Announcements

- Next Aplia due Monday
- Exam Next Wednesday (April 2)
- Review session Next Monday (Mar 31)
  5:30 pm, room 130 ILC

Cognition & Emotion

E. Cognition in depression

1. Distorted cognitions create depression
2. Cognitive distortions (or errors)
   a. Overgeneralization
   b. Selective abstraction
   c. Magnification & Minimization
   d. All or Nothing thinking
3. Therapy: Changing cognitions changes emotions
4. Sadder but Wiser phenomenon

Sadder but Wiser Study (Alloy and Abramson)

Press Button A or Button B.

After each press…
- Light Turns on (Win 25 cents)
- Light remains dim (No Win)

"How much control did you have?"

No relationship between button pushed and winning!

Nondepressed people may suffer either from illusions of control or noncontrol, depending on the circumstances. These illusions help them to see themselves and their world with a "rosy glow" and may help them persist when things go wrong.
On to the next topic

Learning

When I think back on all the CRAP I learned in High School

A simple illustration of learning
I. Overview and general issues

A. What the heck is learning? = the ability to modify behavior after exposure to a situation.
Learning is a relatively permanent change in an organism’s behavior due to experience.

B. Theories of learning must reconcile that we have "hard-wired" reflexes, yet are capable of modifying those reflexes
Experience-dependent neural plasticity!

C. Today, associative learning
1. This can range from very simple to terribly complex
2. Can explain some very interesting phenomena:
   a. Training animals
   b. Superstitious behavior
   c. Phobias (irrational fears): more later

3. Two types of associative learning:
   a. Classical: learn that one event is followed by another
   b. Operant: learn that a response you make will be followed by a consequence

Stimulus-Stimulus Learning  
(Classical)

Learning to associate one stimulus with another.

Response-Consequence Learning  
(Operant)

Learning to associate a response with a consequence.
I. Overview and general issues

4. Similarities between the types of learning: both **Behavioral**
   a. Simple learning of associations are the building blocks
   b. Simple laws govern all learned behaviors
   c. Learning is best understood by examining causes external to the organism (no need to look inside the black box)

II. Pavlov and Classical Conditioning (CC)

A. Ivan Pavlov
   1. History: There was a problem in Pavlov’s experiments
   2. Pavlov therefore decided to study this phenomenon of salivation before food presentation

B. Pavlov’s "Classical" CC experiment: Tone turned on before meat powder presented

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**Before Conditioning**

- **Conditioned Stimulus (CS)**: Tone
- **Unconditioned Stimulus (UCS)**: Food
- **Unconditioned Response (UCR)**: Drool!
- **No Response or Irrelevant Response**

**During Conditioning**

- **Conditioned Stimulus (CS)**: Tone
- **Unconditioned Stimulus (UCS)**: Food
- **Unconditioned Response (UCR)**: Drool!
- **Animal learns that Tone precedes delivery of Food! Some drool possible…**

**After Conditioning**

- **Conditioned Stimulus (CS)**: Tone
- **Conditioned Response (CR)**: Drool!!
- **Unconditioned Stimulus (UCS)**: Food
- **Unconditioned Response (UCR)**: Drool!

**Conditioning With Smiles and Smarties**

- **Conditioned Stimulus (CS)**: Smiles
- **Conditioned Response (CR)**: Drool!!
- **Unconditioned Stimulus (UCS)**: Smarties
- **Unconditioned Response (UCR)**: Drool!
Applications of CC

A. Little Albert
   A. Furry White Rat (CS)
   B. Paired with Loud Gong (UCS)
   C. Fear following Loud Noise (UCR)
   D. Fear then followed White Rat (CR)
   E. Generalized to other fuzzy harmless things

https://www.youtube.com/v/FMnhyGozLyE

B. Heroin and Needles: Overdoses in unusual environments

Conditioning and Drug Tolerance: I

Conditioned Stimulus (CS)
Environment
Room, Friends, Music, etc

Conditioned Response (CR)
Compensatory Response as Conditioning Occurs

UnConditioned Stimulus (UCS)

heroin

UnConditioned Response (UCR)

Euphoria

Conditioning and Drug Tolerance: II

Conditioned Stimulus (CS)
Environment
Room, Friends, Music, etc

Conditioned Response (CR)
Compensatory Response Grows Larger

UnConditioned Stimulus (UCS)

heroin

UnConditioned Response (UCR)

Euphoria

Conditioning and Drug Tolerance: III

Conditioned Stimulus (CS)
Environment
Room, Friends, Music, etc

Conditioned Response (CR)

UnConditioned Stimulus (UCS)

heroin

UnConditioned Response (UCR)

Euphoria is smaller
Conditioning and Drug Tolerance: IV

Conditioned Stimulus (CS)
- Environment
  - Room, Friends, Music, etc

Conditioned Response (CR)
- Compensatory Response
  - Is Large

UnConditioned Stimulus (UCS)
- Heroin – increased dose

UnConditioned Response (UCR)
- Euphoria returns!

Conditioning and Drug Tolerance: V

New Environment
- Not conditioned

No Conditioned Response (CR)
- No Compensatory Response

UnConditioned Stimulus (UCS)
- Heroin – Big dose again

UnConditioned Response (UCR)
- OVERDOSE

Another Example…

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And it happens again!

And again!
F. Other comments on CC

1. Initially, CS elicits only an OR, or nothing
2. R is defined by what elicits it
3. There is nothing unique about the CS, except that it is paired with the UCS

G. Extension of the basic phenomenon of CC

1. Temporal sequencing of UCS & CS is important
   a. Best is "Delayed Conditioning", CS precedes UCS by ~.5 seconds
      CS______________________|------|_____ UCS______________________|------|_____
   b. Less effective are Simultaneous and Trace conditioning:
      (1) Simultaneous: both onset and offset at same time
          CS______________________|------|_____ UCS______________________|------|_____  
      (2) Trace: CS on and off before UCS on
          CS______________________|------|_____
          UCS______________________|------|_____  
   c. Reason for less effectiveness is that CS must predict UCS

2. Some basic phenomena of CC
   a. Extinction
      (1) if no longer pair CS and UCS, the CR will diminish and then disappear

It’s not her
It’s not her

Ex-girlfriends in black Jettas
Everywhere I go, there it is
When I take a stroll, there she is
When I’m out the door, what I’m looking for
Same looking car that I saw 12 seconds ago

They're so popular you can't get away
Girls drive 'em in Encino
And they drive 'em in LA
Some are different, some are older
And their body style is changed
But my heart will still jump
Because to me, they look the same

Ex-girlfriends, black Jettas
Ex-girlfriends, black Jettas
Ex-girlfriends, black Jettas
Ex-girlfriends, black Jettas

Extinction takes time

G. Extension of the basic phenomenon of CC
2. Some basic phenomena of CC
a. Extinction
   (1) if no longer pair CS and UCS, the CR will diminish and then disappear
   (2) However, the CR can return:
      (a) Spontaneous recovery
      (b) Reconditioning: must repair

b. Stimulus Generalization

c. Discrimination: learn to differentiate two similar CS's: CS+ and CS-

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Discrimination

STOP