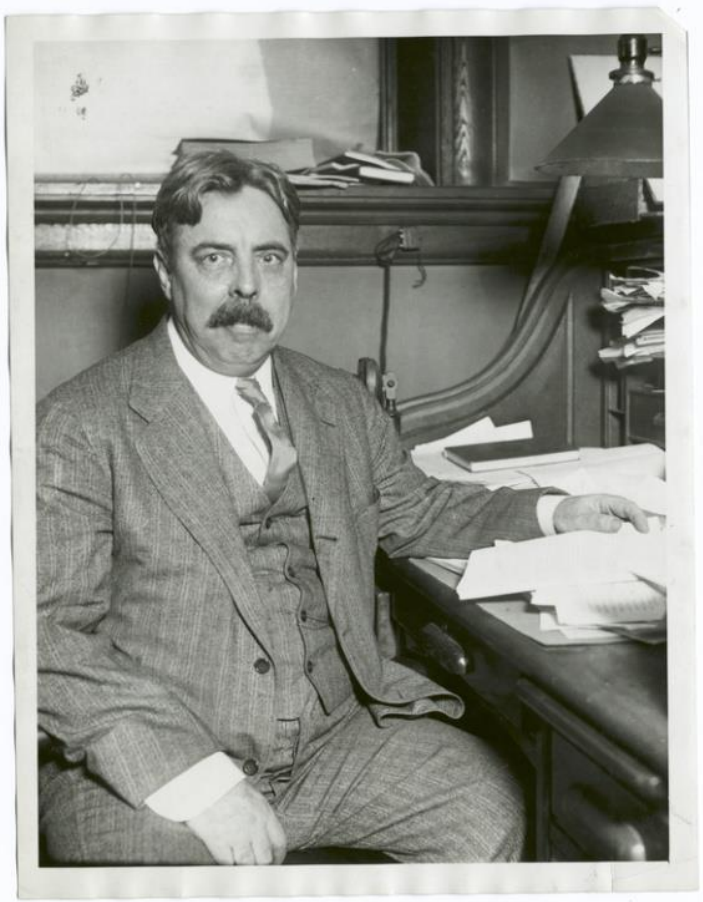
The Law of Effect



- Edward Thorndike
- Locked cats in a cage
- Behavior changes because of its consequences.
- Rewards strengthen behavior.
- If consequences are unpleasant, the Stimulus-Reward connection will weaken.
- Called the whole process **instrumental learning**.

Learning = Behavior + Consequences

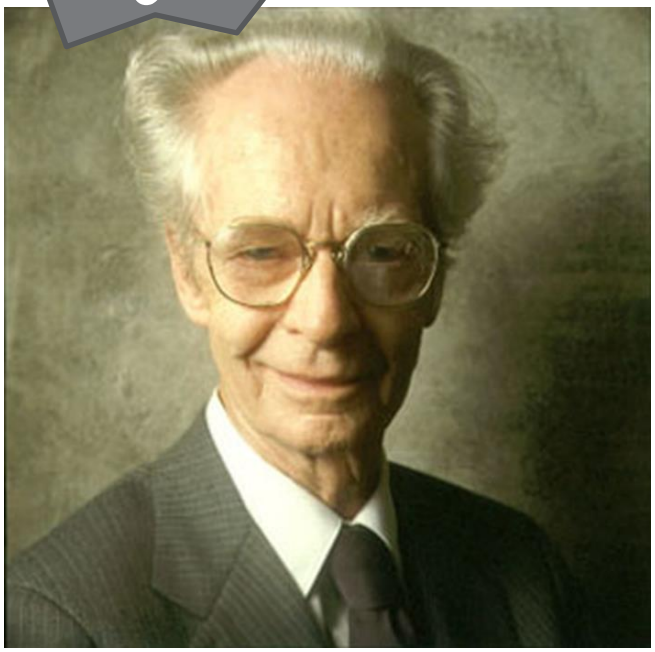
Thorndike -The Law of Effect

Operant conditioning: a learning theory of attachments

B.F. Skinner

- The Mac Daddy of Operant Conditioning.
- Nurture guy through and through.
- Skinner's experiments extend Thorndike's thinking, especially his law of effect.

