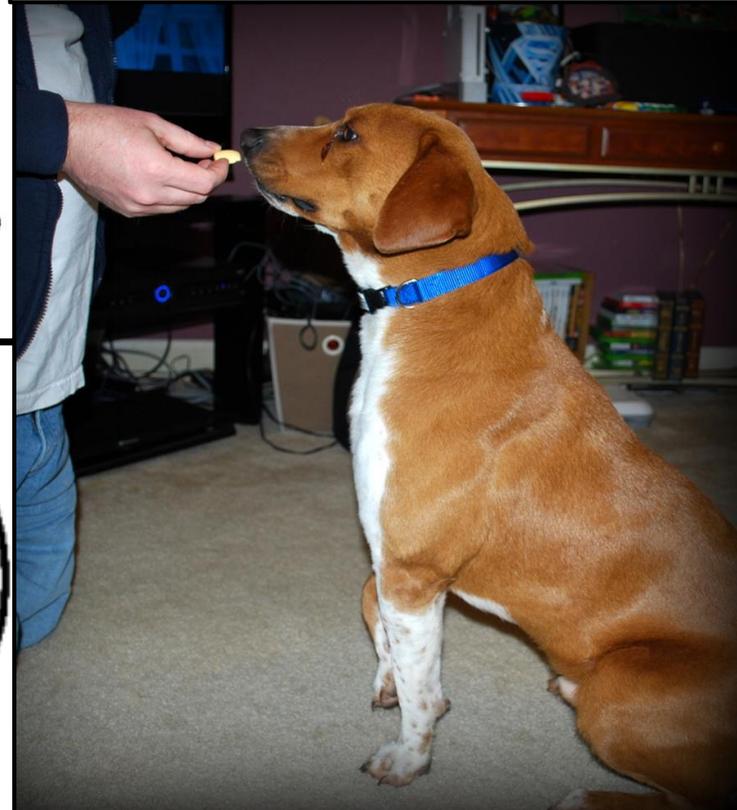


AP Psychology
LEARNING
"Operant Conditioning"



What is Learning?

Most learning is...

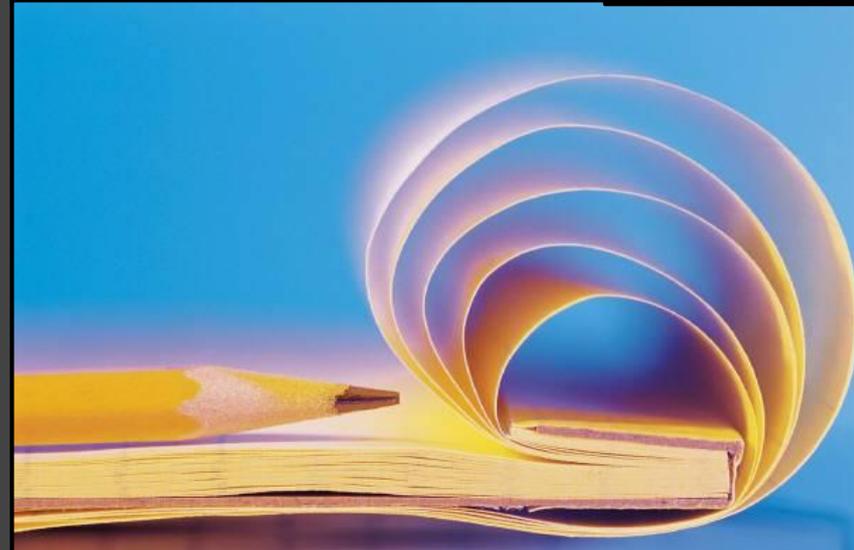
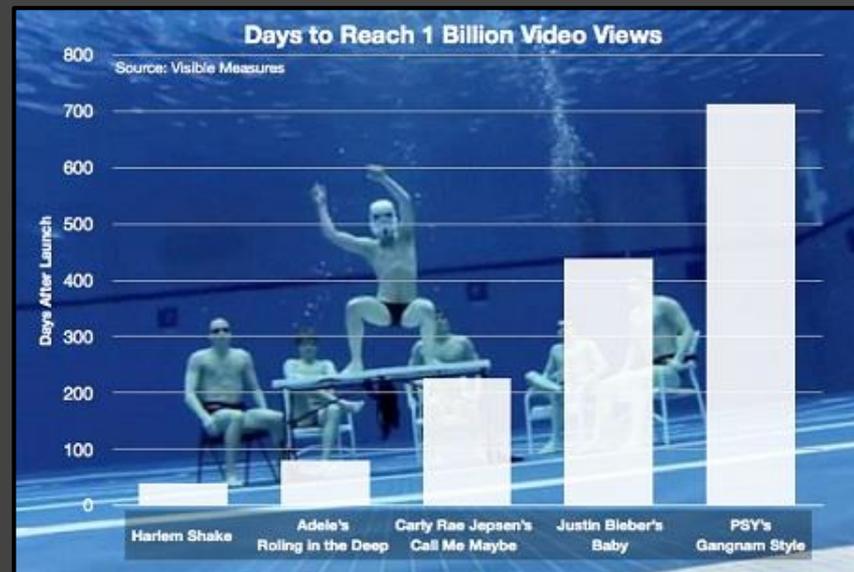
Associative Learning:

