Introduction to Medical Psychology
Lecture 8: Anxiety

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https://youtu.be/VbeCfs41iQU

Lecture video at above link.

Today: Anxiety

- Posttraumatic stress disorder (PTSD)
- Specific phobias
- Social phobia, Agoraphobia, Panic disorder

Experience of extreme conditions

Great East Japan earth quake:

In a study conducted 14 months after the earth quake (Sakuma et al., BMC Psychiatry, 2013)

6.6% of municipality workers (involved in help and reconstruction) and medical workers were diagnosed with probable PTSD

1.6% of fire fighters were diagnosed with probable PTSD

(12-month prevalence in general population: 0.4%)

Difference between municipality/medical workers and fire fighters possibly due to different work load after disaster and better preparation of fire fighters.

“Lack of communication” was mentioned as factor contributing to PTSD.

Post-Traumatic Stress Disorder

What is PTSD?

(some example movies from U.S. Veteran Health Administration)

PTSD: June Moss

From a US combat veteran (June Moss, BBC interview):

Coming home from Iraq was difficult.
I wasn't sleeping.
I wasn't the same Mum that I were when I left…connection with children wasn't the same. My skin felt like fire when my kids tried to hug me…

I was living in a bad neighborhood in Oakland… with drive-by-shooting…I was trying to barricade us in my home and get my weapon…but nothing was around me.

I just wanted to forget (attempted suicide with razor blade).

→ VA (Veteran affairs) PTSD service: toolbox to understand the triggers for stress and anger, better relation with family

PTSD: Diagnosis

Criteria:

- Exposure to a actual or threatened death, serious injury or sexual violence (directly, witnessed, or to a close person)

- Intrusion symptoms:
  recurrent, involuntary, and distressing memories
  recurrent, distressing dreams
  flashbacks: feels like the trauma occurs again
  stress when exposed to external or internal cues related to the traumatic event

- Persistent avoidance of stimuli related to the trauma

- Disturbance persists for more than 1 month, causes distress and problems (social, occupational), and is not attributable to substances like medication or drugs.

after Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-V)

PTSD: Diagnosis

Further Criteria:

- Negative alterations in cognitions and mood associated with the traumatic event: partial memory loss, negative beliefs (guilt, shame), feelings of detachment from others, inability to experience positive emotions

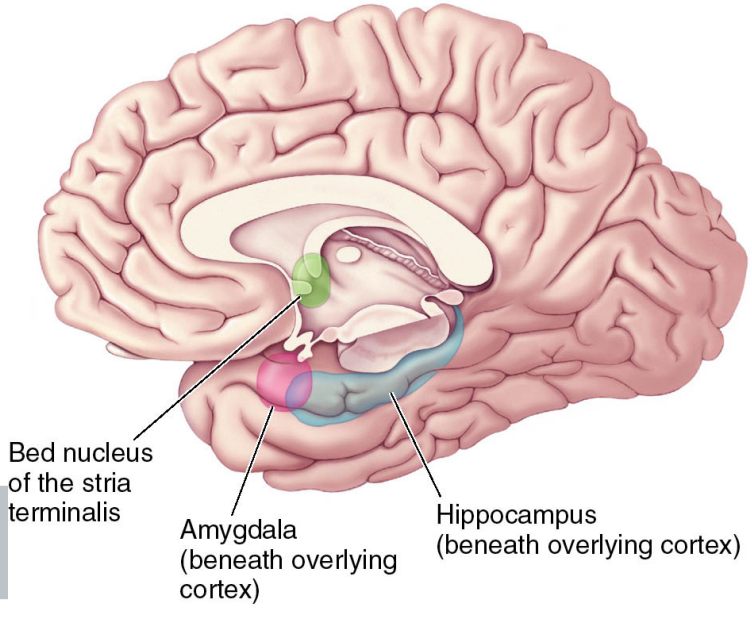
- Alterations in arousal and reactivity:
  - Irritability
  - Self-destructive behavior
  - Concentration problems
  - Sleep disturbance