You can quote me!! (In fact, you should.) "Behavior is a function of its consequences."



TERMS TO KNOW!

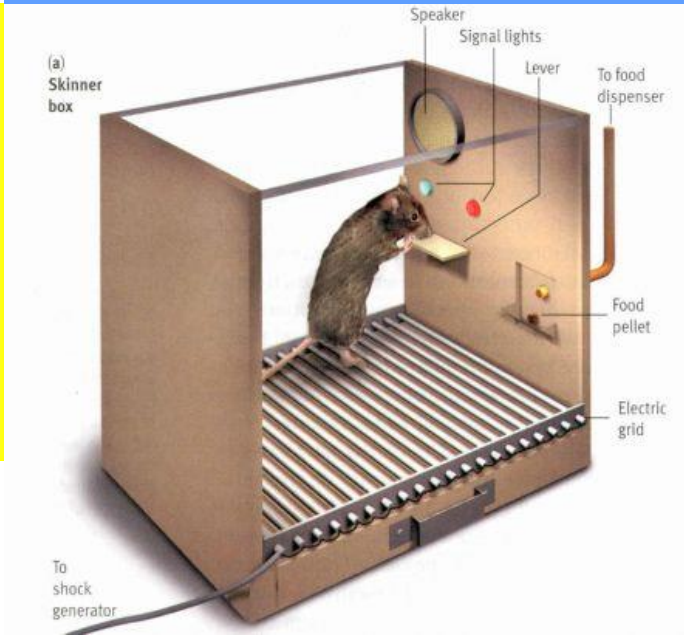
OPERANT = an action e.g. a rat pressing a lever in a Skinner box; a baby crying with hunger

REWARD = the consequence of the action, e.g. the rat receiving food for pressing the lever; the baby being given food

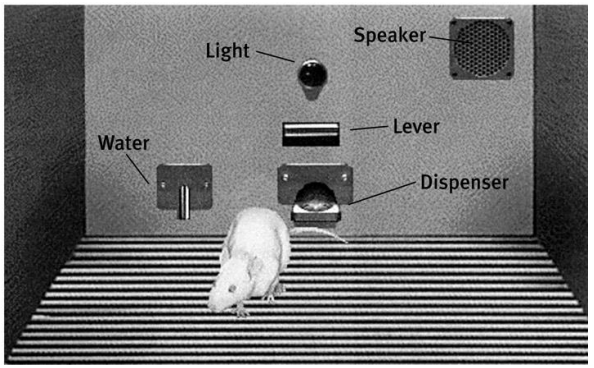
This reward acts as a **REINFORCER**, because it causes the action to be repeated.