Realization that certain events occur together.

Learning itself refers to a relatively **durable change in behavior or knowledge** that is due to *experience*.

- ★ Classical Conditioning
- ★ Operant Conditioning
- ★ Observational Learning

(Latent, Abstract, Insight)

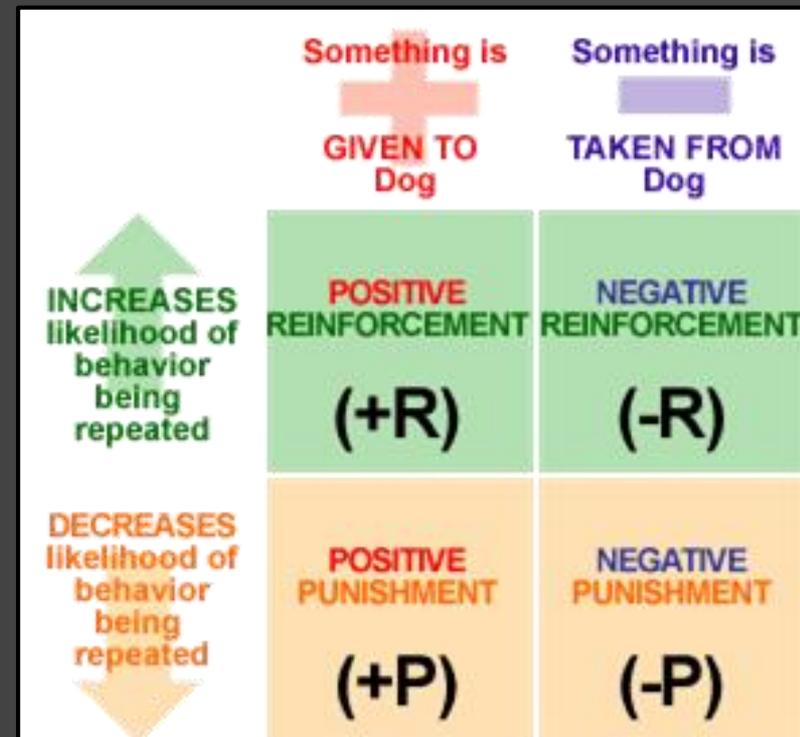
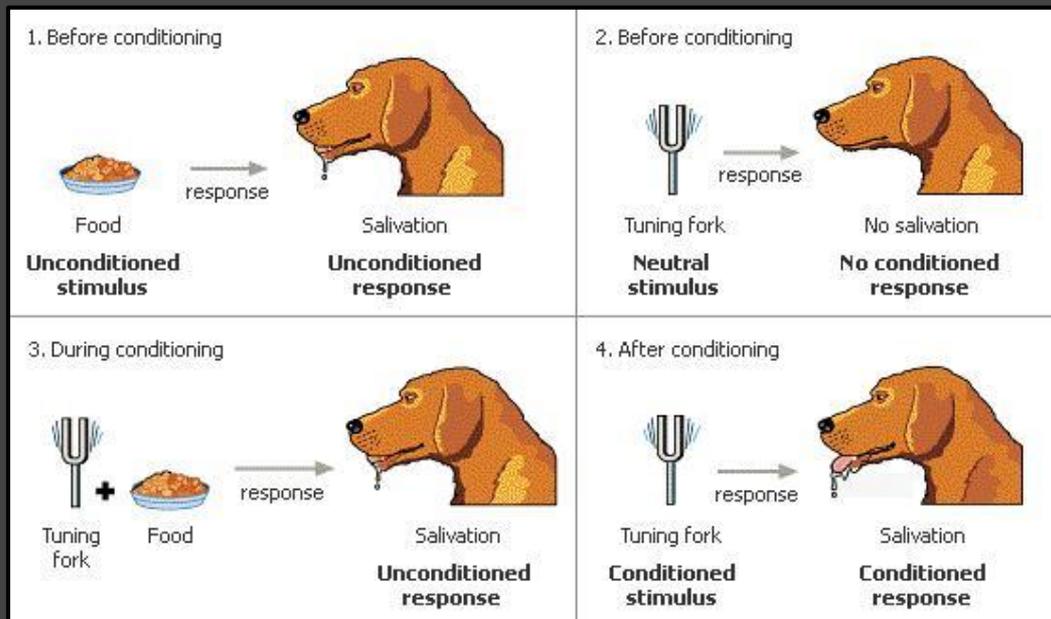