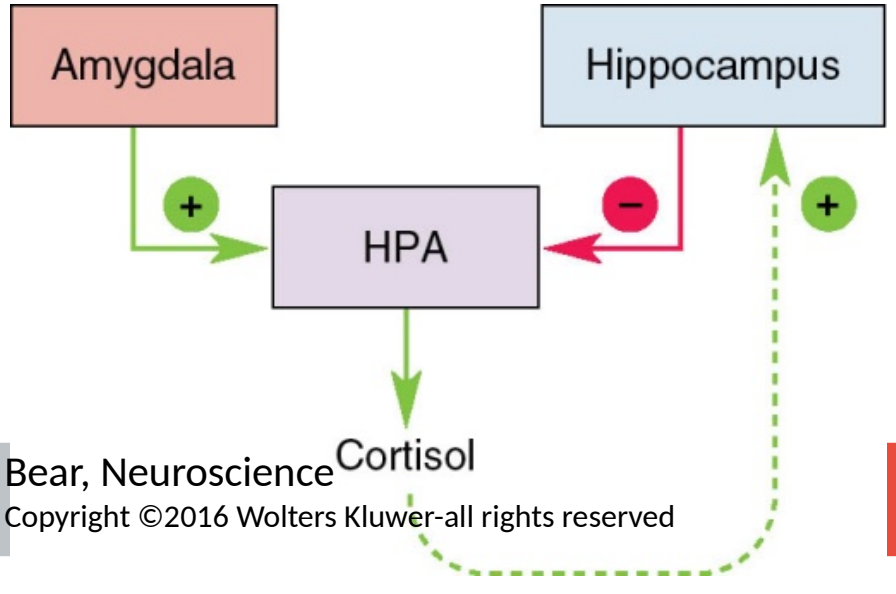
HPA Axis and PTSD

Patients with PTSD usually have normal blood levels of cortisol, but show an exaggerated cortisol response to stress.

PTSD patients have on average smaller hippocampus volume, but so do their monozygotic un-traumatized twins (Gilbertson et al., Nature Neuroscience, 2002). This suggests that small hippocampus volume may be a risk factor for PTSD.

The amygdala is a part of the limbic system essential for the formation of fear memories.