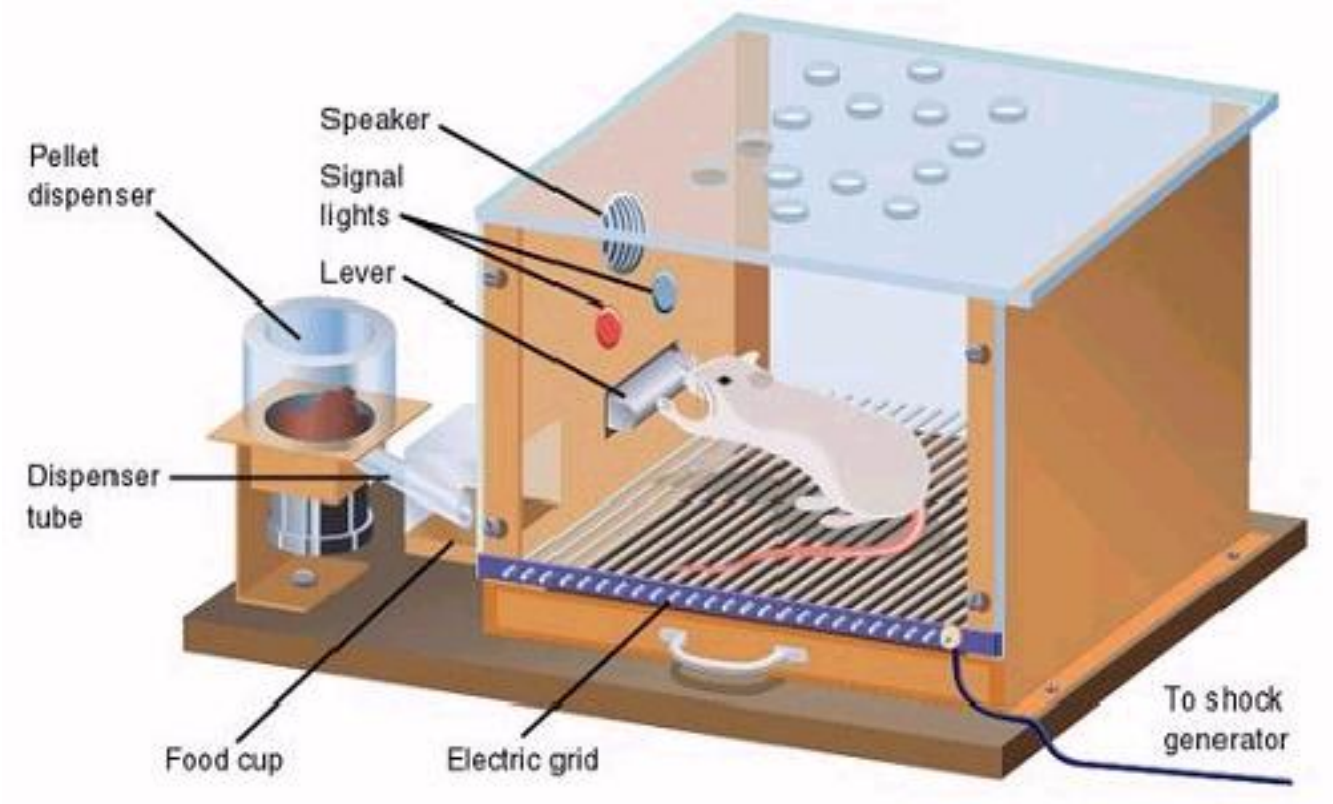
***THE SKINNER BOX*:**

The piece of equipment designed by Skinner to demonstrate operant conditioning



Skinner Box


Light
Speaker
Lever
Water
Dispenser


Speaker
Pellet dispenser
Signal lights
Lever
Dispenser tube
Food cup
Electric grid
To shock generator

