

Drive

Arousal

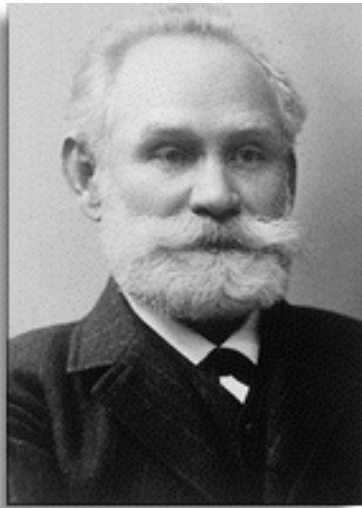
Reinforcement

Intrinsic vs. extrinsic motivation

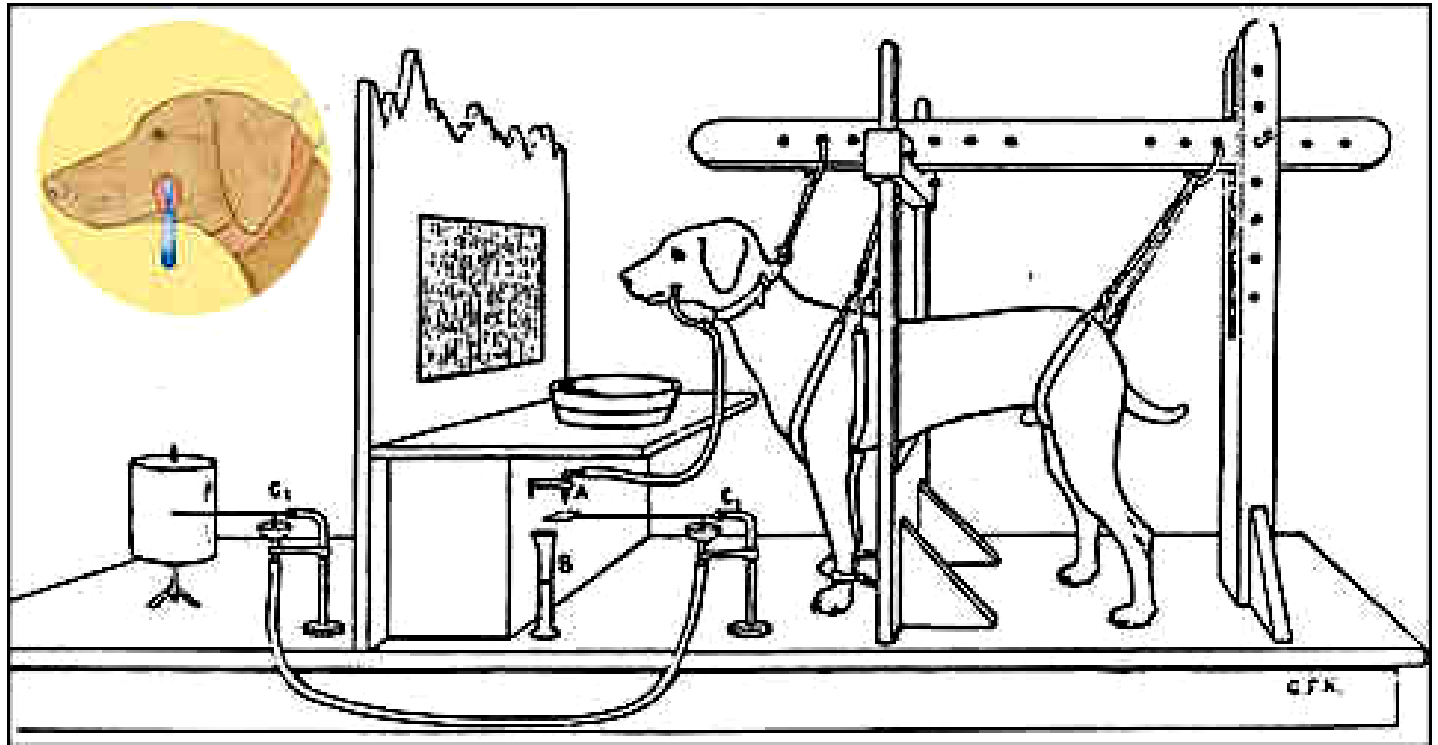
Reinforcement

Reinforcement: stimuli that strengthen antecedent stimuli or responses.