Bear, Neuroscience

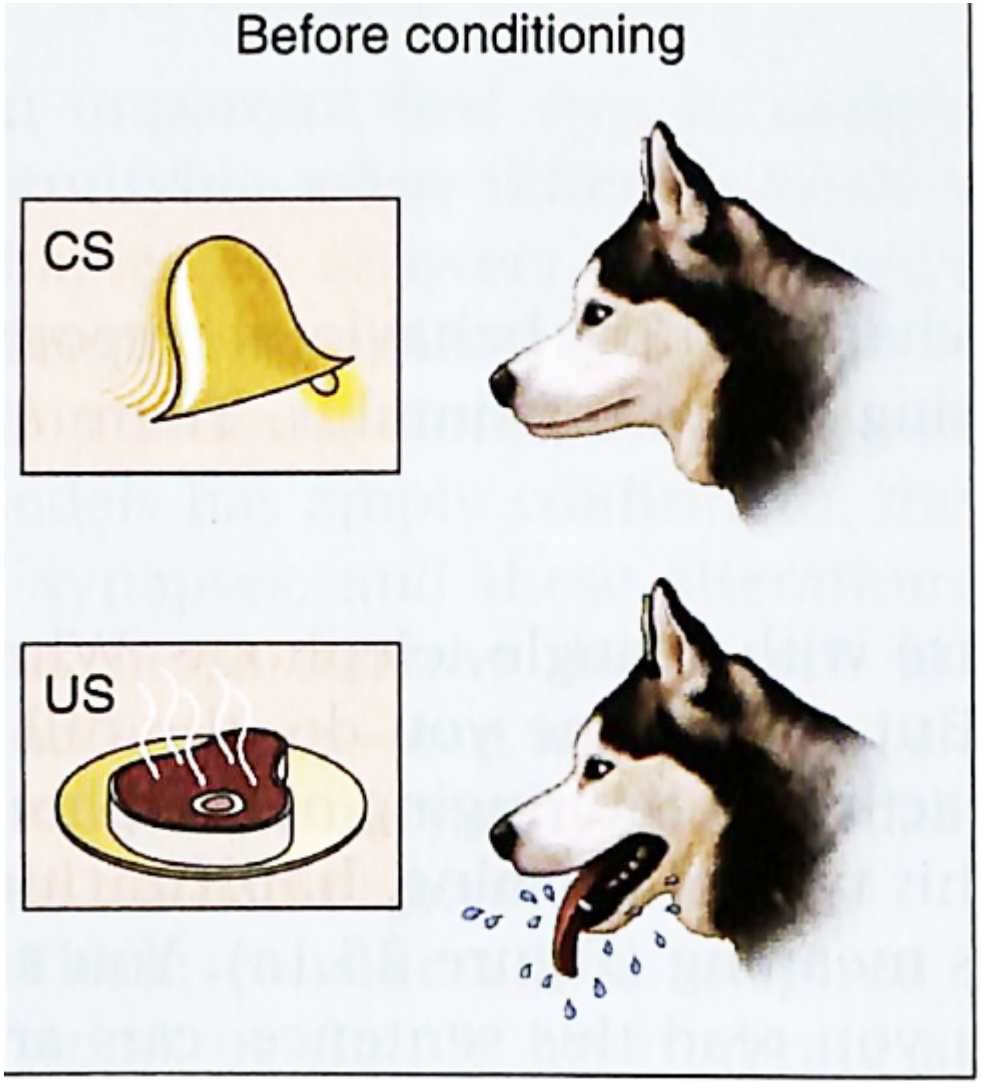
PTSD: Causes

In PTSD, the underlying cause is quite clear: the traumatic event.

Psychological theories view PTSD as the result of **fear conditioning.**

Example:
After experiencing a traffic accident in a tunnel, in which fire broke out and several drivers died, a 46-year old truck driver still experiences flash-backs: it sometimes feels as if the accident occurs again.
He has problems sleeping and he feels distressed when driving towards a tunnel. The distress is so severe that he had to quit his job, and he only drives short distances with his private car.

Reminder:
Classical Conditioning



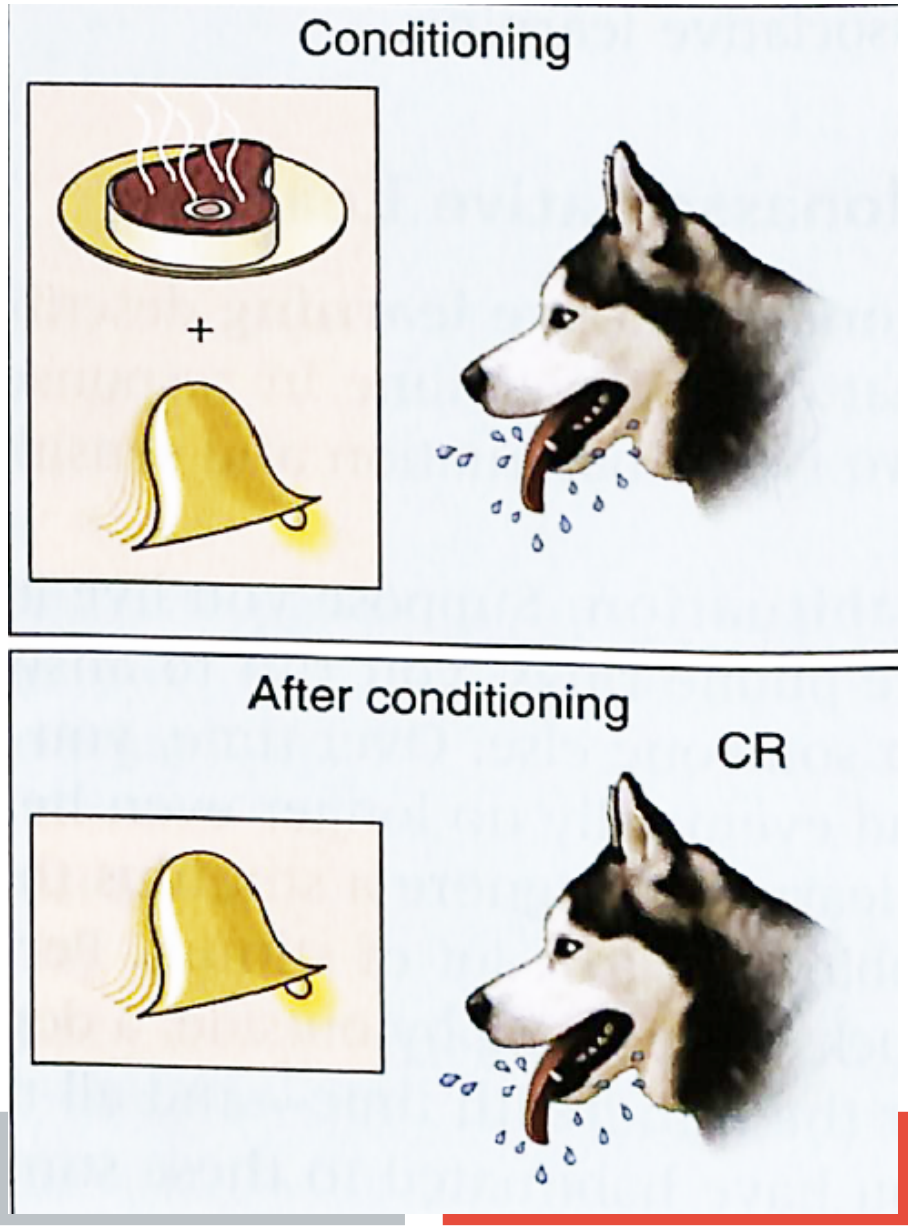
CS: Conditioned stimulus (bell), will not elicit response (salivating).