Operant conditioning: a learning theory of attachments

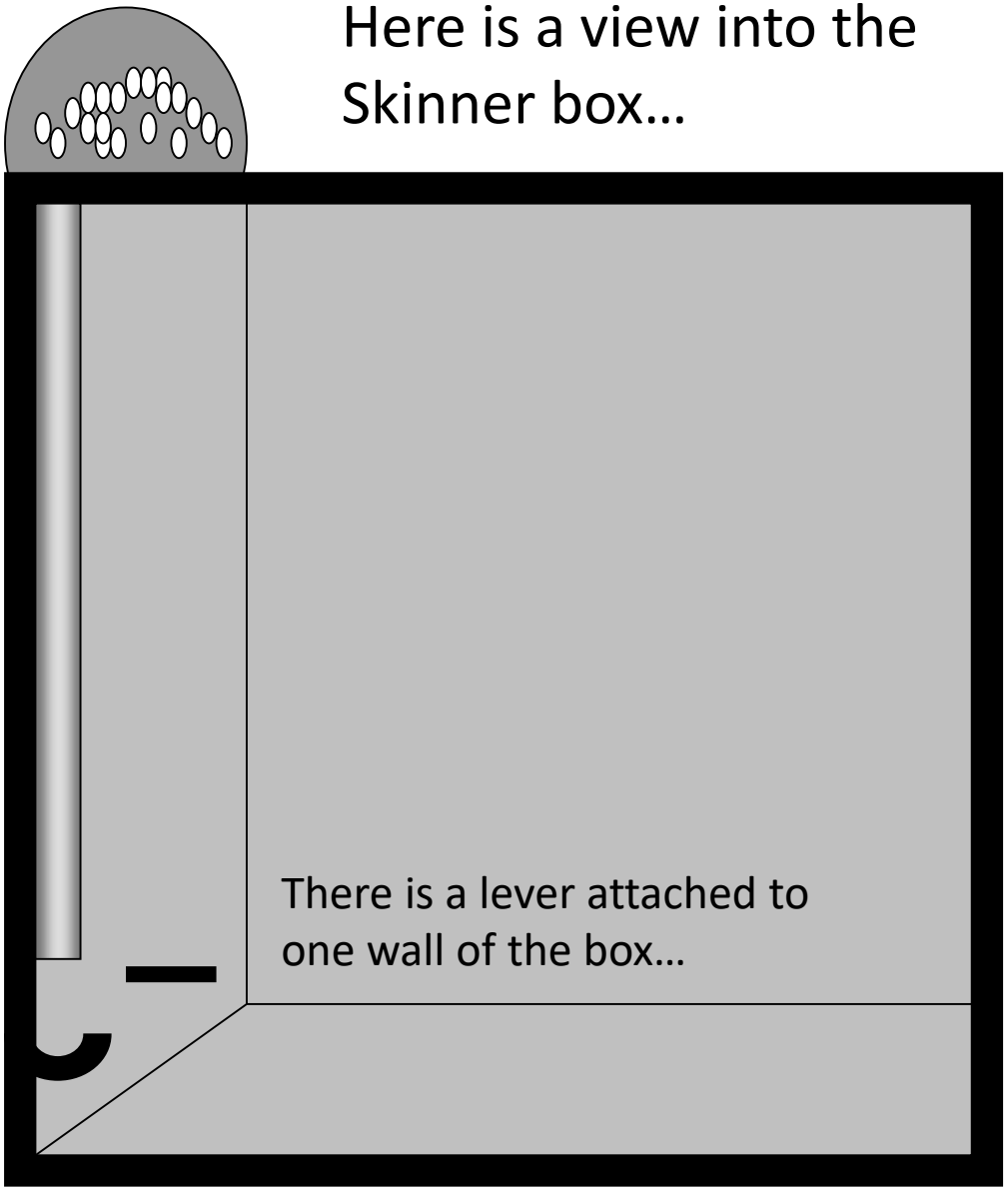
There is a food container on top of the box…

The food container is filled with sugar pellets…

A tube leads from the food container to the tray…

There's a feeding tray attached to the wall, to catch food pellets…

Here is a view into the Skinner box…



Operant conditioning: a learning theory of attachments

How to operantly condition a mouse to press a lever for food …

THE MOUSE!

A mouse is placed in the Skinner box. It has been fasted for 24 hours so it is hungry.

The mouse has never been in a Skinner box before.