Pavlovian conditioning: pairing of two stimuli changes the strength of the first.



I. P. Pavlov

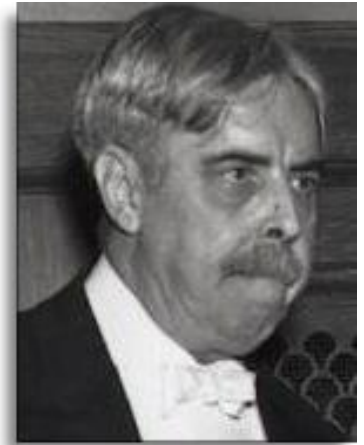


Reinforcement

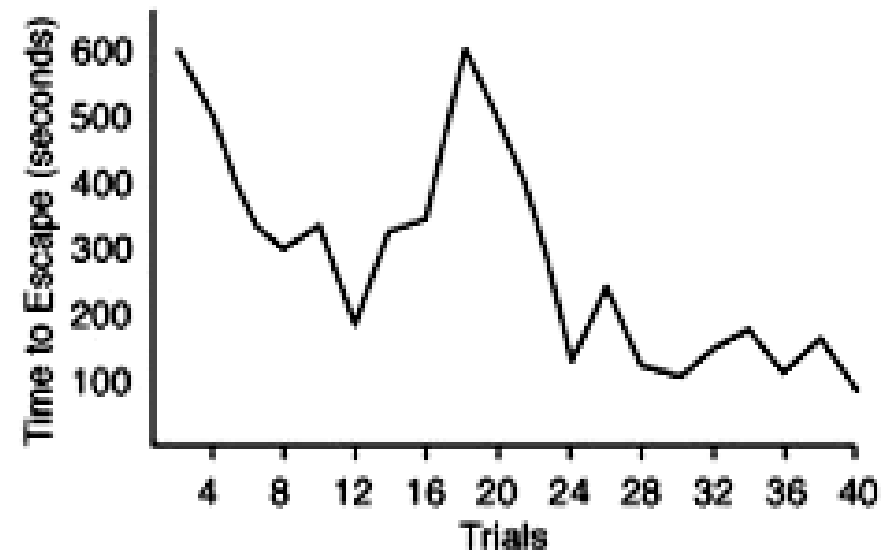
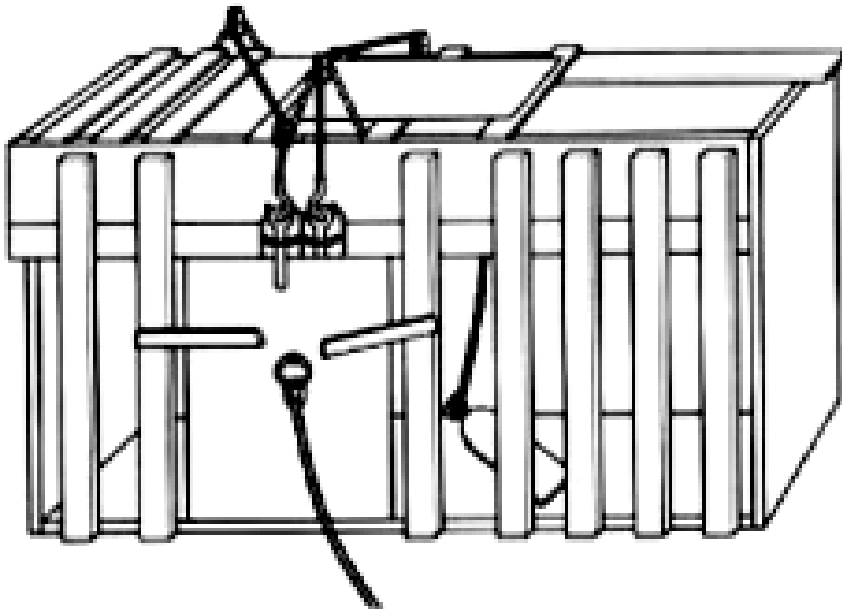
Reinforcement: stimuli that strengthen antecedent stimuli or responses.