US: Unconditioned stimulus (meat), will elicit response (salivating).
→ unconditioned response (UR).

Reminder:
Classical Conditioning

During conditioning, US (meat) and CS (bell) are paired.

After conditioning, the conditioned stimulus (bell), will elicit the response (salivating).
→ Conditioned response (CR).



Fear Conditioning: Tunnel Example

Before conditioning

CS: driving in tunnel

CS: Conditioned stimulus (driving in tunnel), will not elicit any response (extreme fear).

US: fire/pain in tunnel accident

US: Unconditioned stimulus (tunnel accident), will elicit response (extreme fear).
→ unconditioned response (UR).

Fear Conditioning: Tunnel Example

During conditioning (here only 1 event), US (accident with fire) and CS (driving in tunnel) are paired.

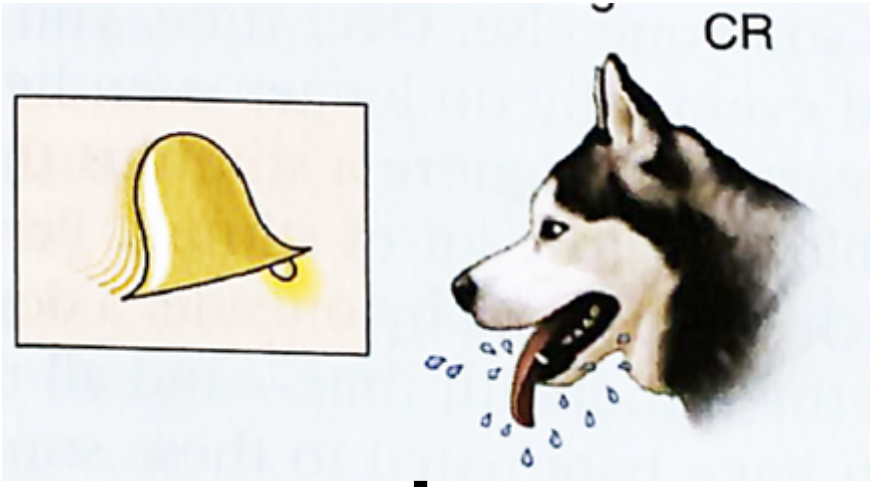
After conditioning, the conditioned stimulus (driving in tunnel), will elicit the response (extreme fear) in absence of the US.
→ Conditioned response (CR).