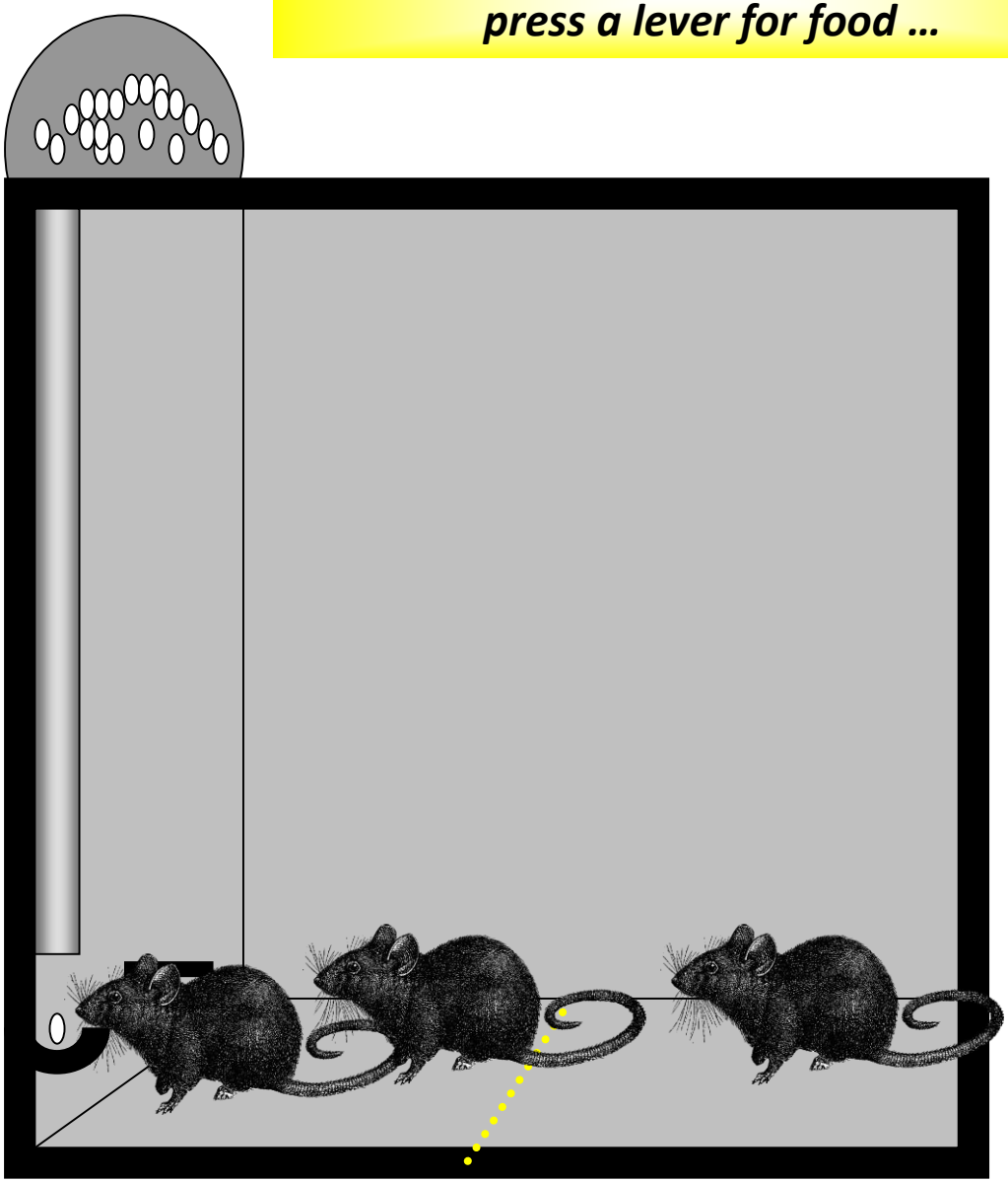
It is allowed to explore the box.

CONDITIONING BEGINS!

The researcher imagines a line dividing the floor of the box in half.

Each time the mouse moves into the half of the floor nearest the lever, the researcher releases a sugar pellet into the feeding tray.

The mouse is attracted to the tray by the sugar pellet, and feeds.



