities to encompass all traditional psychologies
- Believed truth to be found in observations rather than interpretations of them

Radical Behaviorism

Experimental Analysis of Behaviour

- Skinner
  - Goal of psych - locate specific determinants of specific behaviours and establish the exact nature of the relationship between antecedents influenced and subsequent behaviour
  - Best way to analyze behaviour
    - Find determinants
    - Describe relationship between influence and behaviour itself
      - Done through experimentation
        - All factors affecting behavior systematically controlled

Radical Behaviorism

Contingencies of Reinforcement

- Behavior explained when all influences are identified and controlled
  - Antecedents influence acting on behaviours
    - independent variables (IV)
  - Behaviour that is a function of them
    - dependent variables (DV)

- Organism can be thought of as a locus of variables
  - Place where IV's act together to create behaviour without any mental processes intervening

Radical Behaviorism

- Scientific explanation is nothing more than precise description of relationship between observable variables
  - Environmental variables
  - Behavioral variables

- Called this “descriptive behaviourism”

- Importance of controlling behavior, not just describe it
    - Control ultimate test of scientific adequacy
    - Prediction alone insufficient
    - May result from third variable
      e.g. child age and shoe size

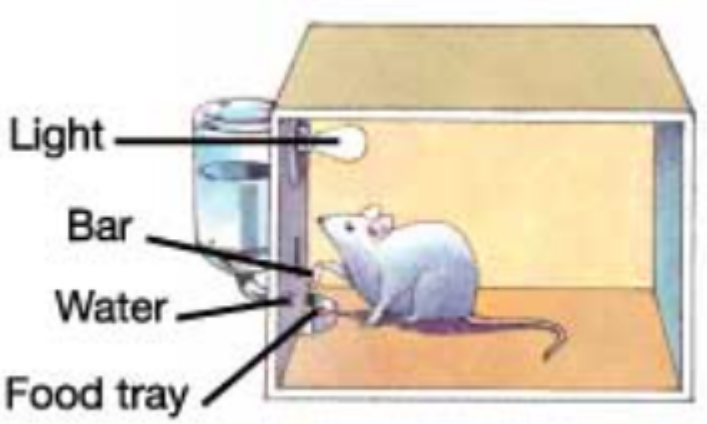
Radical Behaviorism

Skinner distinguished **two** kinds of learning:

- Respondent behaviour (Pavlov)
  - Reflex behaviour
    - Elicited by definite stimulus unconditioned or conditioned
    - Involuntary
    - E.g. Salivary response
- Operant behaviour (learning)
    - Not elicited but emitted from time to time
    - Voluntary
    - Increased occurrence by reinforcement
    - E.g. Cat puzzle box

Radical Behaviorism

- Operant responses never elicited
  - Light doesn't elicit response
  - Reinforced bar press only when light is on
  - Just sets the occasion for reinforcement
    - Light is a discriminative stimulus

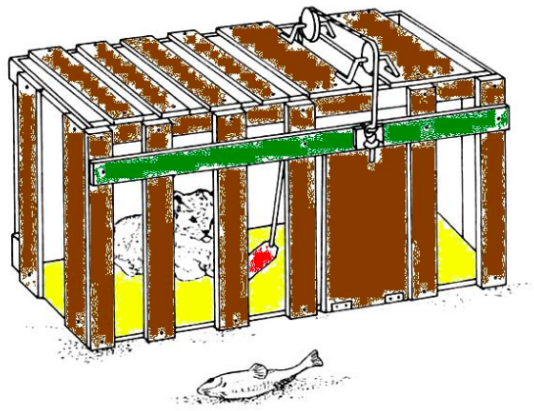


Radical Behaviorism

- Skinner not S-R but another way
  - Organisms may be affected by controlling variables not considered stimuli
  - Motivation
    - Drive-stimulus - food deprivation
    - Skinner sees no gain in drives
    - Mentalistic thinking can be eliminated by directly linking deprivation to change in behaviour
      - Deprive food, affect behavior

Radical Behaviorism

- Behaviour for Skinner was merely movement in space
  - Operant not one response
  - Class of responses
    - Puzzle box cat may press different ways
    - Each response is different at each occurrence
      - All are members of the same operant
      - Controlled by same reinforcer