How can we FIX it?
Extinction learning

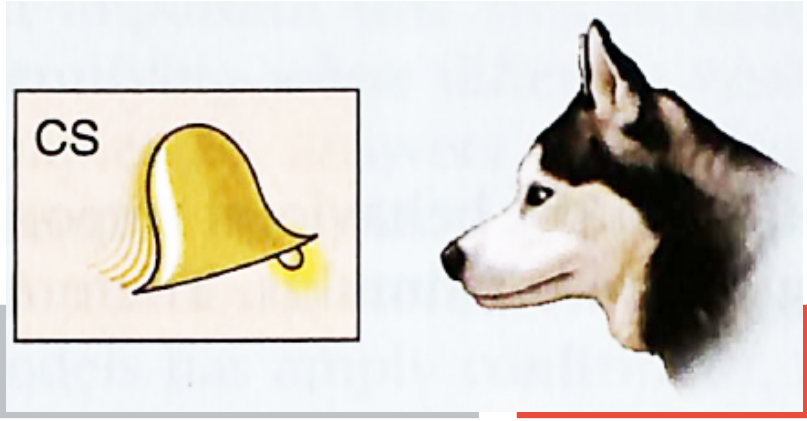
If the CS is often presented without food, the conditioning will be “erased”
→ extinction.

Thus, we can relearn new relationships between stimuli.

However, PTSD patients avoid situations that resemble the trauma.
→ No extinction possible



Extinction



PTSD Treatment

Prevention:
In the aftermath of a disaster, it is important that the victims get into a safe environment, have social support and information about the situation and the whereabouts of their loved ones.

Debriefing: One approach that has been proposed is debriefing, i.e., shortly after a trauma (2-10 days), victims are provided with emotional support and are encouraged to talk about their experiences in a group. However, so far this approach has not been shown to be effective.

PTSD Treatment

As medication, antidepressants have been shown to alleviate PTSD symptoms (comorbid depression, intrusion, and avoidance).

Main psychotherapeutic approaches:

Prolonged exposure

The patient confronts the feared but harmless stimuli/cues (either in imagination, in virtual reality, or real), habituates and learns that the feared consequence does not follow->extinction

To be able to endure the situation for a prolonged period, the method can be combined with relaxation.

Cognitive processing therapy

The patients very often have negative thoughts (guilt, shame) related to the trauma. These thoughts are revisited cognitively and patients learn strategies to overcome these thoughts.

PTSD Treatment: Examples

Examples:

Prolonged exposure

The truck driver with tunnel trauma could first learn relaxation techniques and then undergo virtual exposure to driving through tunnels. He can use the learnt relaxation techniques to stay calm.

Cognitive processing therapy

The truck driver might feel that he is worthless, because he cannot continue his job and provide for his family. Possibly, family interaction suffers. These automatic thoughts however can be addressed and methods be learnt not to follow these thought patterns.

Fear, Panic Attack, Anxiety, Phobia?

Fear

The basic emotion in reaction to threat, triggering the fight-or-flight response.

Panic attack

Fear response in absence of any obvious external danger.

Anxiety

Complex mixture of unpleasant emotions and cognitions, more oriented toward future (“worrying”).

Phobia

Fear of a specific object or situation.

Specific phobia

Phobia

Fear of a specific object or situation.
E.g., snake phobia: patients might refuse to enter woods or grass lands because of fear of snakes.

Fear is a normal and important reaction, but in phobia the fear is out of proportion to the actual danger, persists for more than 6 months and leads to impairments in social functioning.

after Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-V)

Specific phobia

Phobias are common: life time prevalence ~12%.

Some psychological theories see phobia as learned behavior:

1) An unpleasant event leads to fear conditioning, a pairing of a neutral stimulus with fear response (e.g., being stuck in an elevator, or a spider running on your hand as a child).

2) Situations and stimuli related to the phobia are avoided -> avoidance learning, the learning cannot be reversed (e.g., elevators or basements are avoided).