Instrumental conditioning: response-reinforcer pairings change the strength of the response, either increasing it or decreasing it in future occurrences.

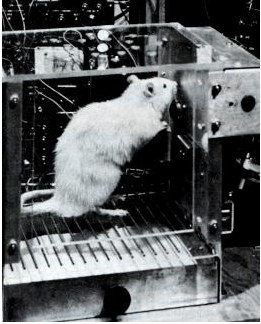
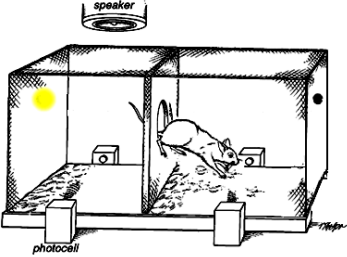
Law of effect: “satisfying” (rewarding) effects strengthen behavior, whereas “annoying” (punishing) effects weaken behavior.



E. L. Thorndike

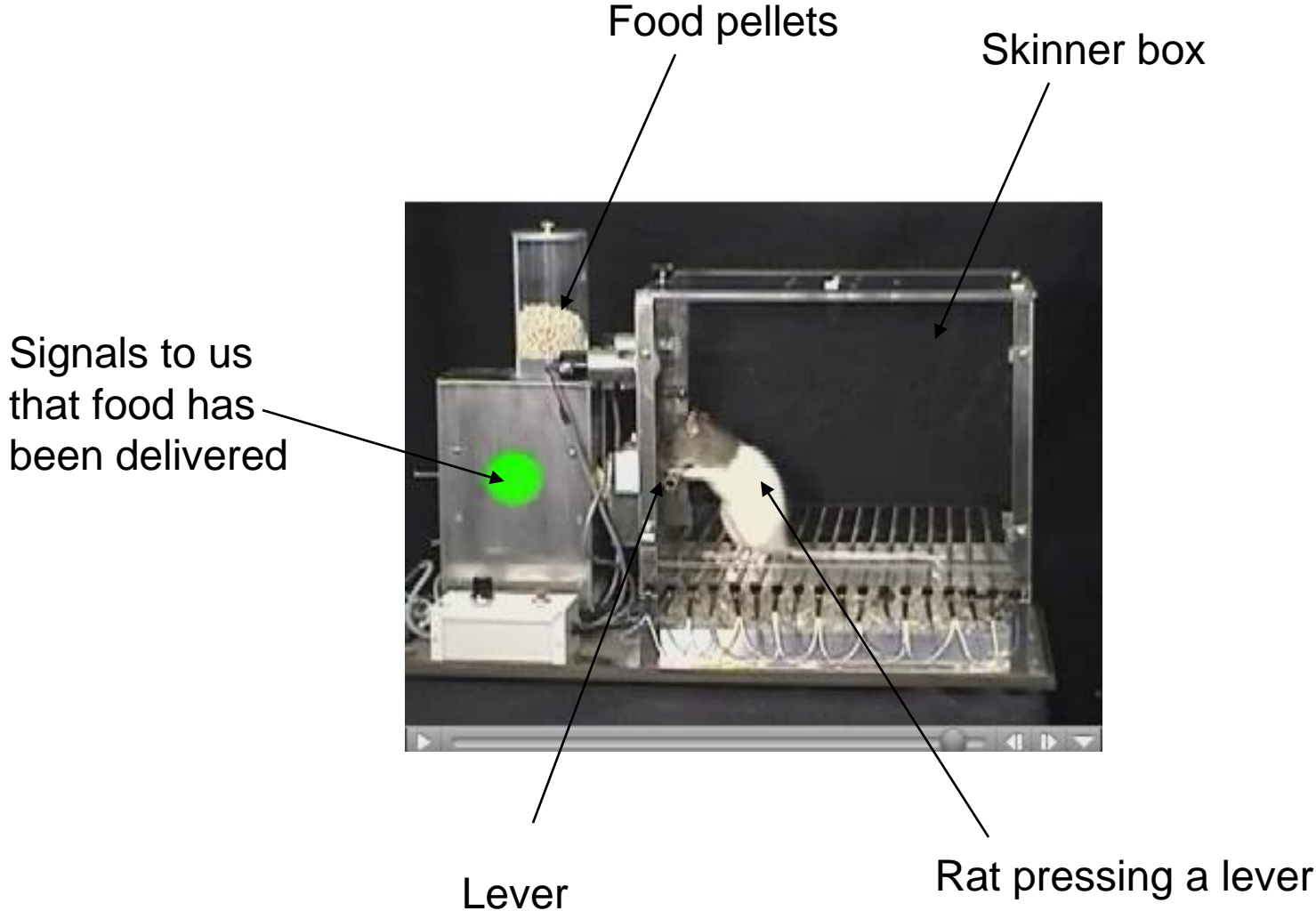