Comparing Classical and Operant Conditioning: What's the Difference?

In summary, the processes of generalisation, discrimination, extinction, and spontaneous recovery occur in both classical and operant conditioning. Both types of conditioning depend on associative learning. In classical conditioning, an association is formed between two stimuli –for example, a tone and form, a white rat and a loud noise, a product and a celebrity. In operant conditioning, the association is established between a response and its consequences –studying hard and a high-test grade, or, in the world of rats, bar pressing and food.

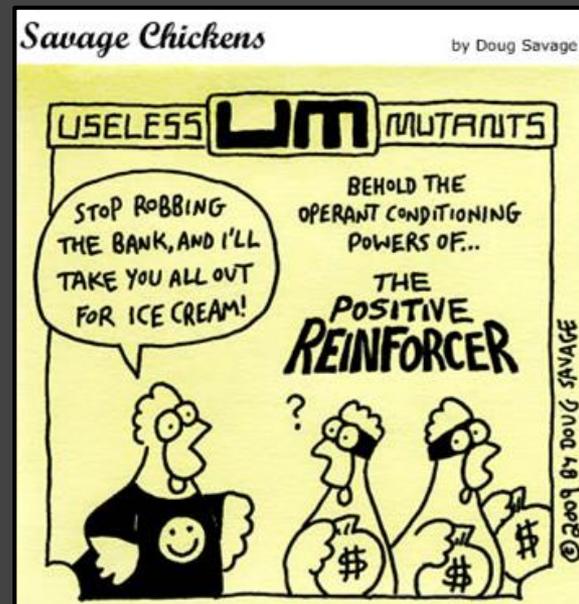
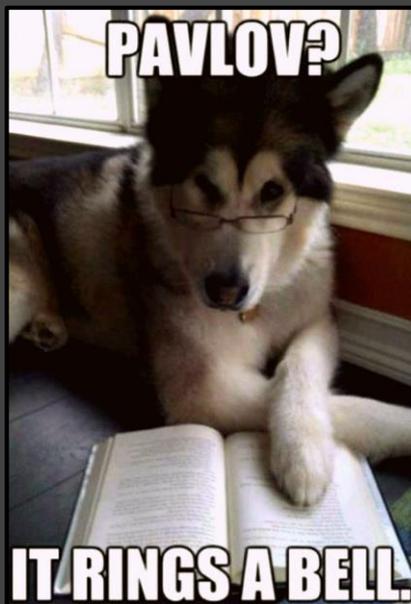
In classical conditioning, the focus is on what precedes the response. Pavlov focused on what led up to the salivation in his dogs, not on what happened after they salivated. In operant conditioning, the focus is on what follows the response. If a rat's bar pressing or your studying is followed by a reinforcer, that response is more likely to occur in the future.

Generally, in classical conditioning, the subject is passive and responds to the environment rather than acting on it. In operant conditioning, the subject is active and operates on the environment. Children *do* something to get their parents' attention or their praise.



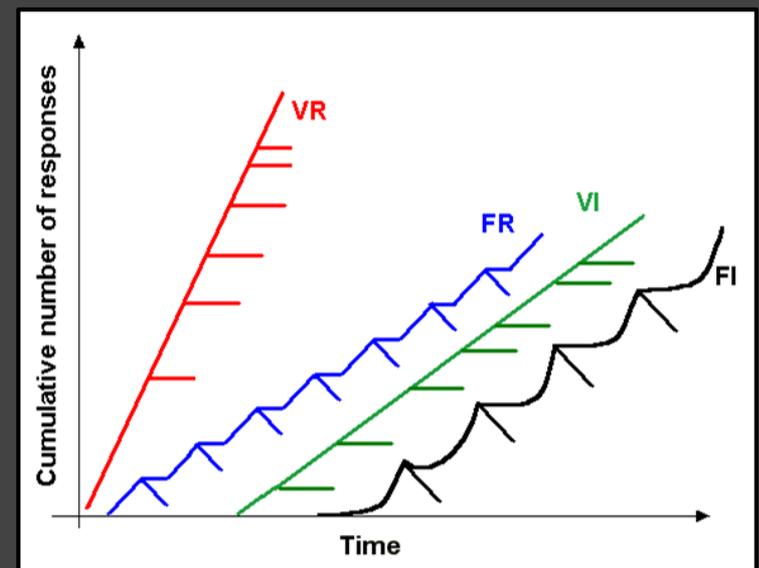
Classical and Operant Conditioning Compared

