#### Hergenhahn's An Introduction to the History of Psychology Eighth Edition

EIGHTH EDITION

HERGENHAHN'S An Introduction to the History of Psychology



Tracy B. Henley

# Chapter 13 Neobehaviorism



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#### Learning Objectives (1 of 2)

After reading and discussing Chapter 13, students should:

- Understand the ideas and concepts that preceded the development of neobehaviorism.
- Understand the characteristics of neobehaviorism.
- Be familiar with Tolman's purposive behaviorism, description, concepts, and impact.
- Be acquainted with Hull's hypothetico-deductive theory of learning and its influence on psychology.



### Learning Objectives (2 of 2)

- Be familiar with Guthrie's theoretical views on learning and psychology.
- Understand Skinner's analysis of behavior and its implication.
- State of behaviorism today.



#### Positivism

- Positivism
  - In various forms had been active for centuries
  - Argues that what constitutes appropriate data are observations that are public domain
  - Important to avoid, or at least minimize, theoretical speculation from the data.



### Logical Positivism (1 of 5)

- Logical positivism (developed by the Vienna Circle)
  - Divided science into empirical and the theoretical.
  - It wedded empiricism and rationalism.
  - Accepting theory as a part of empirical science, however, did not reduce the importance of empirical observation.
  - Abstract theoretical terms were allowed only if such terms could be logically tied to empirical observations.



#### Logical Positivism (2 of 5)

#### Operationism

- The insistence that all abstract scientific terms be operationally defined.
  - An operational definition is the defining of an abstract, theoretical concept by the procedures used to measure it.
    - Operational definitions tie theoretical terms to observable phenomena.
    - No ambiguity about the definition of the theoretical term.
- Once operationism was presented, most psychologists agreed with the logical positivists that unless a concept can be operationally defined it is scientifically meaningless.



### Logical Positivism (3 of 5)

#### Physicalism

- The desire for the unification of and a common vocabulary among the sciences including psychology.
  - One outcome of logical positivism was that all sciences were viewed as essentially the same:
    - Following the same principles, with the same assumptions and all attempting to explain empirical observations.
  - Why shouldn't they use the same terminology?



#### Logical Positivism (4 of 5)

- Characteristics
  - The combination of behaviorism and logical positivism is neobehaviorism.
  - Though there were major differences among the neo behaviorists, they all tended to agree on a few important issues.
    - If theories are used, they must be used in ways demanded by logical positivism.
    - All theoretical terms must be operationally defined.



#### Logical Positivism (5 of 5)

- Though there were major differences among the neobehaviorists, they all tended to agree on a few important issues. (continued)
  - Nonhuman animals should be used as research participants for two reasons:
    - Relevant variables are easier to control in animals than when using human subjects.
    - Perceptual and learning processes in nonhuman animals differ only in degree from those processes in humans
  - Learning processes are of prime importance because learning is the primary mechanism by which organisms adjust to a changing environment.



#### Edwin Ray Guthrie (1 of 6)

- Law of learning of contiguity
  - Stimuli which accompanies a movement will on its recurrence, tend to be followed by that movement.
  - Rejected the law of frequency (employed in various forms by most all other learning researchers), and postulated one-trial learning.
- Rejected Law of Frequency
  - The theory rejected the law of frequency (employed in various forms by most all other learning researchers) and postulated one-trial learning.



#### Edwin Ray Guthrie (2 of 6)

- Distinction between Movements and Acts
  - To explain why practice improves performance, even though one trial learning occurs, Guthrie distinguished between movements and acts.
    - Movement
      - A specific response to a configuration of stimuli in which an association is learned at full strength after one exposure.
    - Act
      - Made up of movements and a skill is made up of acts



#### Edwin Ray Guthrie (3 of 6)

- "Reinforcement" changes the stimulus situation and thus preserves the association that preceded the reinforcement condition.
  - When "reinforcement" occurs, the stimulus situation changes and thus the last response made will not be associated with other situations, and when the situation occurs again the response will occur again.



#### Edwin Ray Guthrie (4 of 6)

- Forgetting
  - Occurs in one trail due to an old S-R association being displaced by a new one.
- Breaking habits
  - Consists of observing the stimuli, which elicit the habitual behavior and performing other behavior in the presence of those stimuli.



#### Edwin Ray Guthrie (5 of 6)

- Effectiveness of Punishment
  - Determined not by the pain it causes, but by what it causes the organism to do it the presence of stimuli that elicit undesirable behavior.
  - If punishment elicits behavior incompatible with the undesirable behavior in the presence of these stimuli, it will be effective.



#### Edwin Ray Guthrie (6 of 6)

- Drives
  - Provide maintaining stimuli that keep an organism active until a goal is reached. These can be internal or external.
- Attempts made to formalize the theory and thus make it more testable
  - Virginia Voeks and William Estes



### Clark Leonard Hull (1 of 4)

- The hypothetico-deductive theory of learning of Hull
- Three important concepts include reinforcement, habit strength, reaction potential
- Influence on the amount of research it produced and methodology



#### Clark Leonard Hull (2 of 4)

- The hypothetico-deductive theory of learning of Hull
  - Used intervening variables as Tolman, but used them more extensively.
  - From summarizing the research on learning, he formed postulates from which he inferred theorems that yielded testable propositions.
    - Hull's intervening variables were primarily physiological, in contrast to the cognitive variables of Tolman.
    - His final theory had 17 postulates and 133 theorems.