Types of reinforcement

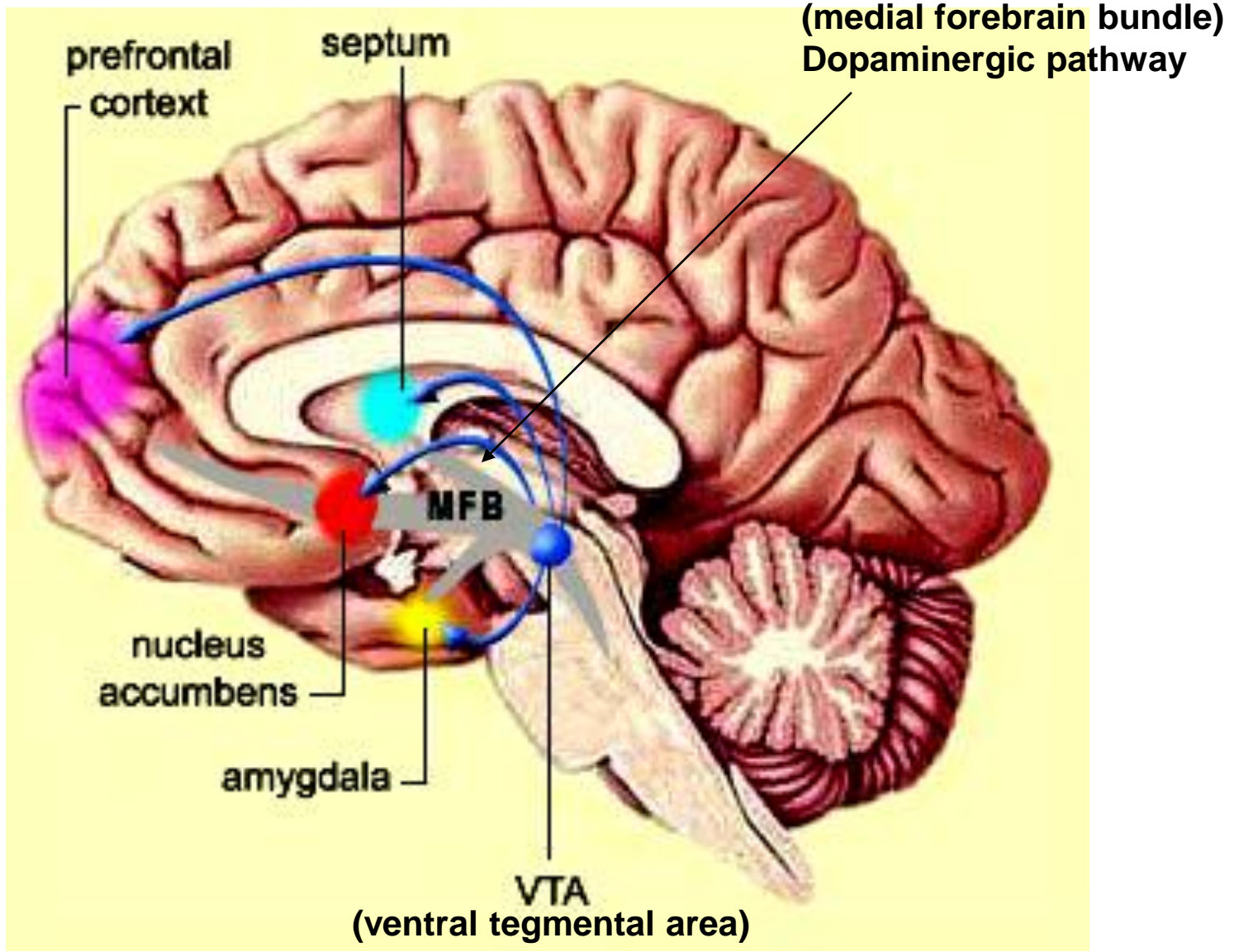
		Hedonic value	
Response contingency	Appetitive	Aversive	
Positive	<p>Lever → Food</p> <p>↑ Lever</p>  <p>Positive reinforcement</p>	<p>Lever → Shock</p> <p>↓ Lever</p> <p>Punishment</p>	
Negative	<p>Lever → No food</p> <p>↓ Lever</p> <p>Omission training</p>	<p>Shuttle → No shock</p> <p>↑ Shuttling</p>  <p>Negative reinforcement</p>	