The Skinner box…

Operant conditioning: a learning theory of attachments

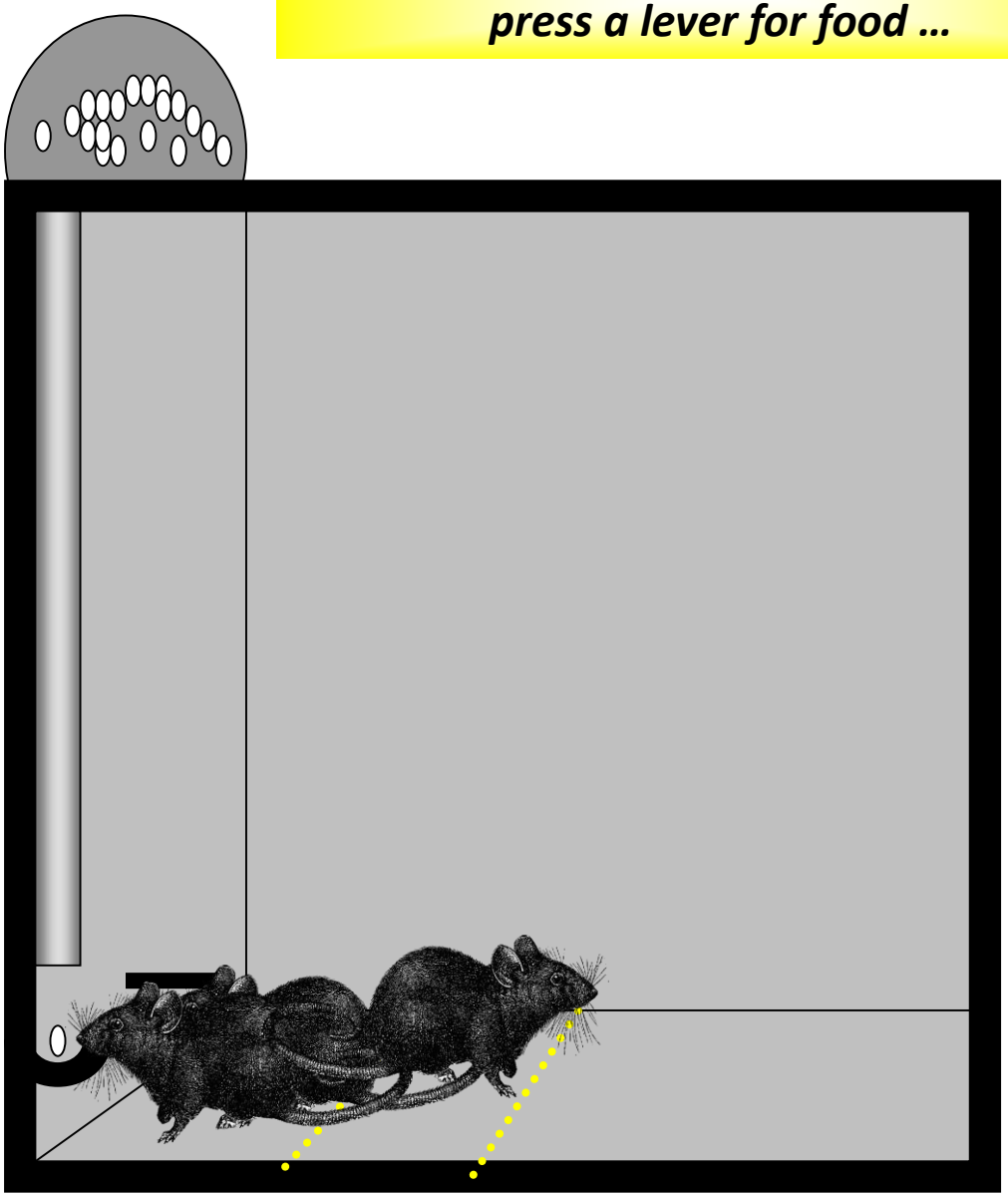
CONDITIONING CONTINUES!

This process is repeated several times. At first the mouse continues exploring the whole box.

But before long, the mouse is staying in the half of the box nearest the feeding tray.

Now the researcher becomes more demanding, and imagines a line even nearer the lever – he stops giving the mouse food pellets, unless the mouse stays in this area.

