

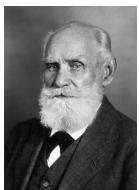
02-Classical Conditioning: Salivation...let 'er go

US		CS
UR		CR

Basic learning processes are adaptive and flexible to automatically guide behaviour. Today, we explore how the elements of classical conditioning apply in the real world as we consider how learning can interact with the physiology of drug effects.

 **Learning: relatively enduring change in behavior due to experience**

 **Behaviorism: We learn from experience.**

		
Pavlov	Watson	Skinner
Reflexive responses associate with cues.	Prediction and control of behaviour.	Prediction and control of behaviour.



1. Non-associative learning: info about one external stimulus

Habituation: decrease in behavioral responding to a repeated stimulus

Sensitization: increase in behavioral responding to a repeated stimulus



2. Associative learning: how two or more pieces of info are related

Classical conditioning: learn that two stimuli go together

Operant conditioning: learn that a behavior leads to a particular outcome



The brain changes during learning

Long-term potentiation (LTP): the strengthening of synaptic connections between neurons

Why were relapse rates so low in returning Vietnam War Vets?



Heroin Addiction rate ~20%
General: ~0.3 %

Relapse rate ~5%
General: ~20 %

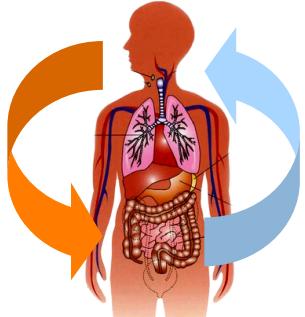
What causes enigmatic opiate overdose?



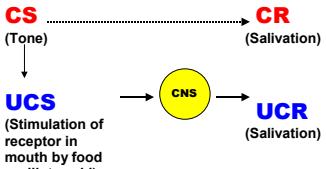
Quick, think about lemons.



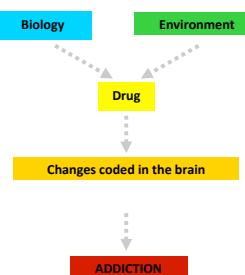
 Learning allows for homeostasis.



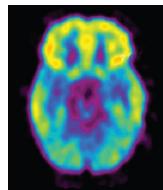
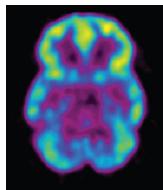
 “Conditional” on Pairing, the CS Elicits a CR



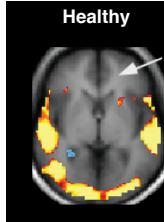
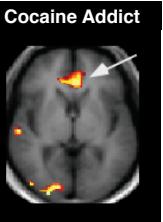
 How does learning contribute to the physiology of drug effects?



 Functional changes in the addicted brain affects future choice of behaviours.

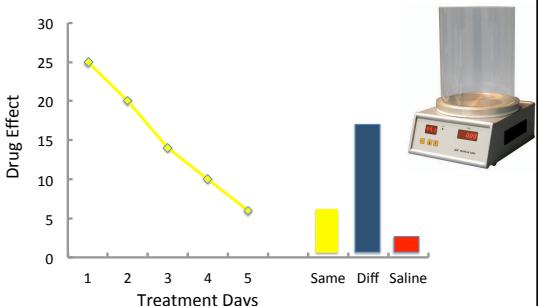
Healthy Brain 	Addicted Brain 
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 The brains of addicts respond to taking the drug, but also to drug-associated cues.