Characteristics	Classical Conditioning	Operant Conditioning
Types of association	Between two stimuli	Between a response and its consequence
State of subject	Passive	Active
Focus of attention	On what precedes response	On what follows response
Types of response typically involved	Involuntary or reflexive response	Voluntary response
Bodily response typically involved	Internal responses: emotional and glandular reactions	External responses: muscular and skeletal movement and verbal responses
Range of responses	Relatively simple	Simple to highly complex
Responses learned	Emotional reactions: fear, likes, dislikes	Goal-oriented responses



Reinforcement Schedule Compared

Schedule of Reinforcement	Response Rate	Pattern of Responses	Resistance to Extinction
<u>Fixed-ratio schedule</u>	Very high	Steady response with low ratio. Brief pause after each reinforcement with very high ratio.	The higher the ratio, the more resistance to extinction.
<u>Variable-ratio schedule</u>	Highest response rate	Constant response pattern, no pauses	Most resistance to extinction.
<u>Fixed-interval schedule</u>	Lowest response rate	Long pause after reinforcement, followed by gradual acceleration.	The longer the interval, the more resistance to extinction.
<u>Variable-interval schedule</u>	Moderate	Stable, uniform response.	More resistance to extinction than fixed-interval schedule with same average interval.



The Effects of Reinforcement and Punishment

Reinforcement

(Increases or strengthens a behaviour)

Adding a Positive (positive reinforcement)

Presenting food, money, praise, attention, or other rewards.



Subtracting a Negative (negative reinforcement)

Removing or terminating some pain-producing or otherwise aversive stimulus, such as an electric shock.



Punishment

(Decreases or suppresses a behaviour)

Adding a Negative

Delivering a pain-producing or otherwise aversive stimulus, such as a spanking or an electric shock.



Subtracting a Positive

Removing some pleasant stimulus or taking away privileges such as TV watching or use of automobile.