Shaping instrumental behavior

[Video]



Brain mechanisms of reinforcement



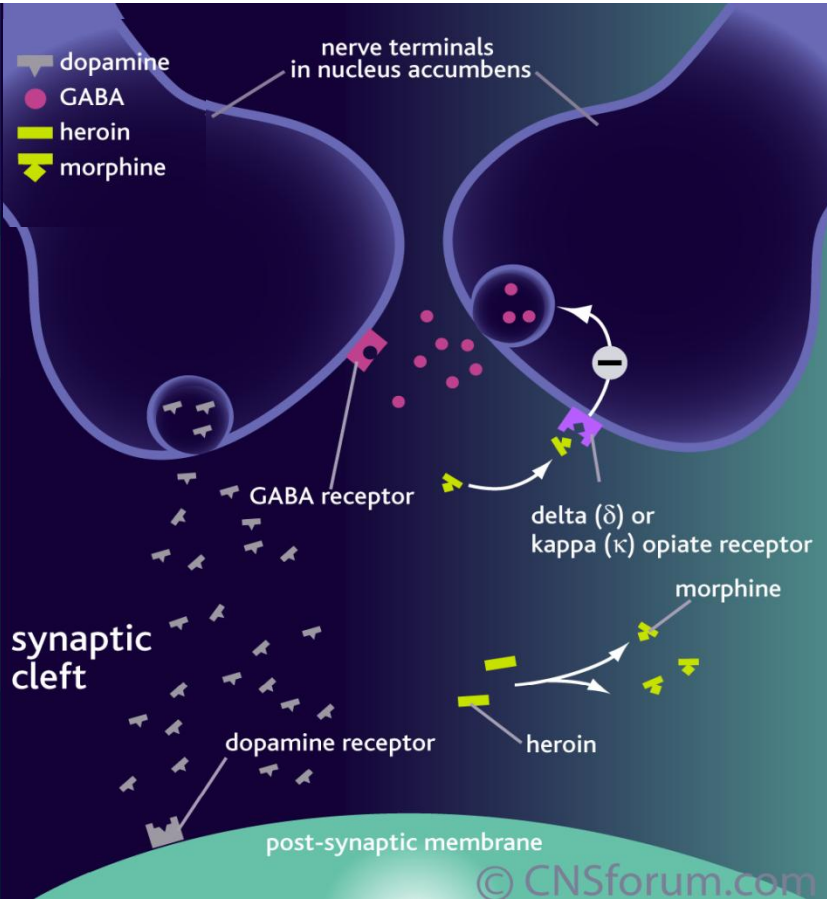
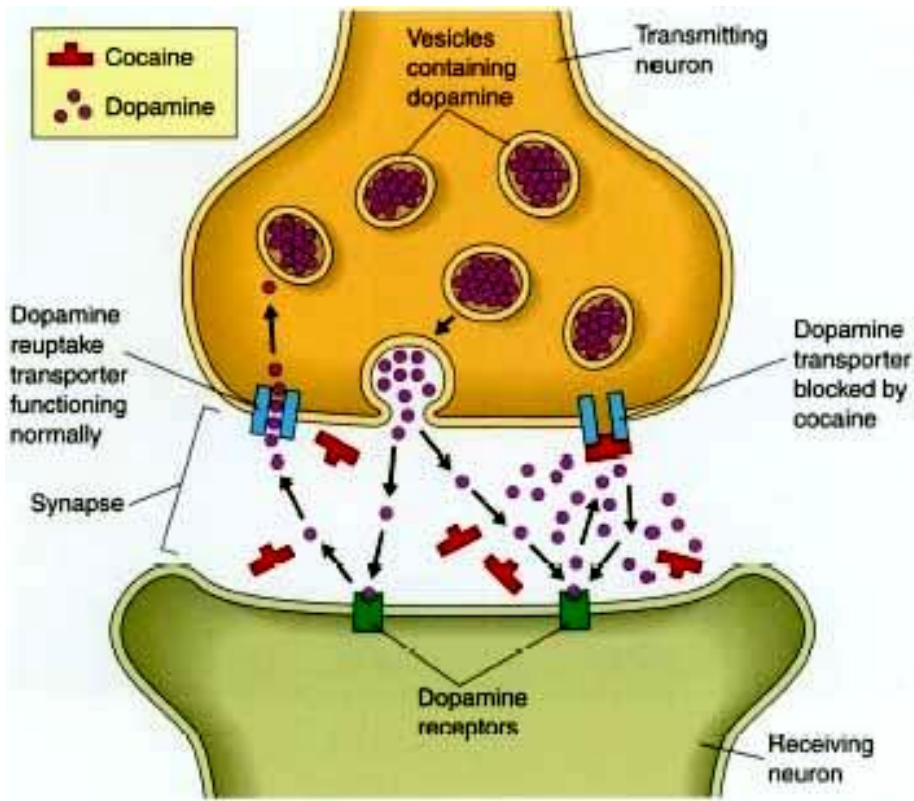
Role of dopamine release in reinforcement

- Dopamine activity during reward consumption is a determinant of incentive learning.
- Administration (ip) of the dopamine antagonist haloperidol reduces running speeds a day after training, in the absence of haloperidol treatment.
- Dopamine blockage in the NAc has similar effects.

Phase 1	Phase 2
Haloperidol: Odor→Running→Heroin Saline: Odor→Running→Heroin	Odor→Running: SLOW Odor→Running: FAST

Role of dopamine release in reinforcement

Cocaine: blocks the reuptake of dopamine by the presynaptic cell in the NAcc, thus allowing dopamine to have a long-lasting excitatory effect.



Heroin: converts into morphine in the brain and blocks the release of GABA in the NAcc. Because GABA inhibits the release of dopamine, heroin causes a long-lasting excitatory effect of dopamine.