Radical Behaviorism

Operant Methodology

1. Choose experimental situation that preserved fluidity of behaviour
   → Continuous, changes over time
2. Experiment exert maximum control over organism's environment
   → Manipulate or hold constant IV's and directly observe change in behavior
3. Choose a simple artificial response to study
   - Easily counted by machines
   - e.g. Rat lever pressing
4. Rate of responding as basic data of analyses
   - Measure of response probability
   - Varies with changes to IV

Radical Behaviorism

Interpreting Human Behaviour

- Extended his radical behaviourism to human behaviour
- Human behaviour as animal behaviour not significantly different from animals studied in his lab
- Same methods can be used without serious modification

Radical Behaviorism

Verbal Behaviour (1957)

- Skinner introduced number of technical concepts in discussion on verbal behaviour
  - Verbal Behaviour - behaviour who's reinforcement is mediated by other persons
  - Introduced concept of 'tact'

- Tact - A verbal operant response under stimulus control of some part of physical environment
- Correct use of tact reinforced by verbal community
  - e.g. child says "doll" when see doll, reinforce

Radical Behaviorism

- Tacting raises points about human consciousness and private stimuli
- Skinner says Hull and Tolman were wrong to exclude private events from behaviorism

- Part of each person's world is private and mental, unknown to observer
  - Mental images, pain

- Verbal statements can be under this control
  - "I have a toothache"
  - Survival value

Radical Behaviorism

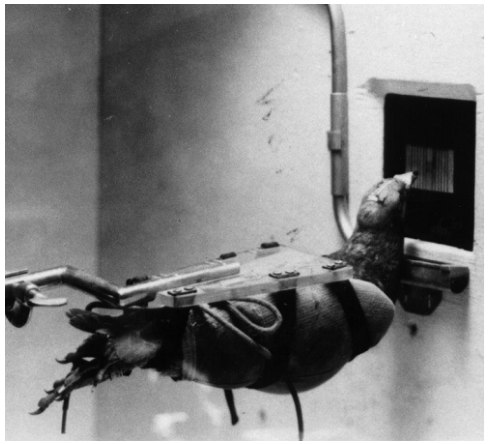
Last topic discussed in Verbal Behavior: Thinking

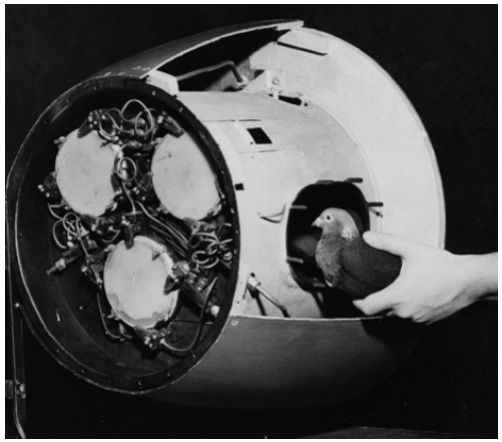
- Most mental of all human activities
- Argued thought is simply behaviour
  "I think I shall be going" translate to "I find myself going"
- Thought is a tact that we have learned to apply to certain forms of behaviour
- Skinner denied existence of mind
  - All that is left is behavior
- Thinking is behavior under control of contingencies and reinforcement

Radical Behaviorism

Scientific Construction of Culture

- WWII Skinner worked on Project OrgCon (Organic Control)
  - Behavior guidance system for air missiles
  - Trained pigeons to peck at image of target of which missile sought out
  - Pecking operated missile to reach its target until it stuck
    - Destroying target and pigeons





Radical Behaviorism

- Skinner impressed with complete control over bird's behavior
  - If pigeons' behaviour could be controlled so that the birds guide missiles to their death so can a human being
  - Military deemed implausible, no new pigeon-guided air missiles

- After WWII
  - Wrote Walden II (1948)
    - Utopian novel based on principles of experimental behaviour analysis
    - Proving ground for EBA

Radical Behaviorism

Walden II (1948)

- Wanted to be able to control human behavior in interest of society
- Utopia based on principles of Experimental Analysis of Behavior
- Could have total control of humans to cause them to be happy, productive and feel free and dignified

Behaviorism & the Human Mind: Informal Behaviorism

- Behaviorists did not continue the Watsonian tradition of rejecting all inner causes of behavior (aside from Skinner's radical behaviorism)
  - Few agreed with Skinner that organisms were "empty"
  - Knew the hazards of "junkshop psychology"
    - Mental faculties or entities multiplied as fast as the behaviors that needed to be explained
  - **Problem**: avoiding "junkshop psychology"