Adding a positive = green plus

red plus

Subtracting a negative = red minus

minus

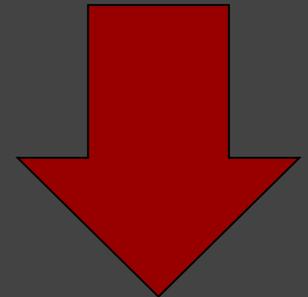
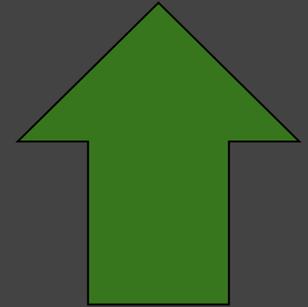
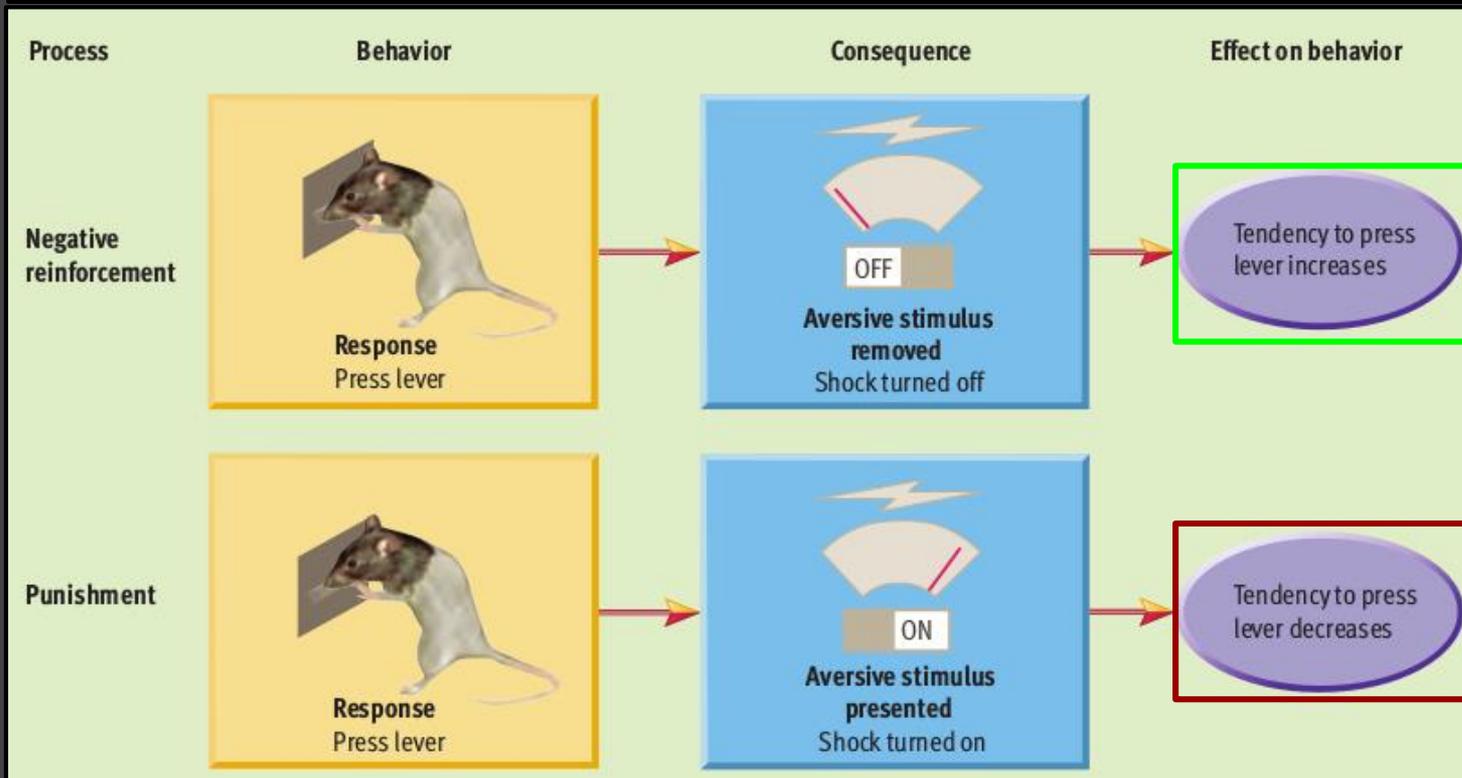
Adding a negative =

Subtracting a positive = green



"Here at Tiny-Taught Preschool we're proud of our 'no spanking' policy."

Comparison of negative reinforcement & punishment



Although **punishment** can occur when a response leads to the removal of a rewarding stimulus, it **more typically involves the presentation of an aversive stimulus**.

Students often confuse punishment with negative reinforcement because they associate both with aversive stimuli. However, as this diagram shows, **punishment** & **negative reinforcement** represent opposite procedures that have opposite effects on behavior.

Behaviorism

To a Behaviorist -
Everything you know...
Everything you are...