### Clark Leonard Hull (3 of 4)

- Three important concepts include reinforcement, habit strength, reaction potential.
  - Reinforcement
    - A biological need creates a drive and the decreasing of the drive constitutes reinforcement thus a drive-reduction theory of reinforcement.
  - Habit strength
    - If a response leads to drive reduction, habit strength is increased. Operationally defined, habit strength is the number of reinforced pairings between an environmental situation and a response. An increase in habit strength constitutes learning.



#### Clark Leonard Hull (4 of 4)

- Reaction potential
  - The probability that a learned response will occur. It is primarily a function of the amount of drive and habit strength but is also influenced by other intervening variables.
- Influence on the amount of research it produced and methodology.
  - Though Hull's theory has essentially gone away, its great influence was the amount of research it produced as researchers devised projects to test the theory's predictions and validity.



## B. F. Skinner (1 of 8)

- Skinner's positivism
  - Essentially was from Francis Bacon and, to a lesser extent, from Ernst Mach.
    - Scientists were to collect empirical facts and then infer knowledge from those facts—not devise theories and then deduce facts from theory.
    - Science is to be descriptive and inductive rather than theoretical and deductive.



### B. F. Skinner (2 of 8)

- Functional analysis of behavior
  - An analysis of the relationships between environmental events and behavioral events.
  - Internal events have no place in such an analysis because they are events also and thus need to be explained also.
  - Internal events cannot serve as explanations or causes of behavior.



### B. F. Skinner (3 of 8)

- Operant behavior
  - Two types of behavior
    - Respondent behavior was behavior which was related to environmental stimuli, that is reflexive behavior
      - Watson and Pavlov were interested in this type of behavior.
    - Operant behavior is behavior that is influenced by its consequences and because it operates on the environment in such a way as to produce consequences he called this behavior operant behavior.



#### B. F. Skinner (4 of 8)

- Skinner's free operant methodology allows the organism to respond freely in an experimental chamber in which a particular response is reinforced based on prearranged contingencies.
- The relevant measure is usually the rate of the selected response.
- Operant conditioning takes place as the behavior of the organism is affected by its consequences.



### B. F. Skinner (5 of 8)

#### Reinforcement

- The process by which a consequence of a behavior increases the rate or probability of the behavior.
- Nothing else is necessary to define reinforcement
  - The reinforcer can be anything as long as its effect is to increase the probability of the behavior that produces the consequence.



## B. F. Skinner (6 of 8)

- Reinforcement contingencies
  - Influence which behaviors are increased and which are not.
  - Change contingencies and you can change behavior.
  - Selection of behavior by consequences
    - Darwinian ideas can be applied here
      - The organism produces a variety of behaviors
        - Some will result in consequences that will increase the behavior (will be functional, reinforcing).
        - These effective behaviors will be selected to be part of the organism's repertoire while others will not.



## B. F. Skinner (7 of 8)

- Reinforcement versus punishment
  - Reinforcement of behavior exerted a much better control over behavior than punishment of behavior.
- Skinner's position was nontheoretical
  - Operationism is important, but he rejected the theoretical aspects of logical positivism.
  - Was content to manipulate environmental events and observe the effects on behavior
    - This functional analysis is all that is necessary.
  - His approach is called descriptive behaviorism.



### B. F. Skinner (8 of 8)

- Applications
  - Education
    - Criticized use of punishment rather than the manipulation of reinforcement contingencies
  - Behavior therapy
    - Treatment is a matter of removing reinforcers of abnormal behavior and arranging reinforcement contingencies so that they strengthen desirable behavior.
    - Token economies



#### Edward Chase Tolman (1 of 5)

- Studied purposive and molar behavior
  - Studied purposive behavior in contrast to the molecular behavior that he saw Watson studying.
  - At Harvard, Tolman learned to study purposive aspects of behavior without sacrificing scientific objectivity.
  - Done by seeing purpose in the behavior itself rather than inferring purpose from the behavior.



#### Edward Chase Tolman (2 of 5)

- Rats used to avoid introspection
  - Tolman saw the use of rats as experimental subjects as a way of guarding against even the possibility of indirect introspection that could occur if humans were used as experimental participants.



#### Edward Chase Tolman (3 of 5)

- Intervening variables
  - Variables that intervene between environmental events and behavior.
  - Employing logical positivism, he tied all intervening variables to observable behavior
    - He operationally defined all the theoretical terms.
  - Tolman's intervening variables were cognitive processes, which are influential in determining behavior.
    - Hypotheses, expectations, beliefs, and (sometimes) a cognitive map.



#### Edward Chase Tolman (4 of 5)

- Tolman disagreed with Watson and Thorndike's explanations of learning.
  - He believed that learning occurs constantly with or without reinforcement and with or without motivation.
- Distinction between learning and performance.
  - Learning takes place constantly as the organism interacts with its environment.
    - Whether the organism uses what it has learned is determined by its motivational state, in other words, whether the organism performs the learned behavior is based on whether it is motivated to do so.



#### Edward Chase Tolman (5 of 5)

- Performance is the translation of learning into behavior.
  - Latent Learning
    - Tolman and Honzik (1930) showed that learning remained latent until the organism had a reason to use it, which was an incentive.



#### **Behaviorism Today**

- Skinner remains the most influential of all the behaviorists
  - Skinner remains the most influential of all the behaviorists, which have been discussed.
- Behaviorism and neobehaviorism have lost influence today
  - Evidence of genetic influence on behavior
  - Criticism of logical positivism
- Major legacy of behaviorism:
  - Psychologists generally now agree that the subject matter of psychology is overt behavior

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