Such events are reported in about 58% of phobic patients (Butcher, Hooley, Mineka, Abnormal Psychology, 2015).

Avoidance learning and phobia

A person with claustrophobia is afraid of confined spaces such as elevators. Possibly the phobia is based on a negative experience with an elevator (classical conditioning).

Phobic people often avoid the phobic stimulus, in this example the elevator. They have learnt that the unpleasant experience of claustrophobia can be avoided by not entering the elevator (instrumental conditioning).

The problem is that extinction cannot occur: the claustrophobic cannot learn that elevators are harmless.

→ Moreover, avoidance behavior can result in severe impairments in daily life (in a city it is hard to avoid all elevators).

Desensitization via exposure

With specific phobias, a good treatment option is exposure:

In systematic desensitization, the aim is to expose the patient to a situation or stimulus related to the phobia and keep the patient exposed until relaxation occurs.

→ extinction learning

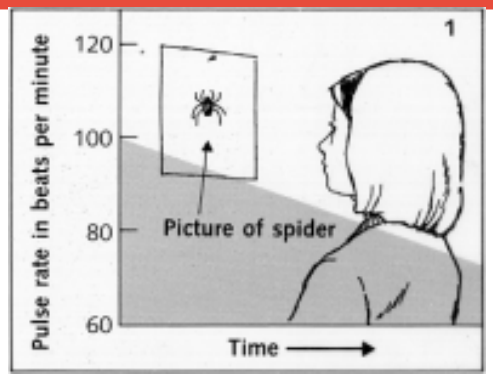
The stimulus intensity is gradually increased.

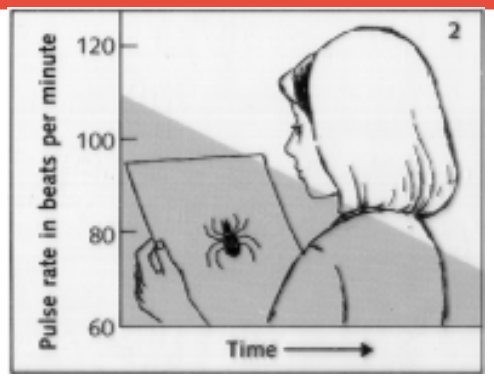
imagination → pictures/virtual reality → real stimulus

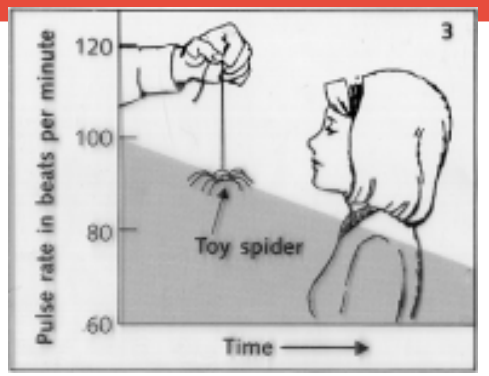
e.g., imagine a snake, see a picture of a snake, real snake

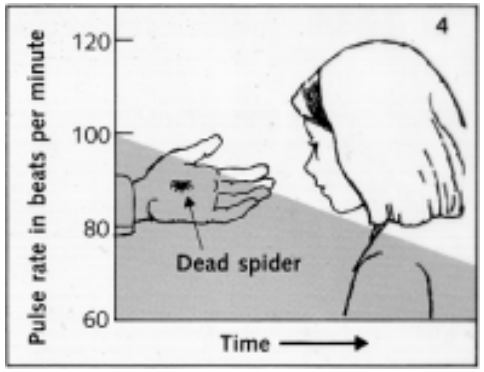
→ nothing happens → after some time relaxation → extinction learning