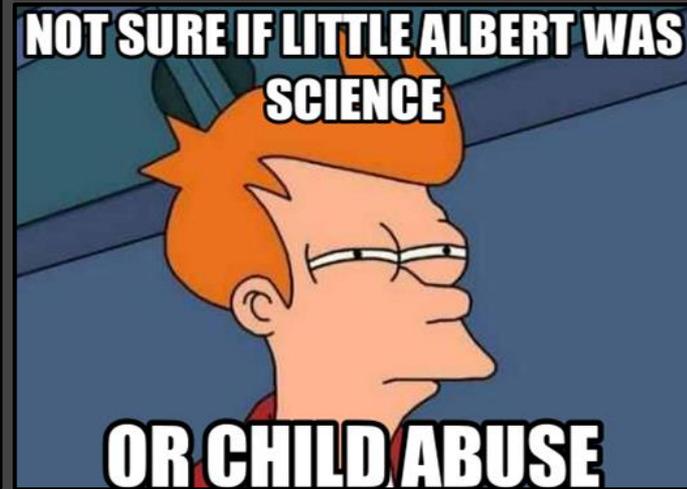
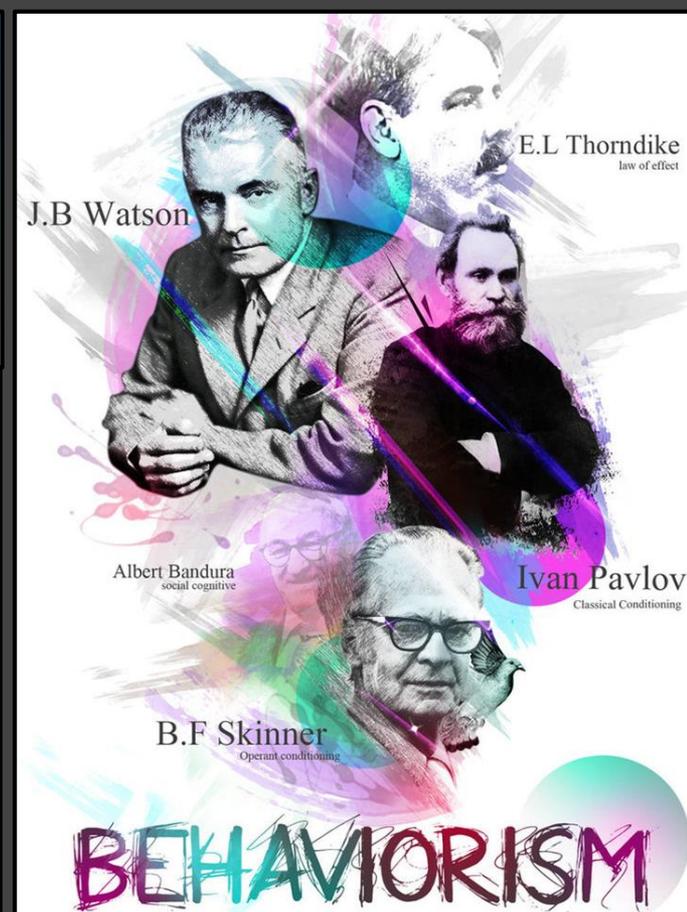
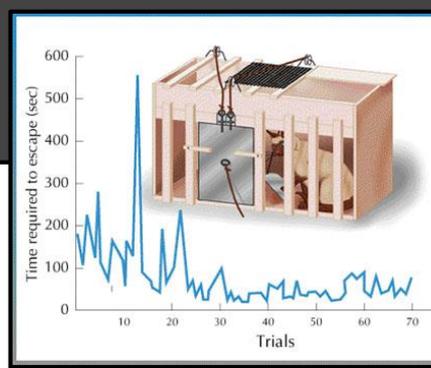
is the result of **human**
behavior.

*“Psychology is the study of
behavior, not of the mind!”*

- say the behaviorists.

Picked up steam in the late 1960s &
during the 1970s.

**A reaction to the non-scientific
work of Freud.** Freud was all the
rage. *Yet where was the ‘science’ &
how can you prove anything about the
unconscious mind?*



Classical vs. Operant Conditioning

Both use acquisition, discrimination, S-R, generalization & extinction.

Classical Conditioning:

Automatic or Respondent Behavior

Ex.) Your dog gets sick & requires several painful trips to the vet. Now he hides every time he hears you rattle your keys. Automatic.

Or - Your cat is excited to eat, as soon as you get home, he gets fed.



Operant Conditioning:

Behavior where one can influence their environment with behaviors which have consequences (operant behavior).

Ex.) Teacher comments on test.

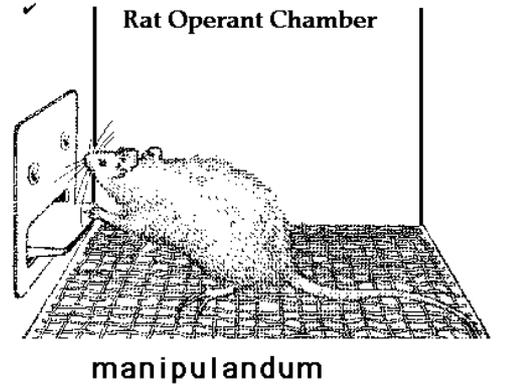
Child working on homework, if completed can play their Xbox. If not completed, may lose play time.

Or - Your dog sits nicely because he knows he'll get a treat for 'being a good boy.' :)



Operant Conditioning

A type of learning in which **behavior** is **strengthened** if followed by **reinforcement** or **diminished** if followed by **punishment**



- in rats:*
- ★ **trial and error** learning
 - ★ allows acquisition of motor programs that are **not instinctive**
 - ★ **behavior shaped by rewards**
 - ★ develops as a result of the **association of reinforcement** with a particular response
 - ★ on a **proportion** of occasions



Classical conditioning

A signal is placed before a reflex

Developed in Russia

Known as "Pavlovian"

Also called "respondent conditioning"

Works with involuntary behavior

Behavior is said to be "elicited"

Typified by Pavlov's dog

Operant conditioning

A reinforcing or punishing stimulus is given after a behavior

Developed in U.S.

