

## Exposure Therapy Primer

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## Classical Conditioning

- Learning through associations (3 Steps)
  - Unconditioned Stimulus → Unconditioned Response (**UCS→UCR**)
  - Conditioned Stimulus + Unconditioned Stimulus → Unconditioned Response (**CS+UCS→UCR**)
  - Conditioned Stimulus → Conditioned Response (**CS→CR**)
- The Conditioned Stimulus, which was originally neutral, now causes a Conditioned Response

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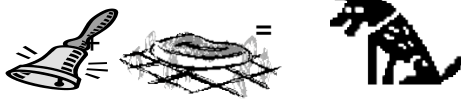
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## History – Pavlov’s Dogs

- Food causes dogs to salivate (*but not tones*)
  - **UCS (food) → UCR (salivation)**
- Pavlov sounded a tone just prior to giving food
  - **CS (tone) + UCS (food) → UCR (salivation)**
- The dogs learned to salivate to the tone, in anticipation of the food
  - **CS (tone) → CR (salivation)**



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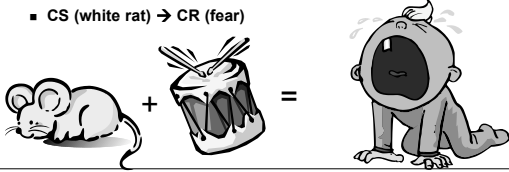
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## Watson's Little Albert

- Little Albert was afraid of loud noises (*but not white rats*)
  - UCS (loud noise) → UCR (fear)
- A loud noise was made while Albert was with a white rat
  - CS (white rat) + UCS (loud noise) → UCR (fear)
- Albert learned to fear white rats due to the association
  - CS (white rat) → CR (fear)



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## Important Terms

- Extinction – When the CS is repeatedly experienced without the UCS, the association is weakened so that the CS no longer evokes the CR.
  - This is the premise of *Exposure Therapy*.
- Spontaneous Recovery – After extinction takes place, the CS suddenly evokes the CR again.

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## Fear and the Brain

- The scientists believed the amygdala created both the fear memory and the fear-inhibiting memory but the medial prefrontal cortex (mPFC) stored the fear-inhibiting memory

Location in a Human Brain



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## Animal Models: Fear and the Brain

- They tested this belief by making lesions in some of the rats' mPFC regions and repeating the experiment
- The rats with the lesions unlearned the fear only for a very short time – the inhibiting memory could not be stored
- Furthermore, direct electrical stimulation in the mPFC appeared to suppress the fear activity in the amygdala

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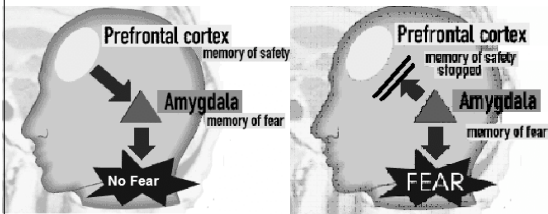
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## Illustration Using Human Brain

No Lesions → Safety  
Memory Had Been Stored  
and Fear was Unlearned

Lesions → Safety Memory  
Unable to be Stored and  
Fear Still Evident




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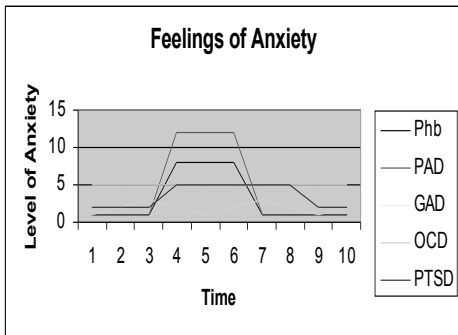
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## Feelings of Anxiety




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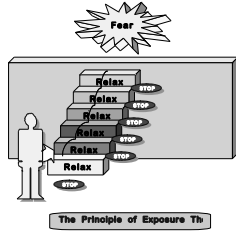
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## Behavioral Strategies

### Exposure therapy for anxiety

- Used in OCD, PTSD, PD+A, Specific and Social Phobia
- Exposure to anxiety in graded fashion.
- Identify specific goals and break them into smaller, manageable steps



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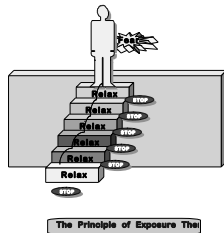
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## Behavioral Strategies

### Exposure therapy for anxiety

- Learn to master situations that cause mild, then gradually greater, anxiety.
- Teach & test a relaxation strategy before to reduce distress/panic during exposure
- Aim is to achieve relative relaxation before next step



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## Behavioral Strategies

- Principle: best way to overcome fear is to face it, but in ways research says are more likely to succeed
- Emphasize habituation to anxiety in each exposure session.
- Biggest trap is to flee a step at height of fear
  - Re-forges association of situation & fear
- Confront fears regularly and frequently

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## Behavioral Strategies

### Example of exposure hierarchy for Agoraphobia

Goal: To travel alone by bus to the city and back

1. Traveling one stop, quiet time of day (SUDS = 40)
2. Traveling two stops, quiet time of day (SUDS = 50)
3. Traveling two stops, rush hour (SUDS = 60)
4. Traveling five stops, quiet time of day (SUDS = 70)
5. Traveling five stops, rush hour (SUDS = 80)
6. Traveling all the way, quiet time of day (SUDS = 90)
7. Traveling all the way, rush hour (SUDS = 100)

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## Interoceptive Cue Exposure: Exposure Therapy in Panic Disorder

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## Rationale

- Based on 'fear of fear' models of panic disorder
- Focuses on extinction of fear of somatic sensations
- Tests catastrophic beliefs regarding sensations
- Substitutes noncatastrophic explanations of experiences/sensations

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## The Technique

### Initial Assessment

- Have the individual perform a range of interoceptive exercises designed to elicit a variety of somatic responses:
  - Numbness or tingling, trembling, lightheadedness, breathlessness, racing heart, choking, chest pain, sweating, hot flushes/chills, depersonalization, nausea
- The goal is to identify which exercises most closely resemble the experience of having a panic attack.
- Individuals can rate the similarity to a panic attack and rate of anxiety provocation to provide a hierarchical scale.

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## The Technique

- Exposure will focus on completing desensitization exercises until subjective distress has decreased.
- Goal is to set a progressive course for exposure.
  - Those who are highly distressed may need to start with small steps (e.g. 2 deep breaths instead of hyperventilation)
  - Those who feel safe performing exercises in the therapy setting may be asked to practice exercises at home, alone, or in a naturalistic setting.
  - Difficulty can be altered by varying duration or intensity of the exercise, by eliminating safety behaviors or by performing in a more natural setting

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## The Technique

### To do exercises (assessment or exposure)

- Therapist models the task & describes sensations
- Client performs the task, trying to maximize sensations
- Client describes sensations that occurred.
- Evaluate expected outcome vs. actual outcome (assess catastrophic interpretations)
- Compare similarity between sensations & panic symptoms
- Rate client's belief in strength of test
- Watch for safety/escape behaviors
- Assign homework

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### Contraindications

- Because interoceptive cue exposure does involve altering resting state and increasing arousal, it is imperative that, before performing the exercises, the client and therapist assess whether any medical conditions might be affected by the exercises. (e.g. heart condition, brain injury, etc)

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### Possible Roadblocks

- Exposure leads to a panic attack
- Intervention is used as a safety/avoidance behavior
- Client does not participate fully in exposure exercises

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