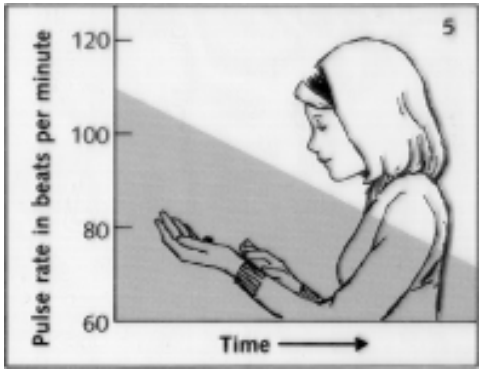
Exposure therapy: arachnophobia

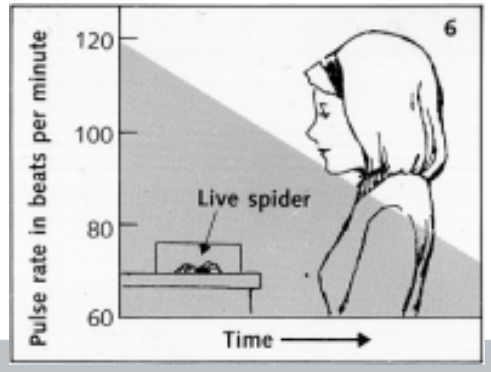


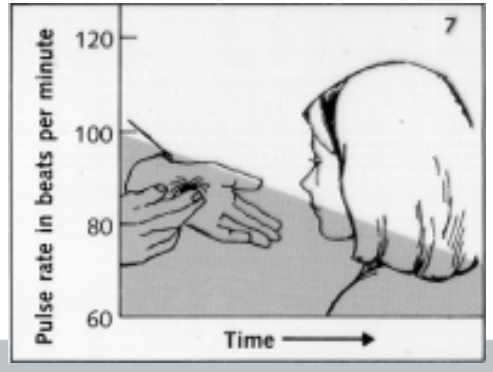


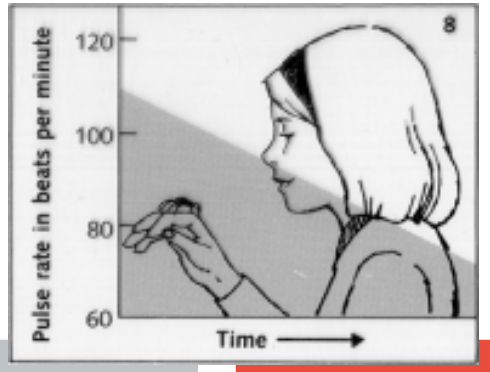












http://courses.washington.edu/psii101/notes/

In **social phobias**, the patient experiences fear of a social situation, such as public speaking or eating or writing in public.

Patients avoid these situations, thus becoming dysfunctional.

12% of the population will qualify for a diagnosis of social phobia at some point in their life.

Treatment includes exposure, social competence training, and cognitive restructuring (to avoid negative cognitions like “I have nothing interesting to say”).

Agoraphobia is the fear of places/situations where a panic attack could occur and escape would be difficult or embarrassing (such as in a shopping mall or in the audience of a cinema).

Panic disorder is characterized by panic attacks (sudden fear and physical symptoms such as pounding heart, sweating, chest pain, etc.) and the worry that panic attacks occur again.

after Diagnostic and Statistical Manual of Mental Disorders, 5th edition (DSM-V)