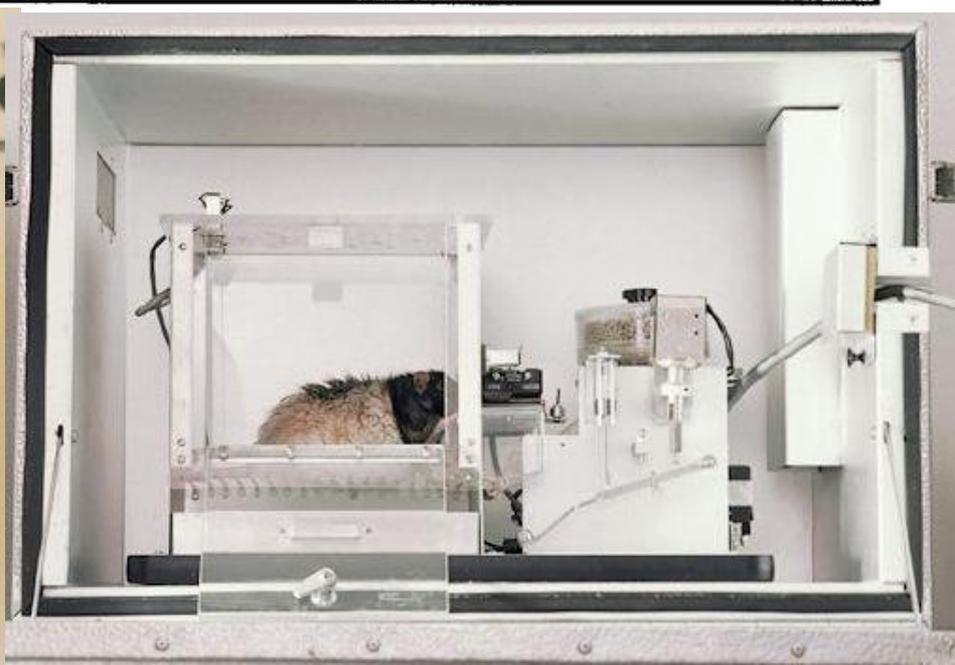
Known as "Skinnerian"

Also called "instrumental conditioning"

Works with voluntary behavior

Behavior is said to be "emitted"

Typified by Skinner Box





**THE WAY POSITIVE REINFORCEMENT IS CARRIED
OUT IS MORE IMPORTANT THAN THE AMOUNT.**

B.F. Skinner
1904 - 1990

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[YouTube: Big Bang Theory - Operant Conditioning](#)



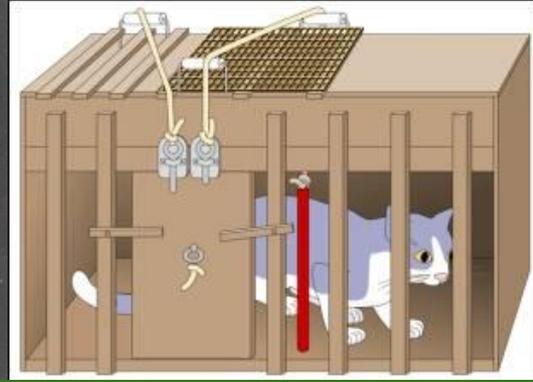
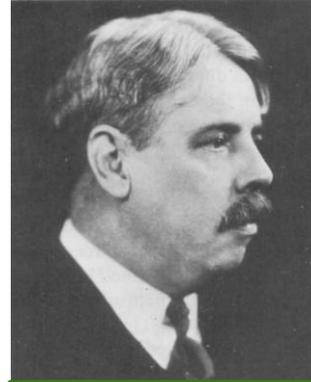
Edward Thorndike

Law of Effect: rewarded behavior is likely to be repeated.

Studied at cats inside a 'puzzle box' - found that a well-practiced cat will find the way out.

If an action brings an reward, Thorndike believed that **that action becomes stamped into the mind.**

Behavior changes because of the consequences of that behavior.



Previous theories had emphasized practice or repetition. Thorndike gave equal consideration to the **effects of reward or punishment, success or failure, & satisfaction or annoyance** on the learner.



[YouTube: Thorndike's Puzzle Box for Cats](#)



B.F. Skinner

Instead of antecedents of behavior (what comes before) a new focus on consequences of behavior.