Healthy 	Cocaine Addict 
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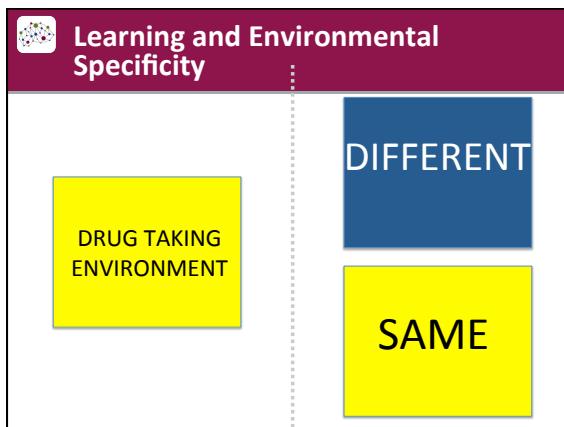
Wexler et al, (2001)

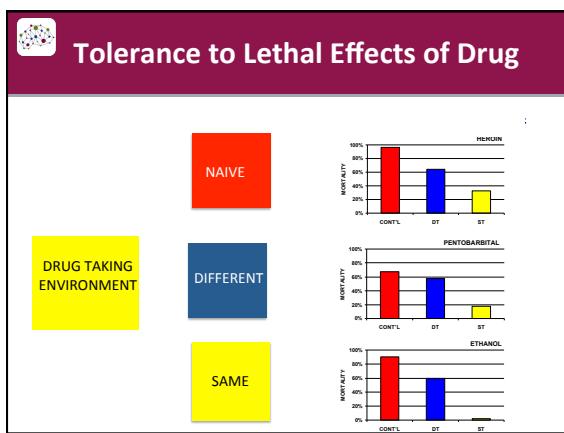
 Drug effects decrease with repeated administration leading to tolerance.

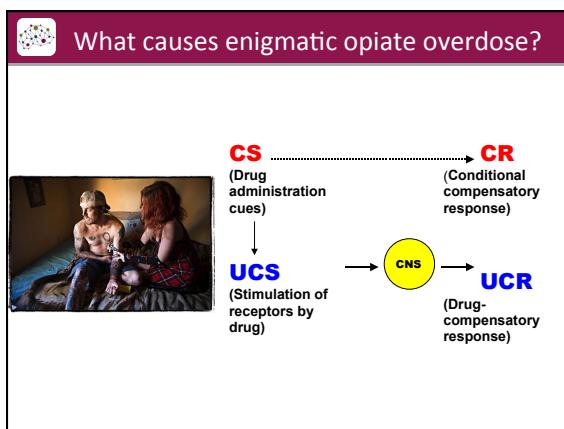


Treatment Days	Drug Effect
1	25
2	20
3	15
4	10
5	5

Condition	Drug Effect
Same	~7
Diff	~17
Saline	~3

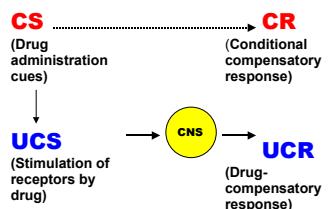








Why were relapse rates so low in returning Vietnam War Vets?





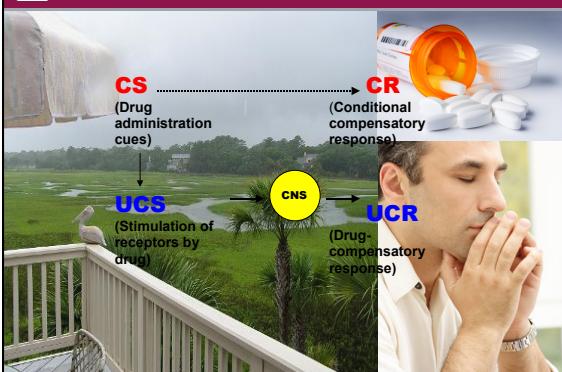
Re-exposure to drug-associated cues



"After being detoxified...the post-addict felt fine and had no craving for heroin or morphine but...on his way home, or after arriving in his drug-ridden environment, he felt sick, craved a fix. Some post-addicts described the sickness in more detail: running nose, watery eyes, sweating, chills, nausea and vomiting – 'like the flu, doc.' (Wikler, 1977, p.35)



Treatments: Relocation





4 Things to Know about CC

1. CC generates multiple responses.
2. CC establishes preferences AND aversions.
3. CC underlies various psychological conditions.
4. Pairing the US and CS is NOT sufficient for conditioning to occur.