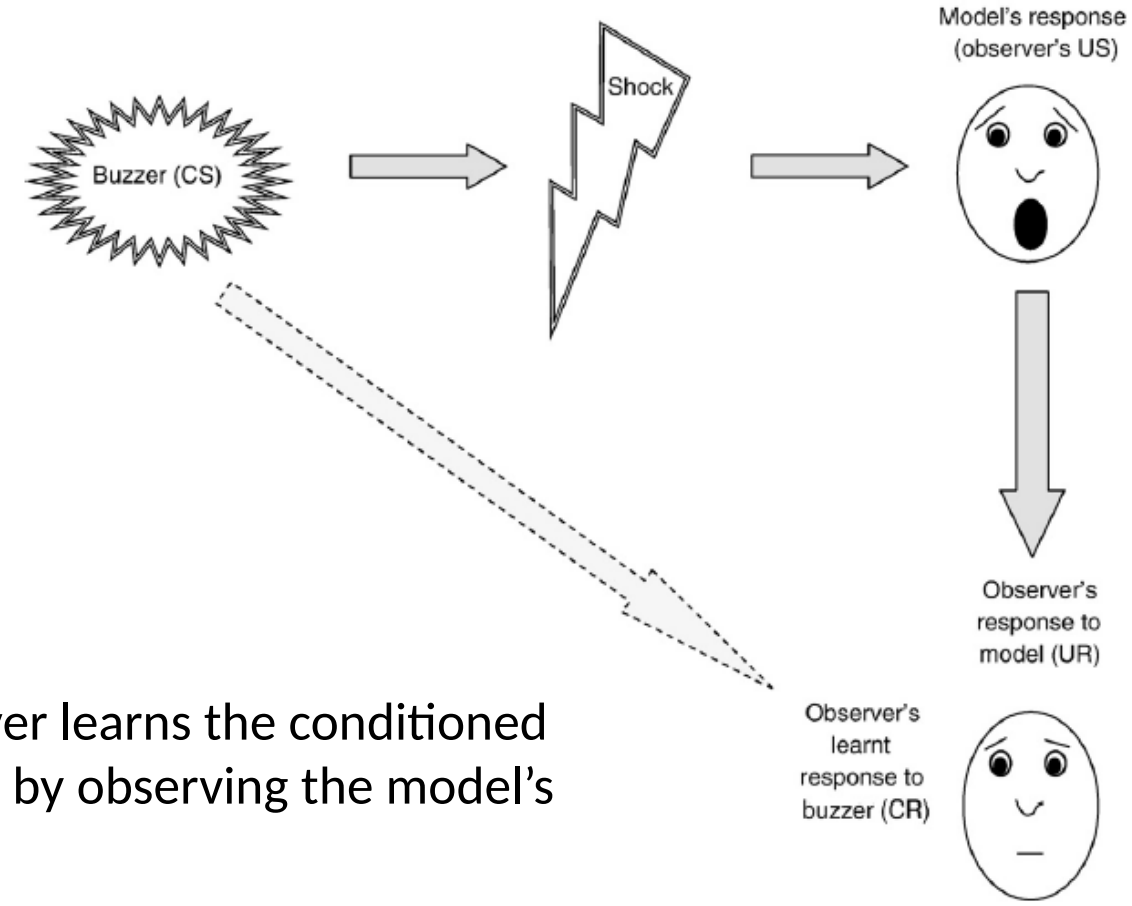
Anxiety Disorders – classification

PTSD (posttraumatic stress disorder):
- is **now** classified as stress disorder

Anxiety disorders:
- Specific phobia
- Social phobia
- Agoraphobia
- Panic disorder
- General anxiety disorder

Conditioning by observation? Vicarious learning

Phobias can be learned by observation of fear by others, without ever having experienced an unpleasant event (Cook and Mineka, 1989; Askew and Field, 2007).



In this case, the observer learns the conditioned response to the buzzer by observing the model's fear response.

Conditioning by observation? Vicarious learning

Cook and Mineka, 1989:

In this experiment, macaque monkey watched a video in which another monkey showed a fear response to:

a) toy snake
b) toy crocodile
c) toy rabbit
d) flower

Conditioning by observation? Vicarious learning

The observing animals had to reach to food with one of the objects (a-d) in their grasping trajectory. This was done before and after watching the video.

Before watching, the objects had no influence and grasping speed was normal.

After watching, grasping duration was increased for toy snakes and crocodiles, not for rabbits and flowers. They were afraid of snakes and crocodiles.

Wisconsin General Testing Apparatus

This shows that the animals acquired fear conditioning by observation. It also shows that some objects (snakes, crocodiles) are more likely to be object of a phobia: preparedness.

Generalized Anxiety Disorder

Generalized Anxiety disorder (GAD), also known as free-floating anxiety:

Persistent and excessive anxiety and worry (for > 6 months)

Lack of control to worry

Restlessness, fatigue, irritability, concentration difficulties,
sleep disturbance, muscle tension

causes social dysfunction

Cognitive restructuring in combination with relaxation techniques can be used to avoid intrusive worries. Cognitive restructuring aims at reducing information-processing bias (focusing on negative info) and catastrophizing.