I do not deny the existence of internal mental events, however, I don't feel these can be studied scientifically. Moreover, there really is no need to study them



B.F. Skinner, 1904-1990. Granddaddy of Applied Behavior Analysis and the study of Verbal Behavior

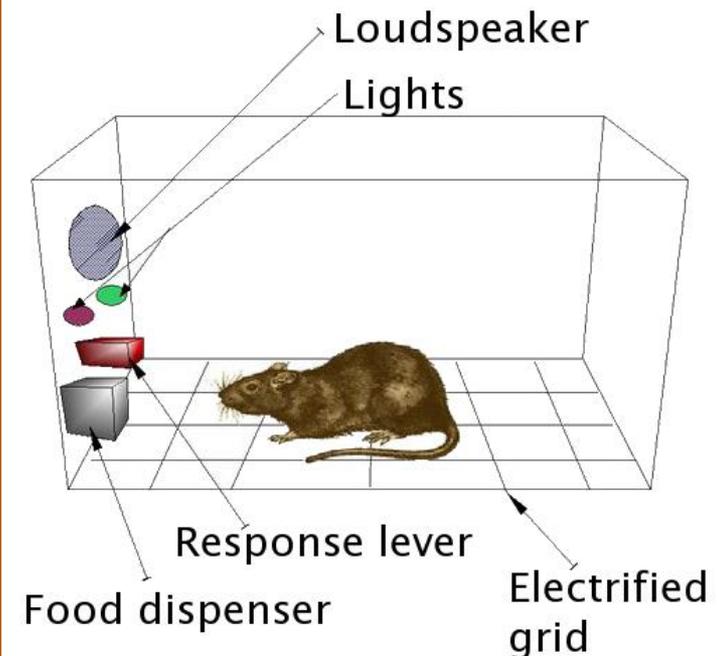
BF Skinner argued that, CC did not explain complex behavior.

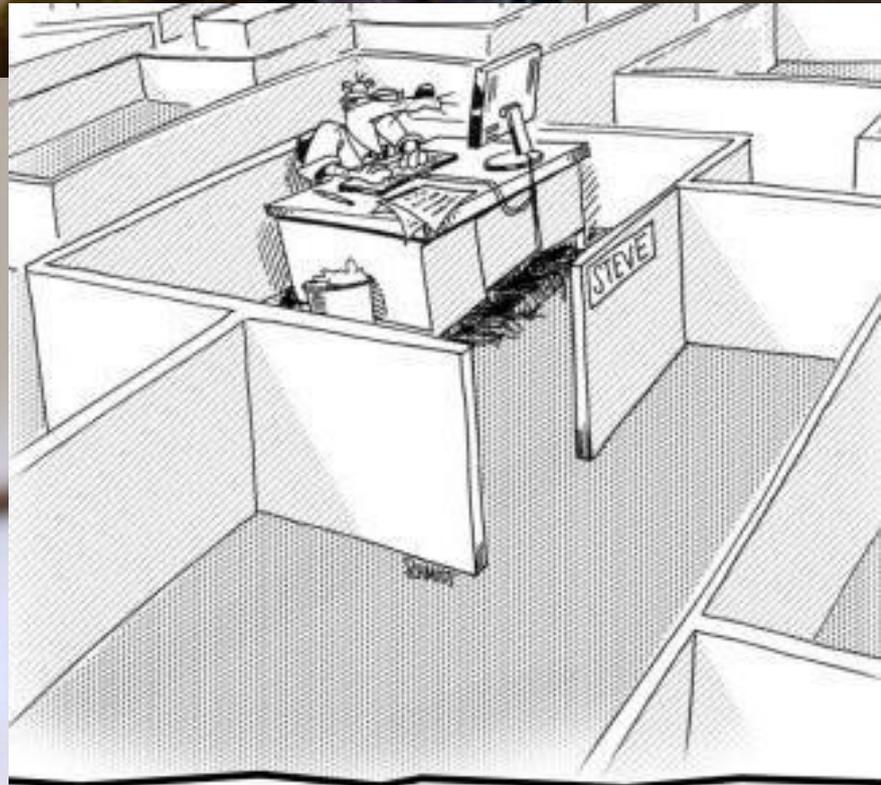
2 categories of consequences:

Reinforcement & Punishment

Reinforcement is designed to increase *the probability* that a behavior will occur again.

Punishment is designed to decrease *the probability* that a behavior will occur again.





THE CORPORATE RAT

Operant Conditioning Chamber

