Basic Forms of Learning

- Learning – a relatively enduring change in behavior as a result of previous experience
- The most basic forms of learning occur automatically, subconsciously – without any particular effort on our part.
- 2 forms of basic learning or “conditioning” involve learning associations between environmental events or stimuli and our behavioral responses

Classical Conditioning

- We automatically learn what stimuli are associated with situations that trigger a reflexive bodily or emotional response. Those stimuli, because of learning, can come to trigger a similar body or emotion response.
- Classical conditioning is useful because learning to predict what’s coming allows the body to get ready ahead of time.

Evidence of Learning

- After repeated pairings, Bell Ringing (on its own) produced salivation.
- That response (e.g. salivating to the sound of a bell) would never occur if learning had not taken place. It is a “conditioned” (learned) response” (CR).
Example: Emotional & Sexual Responses

Remember:
- Classical conditioning always begins with a stimulus (US) that triggers an unavoidable reflexive or emotional response of the body (UR)
- Neutral stimuli that regularly precede or accompany the US register in memory
- Then those stimuli become CS for a learned response (CR) similar to original UR.

Another example....

John B. Watson
- And the tale of Little Albert
- Initially all sorts of stimuli presented to Albert seemed to be “neutral” stimuli, not triggering a response.
- Paired with US of a very loud noise → previously neutral stimuli come to trigger fear
- Now the stimuli are CS → CR
  - [Link](http://www.youtube.com/watch?v=HZP XVbOv3Hc)
  
  Note: Noise in video is not the actual loud sound

Examples
- [Link](https://www.youtube.com/watch?v=iohtVbu23qA)
- (see next slide)
Watson realized the "power of pairing"

(That our brain registers things that occur together and these learned associations can change our future behavior)

When he got fired from his university position, he then applied classical conditioning to marketing and advertising and was highly successful.

Much of advertising is based on trying to build an association between a product and a UCS that naturally triggers a positive body response and attraction.

Classical Conditioning of Worms

- Presenting neutral smell along with noxious chemical → learned retraction

Classical Conditioning of Bees

- Presenting a neutral smell with sucrose → learned extension of proboscis to smell alone

Thorndike’s “Instrumental Conditioning” and B. F. Skinner’s “Operant Conditioning”

We automatically learn the association between behavior & the consequences that follow the behavior. That learning influences the future likelihood of the behavior.
Behavior is Controlled by
2 Types of Consequences:
• Reinforcement: a consequence that increases the likelihood of the behavior it follows
• Punishment: a consequence that decreases the likelihood of the behavior it follows

• A consequence is defined by its effect on behavior. Let’s watch Skinner using reinforcement to change behavior
  http://www.youtube.com/watch?v=TtfOlkGwE2U

2 Kinds of Reinforcement

<table>
<thead>
<tr>
<th>Process</th>
<th>Behavior</th>
<th>Consequence</th>
<th>Effect on behavior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive reinforcement</td>
<td>Response Press lever</td>
<td>Rewarding stimulus presented</td>
<td>Tendency to press lever increases</td>
</tr>
<tr>
<td>Negative reinforcement</td>
<td>Response Press lever</td>
<td>Aversive stimulus removed</td>
<td>Tendency to press lever increases</td>
</tr>
</tbody>
</table>

2 Kinds of Punishment

• Positive (+) Punishment – Behavior is followed by the presenting (or adding) of something bad
• Example – child cussing → spanking presented
  Child cusses less in future.

Negative (-) Punishment - Behavior is followed by the taking away of something good
Example – Teen misses their curfew → parents take away driving privileges
Teen is late less often in the future.

Types of Consequences

<table>
<thead>
<tr>
<th>Behavior Increases</th>
<th>Positive Reinforcement (add (+) something good)</th>
<th>Negative Reinforcement (take away (-) something good)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stimulus Added +</td>
<td>Stimulus Taken Away -</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavior Decreases</th>
<th>Positive Punishment (take away (-) something bad)</th>
<th>Negative Punishment (add (+) something good)</th>
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<tr>
<td>Stimulus Added +</td>
<td>Stimulus Taken Away -</td>
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</table>
“Schedule” of reinforcement

- The schedule refers to the details concerning what behavior has to occur before the consequence is delivered

One Possibility: “Continuous Reinforcement”

- Every correct response is followed by the reinforcing consequence
- Continuous reinforcement is often used early in the training of a response.
  - Not ideal in the long run
    - Consequence may lose its value
    - Not typical in the real world

Partial Reinforcement or Intermittent Reinforcement

- Every correct response is NOT followed by the reinforcing consequence; reinforcement occurs only some of the time, according to some “schedule” or “contingency”
- Different schedules of reinforcement generate different patterns of behavior.

Common Schedules of Rf

<table>
<thead>
<tr>
<th>Type</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed ratio (FR)</td>
<td>Reinforcement depends on a definite number of responses</td>
</tr>
<tr>
<td>Variable ratio (VR)</td>
<td>Number of responses needed for reinforcement</td>
</tr>
<tr>
<td>Fixed interval (FI)</td>
<td>Reinforcement depend on a fixed time</td>
</tr>
<tr>
<td>Variable interval (VI)</td>
<td>Time between reinforcement varies</td>
</tr>
</tbody>
</table>

Partial Reinforcement or Intermittent Reinforcement

- Partial reinforcement more similar to real life.
- Behaviors reinforced on a schedule of partial reinforcement are more resistant to extinction.
  (individual is used to not getting reinforcement all the time so are more likely to persist longer when not receiving reinforcement)
Shaping a Behavior

- Reinforcing successive approximations that get closer and closer to the desired behavior
- Skinner shaping turning behavior in a pigeon
- Operant conditioning is used by all animal trainers
  - http://www.youtube.com/watch?v=q4txGv9FbgM
- If the reinforcing consequences no longer follow the behavior, the learned behavior may disappear or show extinction.
- (If the behavior was only sometimes reinforced, the behavior will persist longer after the PR has been discontinued.)

Punishment Problems

- Only indicates what not to do – doesn’t necessarily increase the correct response
- Often not delivered immediately after the undesired behavior – not as effective
- May trigger emotional responses, sometimes even aggression.
- “Negative punishment” has fewer side effects
- Pay attention to inadvertent reinforcement of behaviors you don’t want to encourage
  - Desired consequences should only follow behaviors you wish to encourage

Pay attention to inadvertent reinforcement of behaviors you don’t want to encourage

Think about the 2 types of basic learning or conditioning we have covered.

Does all learning require direct experience?
- Can you learn without being reinforced?
- Do some learned responses require more mental processing than the simple learned associations of classical and operant conditioning?
Cognitive Learning

• Learning based on observation and mental processing of what we’ve observed
• Does not require reinforcement
• Does not always require direct experience

Edward Tolman’s “Latent Learning”

• Believed we are learning about our environment all the time – don’t need reinforcement to do so
• May not see evidence of this learning until some later time when you need that info
• Example: building a “cognitive map” of your surroundings

Albert Bandura & “Modeling”

The Tale of the Bobo Doll

We often learn through observation of others (“observational learning” or “social learning”), with no reinforcement, and then model our behavior after what we observed.

Use of Social Learning Model to Create Soap Operas to Bring About Social Change

• Public gets attached to characters on long running radio or TV dramas which are crafted to raise awareness and offer strategies for dealing with numerous social issues. Dramas bring about significant changes in social norms and attitudes.

Twende na Wakati in Tanzania
Ven Conmigo in Mexico
Hum Log in India

https://www.youtube.com/watch?v=dmBqwWlJg8U
https://www.youtube.com/watch?v=xjibKaXm3A