Classical Conditioning (CC)

Chapter 5 continues...

HELLO PAVLOV

REMEmBER ME?

Compensatory-Response Model

Conditioning results in a CR that appears to be the opposite of the original UCR. e.g. drug reactions.

During conditioning:

Heroin-related cues: Heroin $\rightarrow$ Decreased blood pressure

NS US UR

After conditioning:

Heroin-related cues $\rightarrow$ Increased blood pressure

CS CR

Remember the opponent-process theory of emotion!

- Certain stimuli can elicit both a primary response (the a-process) and a compensatory response (the b-process).
- Based on CRM, a CS that has been repeatedly associated with the primary response (a-process) to a US will eventually come to elicit a compensatory response (b-process).

$\text{Heroin} \rightarrow \text{Decreased blood pressure} \rightarrow \text{Increased blood pressure}$

(a-process) (b-process)

- The decrease in blood pressure is itself a US that naturally elicits an increase in blood pressure.

Heroin $\rightarrow$ Decreased blood pressure $\rightarrow$ Increased blood pressure

US US/US UR

- Heroin-related cues, such as being in a certain room, become associated not with the heroin but with the primary response to heroin— that is, with the decrease in blood pressure.

Heroin-related cues: Decreased blood pressure $\rightarrow$ Increased blood pressure

NS US UR

Heroin-related cues $\rightarrow$ Increased blood pressure

CS CR
Compensatory-Response Model

• Diagram the actual events involved in the conditioning of an increase in blood pressure in response to a hypodermic needle that has been consistently associated with heroin administration (hint: the US in this conditioning is not heroin):

Needle: _________ → ______________
NS  UCS  UCR

Needle → ______________
CS  CR

Compensatory-Response Model

• Shock naturally elicits an increase in heart rate. In this case, shock is a (NS/CS/US) ______ and the increase in heart rate is a (CR/UR) ______.

• An increase in heart rate naturally elicits a compensatory decrease in heart rate. For this sequence of events, the increase in heart rate is a (NS/CS/US) _____ and the decrease in heart rate is (CR/UR) _____.

Compensatory-Response Model

• A tone that is repeatedly paired with shock will eventually come to elicit a compensatory decrease in heart rate.

Tone: increase in HR → decrease in HR
NS  US  UR
Tone → decrease in HR
CS  CR

Compensatory-Response Model

• Heroin produces a combination of other effects, which the drug user experiences as pleasant feelings of relaxation and euphoria.

Heroin-related cues: Relaxing effect of heroin → Tension & agitation
NS  US  UR
Heroin-related cues: Tension & agitation
CS  CR

Thus, a heroin addict will, after repeated heroin use, begin to experience unpleasant symptoms of tension and agitation simply by being in the presence of cues associated with heroin use, which are called ‘withdrawal symptoms’.

Compensatory-Response Model
‘withdrawal symptoms’. SO, this is why people continue to crave the substance long after they have stopped using it.

Think of an individual who always uses heroin in a particular environment, goes into a rehab program, and then returns home to her usual environment. ???

The aim of any possible treatment should be to extinguish the power of drug-related cues. e.g. someone attempting to quit smoking may be required to remain in the presence of cigarettes for a long period of time without smoking.

Mechanism behind it in CC terms? Repeated presentations of the CS (the sight of the cigarettes) in the absence of the US (nicotine ingestion) should result in weaker and weaker CRs (cravings for a smoke).

The compensatory-response model also has implications for drug tolerance. E.g. you go to your favorite bar. CSs: the various cues in that setting such as; people greeting you as you walk in the front door of the bar; the stool you always sit on. The presence of these CSs will initiate physiological reactions that compensate for the alcohol you are about to consume. As a result, in the presence of these CSs, you should have greater tolerance for alcohol than you would in their absence.

drug tolerance (McCusker and Brown, 1990). Participants consumed alcohol in either an “alcohol expected” environment (like a bar during an evening) or an “alcohol unexpected” environment (like an office environment during day). Result: ‘expected’ group performed better than ‘unexpected’ group on various measures of cognitive and motor functioning. Conclusion: the alcohol-related cues in the expected condition elicited compensatory reactions that partially compensated for the effects of the alcohol!
This means that your ability to drive safely could be significantly more impaired following a lunchtime martini than after an evening drink at a bar.

But, although you consume the drink at a bar, consider what happens when you leave that setting. Since you’re outside the bar, you’re also away from the alcohol-related cues which elicit compensatory responses. So, your compensatory reactions might be reduced significantly. As a result, you may become more intoxicated during the drive home from the bar than you were in the bar.

In keeping with the compensatory-response model, modern treatments for drug addiction often recommend (exposure to/removal of) drug-related cues to allow (conditioning/extinction) of the cravings to take place.

We tend to have (higher/lower) tolerance for a drug in the presence of cues associated with taking the drug.

Suppose an addict always injects heroin in her bedroom at home, but one time stays overnight at a friend’s house and decides to take an injection there. The addict will likely experience a(n) (increased/decreased) reaction to the drug at her friend’s house.

A person who drinks a glass of wine in a fine restaurant is likely to be (more/less) affected by the alcohol than if she drank the same amount of wine in a courtroom.

irrational fear reactions.

There are some additional factors which affect the process of developing phobias. You may want to read pp. 186-191 in Chapter 5.
Treating Phobias

- **Systematic Desensitization:** gradual conditioning procedure.
  - A study of Mary Cover Jones (1924) with Peter, a 2-year-old boy who had an extreme fear of rabbits.
  - First feeding Peter cookies while presenting a rabbit at a considerable distance.
  - Over successive sessions, the rabbit was gradually brought closer to Peter as he continued to eat cookies.
  - Within a few months, Peter was holding the rabbit in his lap.

Treating Phobias: Systematic Desensitization

- Wolpe’s study (1958)
  - Conducted research on fear conditioning in cats exposed to electric shocks.
  - The cats refused to eat while in the room where shock was given.
  - Wolpe began by feeding the cats in a room that was quite dissimilar from the original “shock” room.
  - Over a period of days, the cats were fed in rooms that were made progressively similar to the shock room.
  - Eventually they were able to eat in the original room and even in the experimental cage in which they had been shocked.

Treating Phobias: Systematic Desensitization

- 3 basic aspects of Wolpe’s treatment procedure:
  - Training in relaxation such as meditation.
  - Creation of a hierarchy of imaginary scenes that elicit progressively intense levels of fear. About 10 to 15 scenes gradually eliciting only a minor degree of fear to tremendous amount of fear.
  - Pairing of each item in the hierarchy with relaxation.
  - Starting with the least fearful scene in the hierarchy, the person is asked to visualize the scene for about 10 to 30 seconds and then engage in a short period of relaxation. This process is repeated until the first scene no longer elicits anxiety.

Treating Phobias: Systematic Desensitization

- Just a simple matter of extinction, in which a CS is repeatedly presented in the absence of the UCS, in the absence of anything bad happening.
Treating Phobias: Flooding

- A behavioral treatment that involves prolonged exposure to a feared stimulus, thus providing maximal opportunity for the conditioned fear response to be extinguished.

Consider a rat that continues to avoid a goal box in which it was once shocked, even though no further shocks will ever be delivered.

- How do you eliminate this phobic behavior?
  - place the rat in the goal box and insert a barrier that prevents it from leaving. Force it to remain in the box.

- 2 types; imaginal (asked to visualize a scenario involving the feared event) and in vivo (prolonged exposure to the actual feared event) flooding.