Behaviorism & Learning

I. Classical Conditioning
A. Ivan Pavlov
B. Unconditioned stimulus (UCS)
C. Unconditioned Response (UCR)
D. Conditioned Stimulus (CS)
E. Conditioned Response (CR)
F. Major conditioning processes
   - Acquisition
   - Extinction
   - Spontaneous recovery
   - Generalization
   - Discrimination
G. John Watson and 'Little Albert'
H. Practical Applications

II. Operant Conditioning
A. Edward Thorndike
B. Operant behavior; operant conditioning
C. B.F. Skinner; the Skinner box
D. Shaping
E. Principles of Reinforcement
F. Reinforcement Schedules
G. Punishment
H. Practical Applications

III. Problems with the Behaviorist Account

IV. The Cognitive Perspective

Ivan Pavlov's Neutral and Unconditioned Stimuli/Responses

Acquisition of a Conditioned Response
The Conditioned Stimulus/Response

Classical Conditioning Terminology

- Unconditioned stimulus (UCS) = food
- Unconditioned Response (UCR) = salivation
- Conditioned Stimulus (CS) = tone
- Conditioned Response (CR) = salivation

5 Major Conditioning Processes

- Acquisition
- Extinction
- Spontaneous Recovery
- Generalization
- Discrimination
Some Important Points about the “Little Albert” Study

• The “Little Albert” study is presented in your text in much the same way as most other texts and it is wrong.
• Watson and Rayner had to “refresh” the rat’s fear halfway through the study, meaning that the fear didn’t last on its own.
• Albert did not generalize his fear to most white things. Just a few.
• We now know that human emotions usually develop slowly over many experiences.
• Innate predispositions and individual differences are very important to the development of emotional responses.
• Humans DO have conditioned responses, though, so the inclusion of this study in your text serves well to make that point.

Behaviorism allowed psychology to become a science:

• Able to control variables
• Able to objectively measure responses
• Only overt behavior acceptable as data
• Departure from mentalism and introspection
Practical Applications of Classical Conditioning

- Drug addiction treatment
- Treatment of phobias
- Bed wetting

Operant Conditioning

- Edward Thorndike: “What about more complicated behaviors?”
- Thorndike’s Law of Effect:
  “Of several responses made to the same situation, those which 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.”

In Plain English: If a behavior has a positive outcome we’ll do it again.
Operant Conditioning Terminology

- Reinforcer
- Operant behavior
- Operant conditioning

B.F. Skinner

Shaping:
Rewarding successive approximations to the desired behavior.

The Skinner Box

Principles of Reinforcement

- Premack's Principle: any activity can be reinforced by a more preferred activity
- Positive Reinforcers
- Negative Reinforcers (*DIFFERENT FROM PUNISHMENT)
- Primary Reinforcers
- Secondary Reinforcers
Comparing Positive vs. Negative Reinforcers

<table>
<thead>
<tr>
<th>Process</th>
<th>Operant</th>
<th>Consequence</th>
<th>Effect on Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive reinforcement</td>
<td>Studying to make dean's list</td>
<td>Make dean's list</td>
<td>Increase studying in the future</td>
</tr>
<tr>
<td>Negative reinforcement</td>
<td>Studying to avoid losing academic scholarship</td>
<td>Avoid loss of academic scholarship</td>
<td>Increase studying in the future</td>
</tr>
</tbody>
</table>

Reinforcement Schedules

- Continuous
- Partial or Intermittent
  - Fixed ratio (e.g., every 5 responses)
  - Variable ratio (e.g., after 5 responses, then 3, then 9, etc.)
  - Fixed interval (e.g., every 7 minutes)
  - Variable interval (e.g., after 4 minutes, then 9, then 2, etc.)

Punishment

- Reduces a behavior
- Less effective in changing behavior than reinforcement
- Works best immediately following a behavior
- Ineffective if no alternative behavior is perceived as possible
Comparing Punishment vs. Negative Reinforcement

<table>
<thead>
<tr>
<th>Process</th>
<th>Operant</th>
<th>Consequence</th>
<th>Effect on Behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Punishment</td>
<td>Using radar detector</td>
<td>Receive speeding ticket and fine for illegal use of radar detector</td>
<td>Decrease use of radar detector in the future</td>
</tr>
<tr>
<td>Negative reinforcement</td>
<td>Using radar detector</td>
<td>Avoid speeding ticket and fine</td>
<td>Increase use of radar detector in the future</td>
</tr>
</tbody>
</table>

Applications of Operant Conditioning

- Students get gold stars for a job well done
- Kids get allowance for chores
- Workers get awards for good attendance records
- Bonuses at work for good performance
- Tax credits for charitable donations

Problems with the Behaviorist Approach to Psychology

- Animals on a fixed interval schedule respond more frequently as time approaches for reinforcement. It is as if they are "expecting" something. Expectation is a mental event.
- Latent learning
- The overjustification effect
- Social learning
Tolman’s Demonstration of Latent Learning

Bandura’s Studies of Social Learning

Behaviorist Approach
Stimulus --------> Response

Information Processing Approach
Stimulus  ----> Mind  ----> Response
<table>
<thead>
<tr>
<th>The Information Processing Approach to Psychology</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Accepts the existence of the mind and the importance of mental activity</td>
</tr>
<tr>
<td>• Uses the computer as a metaphor for the mind</td>
</tr>
<tr>
<td>• Goal is to identify and understand the steps taken to accomplish a behavior (e.g., remembering, problem solving, decision making)</td>
</tr>
</tbody>
</table>