- Solved problem by building on Hull's *r-g-s-g mechanism* & "*pure stimulus act*"

Behaviorism & the Human Mind: Informal Behaviorism

- *r-g-s-g mechanism*
  - Hull observed that rats tend to turn into blind alleys before finding the last choice point before the goal
  - Error = make correct response too soon
    - More likely to make the error as goal was approached

- *Pure Stimulus Act*
  - Hull noted that some behaviors didn't act on the environment, but instead occurred to provide a stimulus support for another behavior
  - Such processes mediate between external stimuli and responses to them

Behaviorism & the Human Mind: Informal Behaviorism

- External stimulus elicits internal mediating response
  - This response has internal stimuli properties
  - These internal (not external) stimuli elicit overt behavior
  - S-R behavior chains could still be used to explain behavior
    - But some chains occurred invisibly inside the organism

- This language of behaviorism could be used to discuss behaviors, but seemed out of reach of radical behaviorism

- Osgood applied this approach of behaviorism to language with special reference to the problem of meaning

- Maltzman (1955) and Goss (1961) applied it to problem solving and concept formation

Behaviorism & the Human Mind: Informal Behaviorism

- **Social Learning Theory**
  - Broadest program of psychology with loosening restrictions
  - Miller & others at Hull's IRH
    - Attempted to develop a psychology that would stay within objective realm of S-R psychology while doing justice to Freud's insights into the human condition
      - Added mediation
  - Social learning theorists loosened its restrictions, but didn't abandon S-R theory

- Concept of mediation = creative response by neo-Hulllian behaviorists to the challenge of explaining human thought

Behaviorism & the Human Mind: Informal Behaviorism

- Mediationists didn't leave S-R psychology intact
  - Thought mediation occurred centrally in the brain
    - Gave up Watsonian & Hullian muscle-twitchism
  - Changes resulting from these neo-Hullians were evolutionary, not revolutionary

- Mediational behaviorism = possibly THE most theoretical position in the 1950s
  - Proved to only link inferential behavioralism of 1930s & 1940s to that of 1980s (cognitive psychology)
  - Dedication of medationalists to internalising S-R language resulted mostly from their desire to preserve theoretical exactness & avoid "junkshop psychology"
  - But the new language made it easier for mediational psychologists to adopt information processing

Philosophical Behaviorism

- Arose out of the problems with animal psychology and introspective mentalism
- Folk psychology of mind that deserves attention

Logical Behaviorism

- A semantic theory about what the mental terms mean.

- Attributing a mental state to an organism is the same as saying that the organism is disposed to behave in a certain way

  -thirst (mental state), drink water (disposition)

- When we attribute a mental statement to a person, we're really just describing his/her actual or likely behavior in a given circumstance

  -Not some inner mental state

- Possible to eliminate mentalistic concepts and replace them with concepts referring only to behavior

- Depends on beliefs

“The Concept of Mind”

- *The Concept of Mind* (Gilbert Ryle, (1949)

-Attacked Descartes’ “the dogma of the Ghost in the Machine” which defined two worlds:

1. material and including the body
2. the ghostly inner stage on which private mental events took place

- Ryle accused him of making a huge “category mistake”

-it treats the mind as if it were a distinct thing

-assumes there is a mental thing behind behavior

- There is more to the mind than descriptions of behavior

Mind as Social Construct

- Wittgenstein (1889-1951): claims there are neither mental objects or mental processes- they are expressions

- There is no uniform process

-mental processes do not consist of one thing

-behavior, mental events, and physiological processes are not the same

-notion of “family resemblance”

-there is no mental processes, they are simply human abilities

Mind as Social Construct

- There is conceptual confusion in psychology
  - -to think there are mental processes and objects when there is not
  - -to seek descriptions of these non-existent objects and processes
- There is nothing behind our acts
- Explanations need to stop somewhere
  - -we cannot scientifically explain behavior but we can understand it
- Must take into consideration Wittgenstein's concept of "form of life"
- Need to give up the "craving" for generality of natural science

Review Questions

1. Why was the mind considered a problematic concept in psychology? How was this problem resolved?

2. How did logical positivism influence individual psychologists and psychology as a whole?

3. Compare and contrast the views of Tolman and Hull.

4. How did Watson's manifesto impact behaviorism?

5. What is Radical Behaviorism? What two types of learning did Skinner distinguish?