How to operantly condition a mouse to press a lever for food …



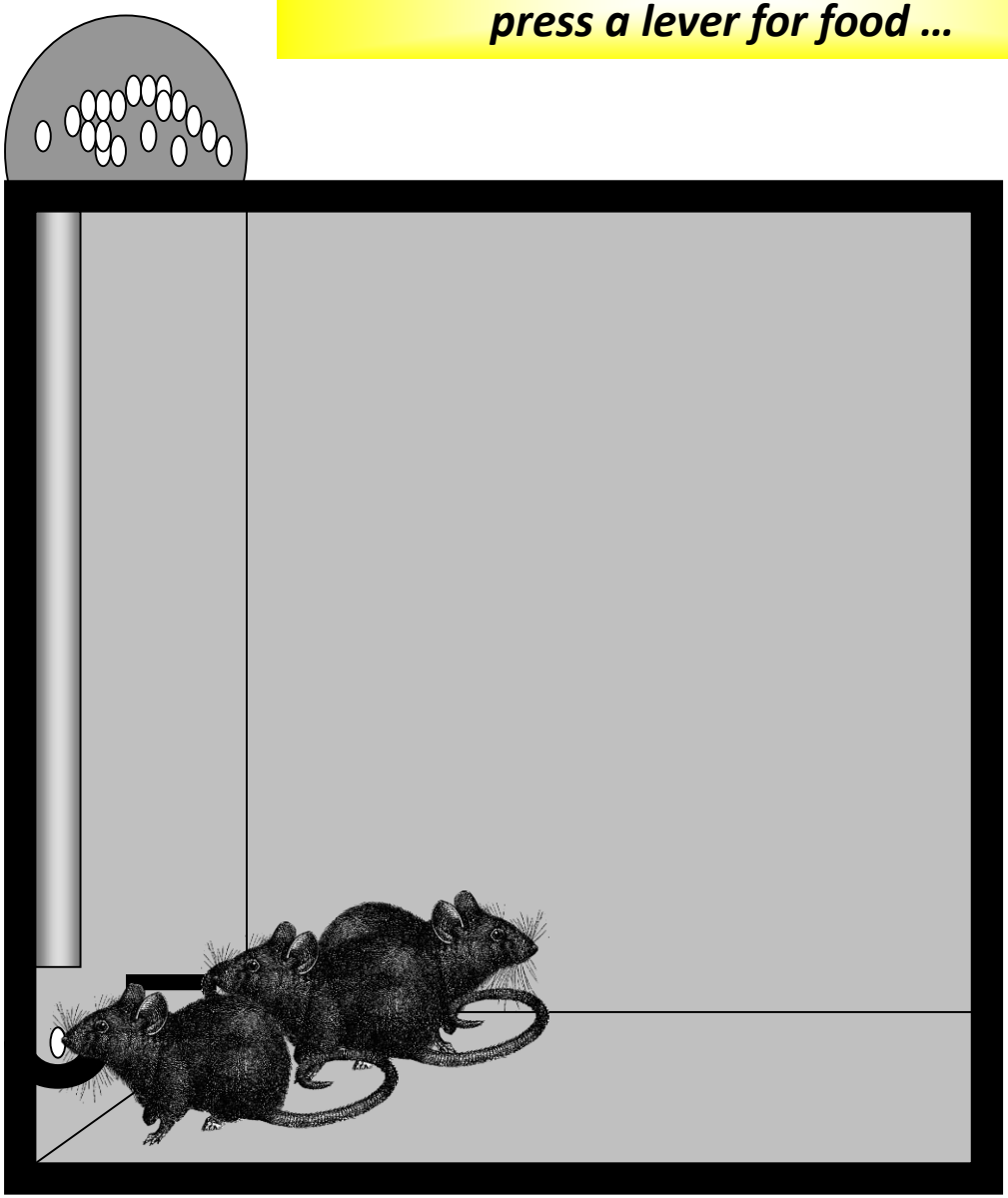
The Skinner box…

Operant conditioning: a learning theory of attachments

CONDITIONING CONTINUES!

Next, the researcher will only give food if some part of the mouse's body is touching the lever – at this stage, it doesn't matter which part.

How to operantly condition a mouse to press a lever for food …



The Skinner box…

Operant conditioning: a learning theory of attachments

CONDITIONING CONTINUES!

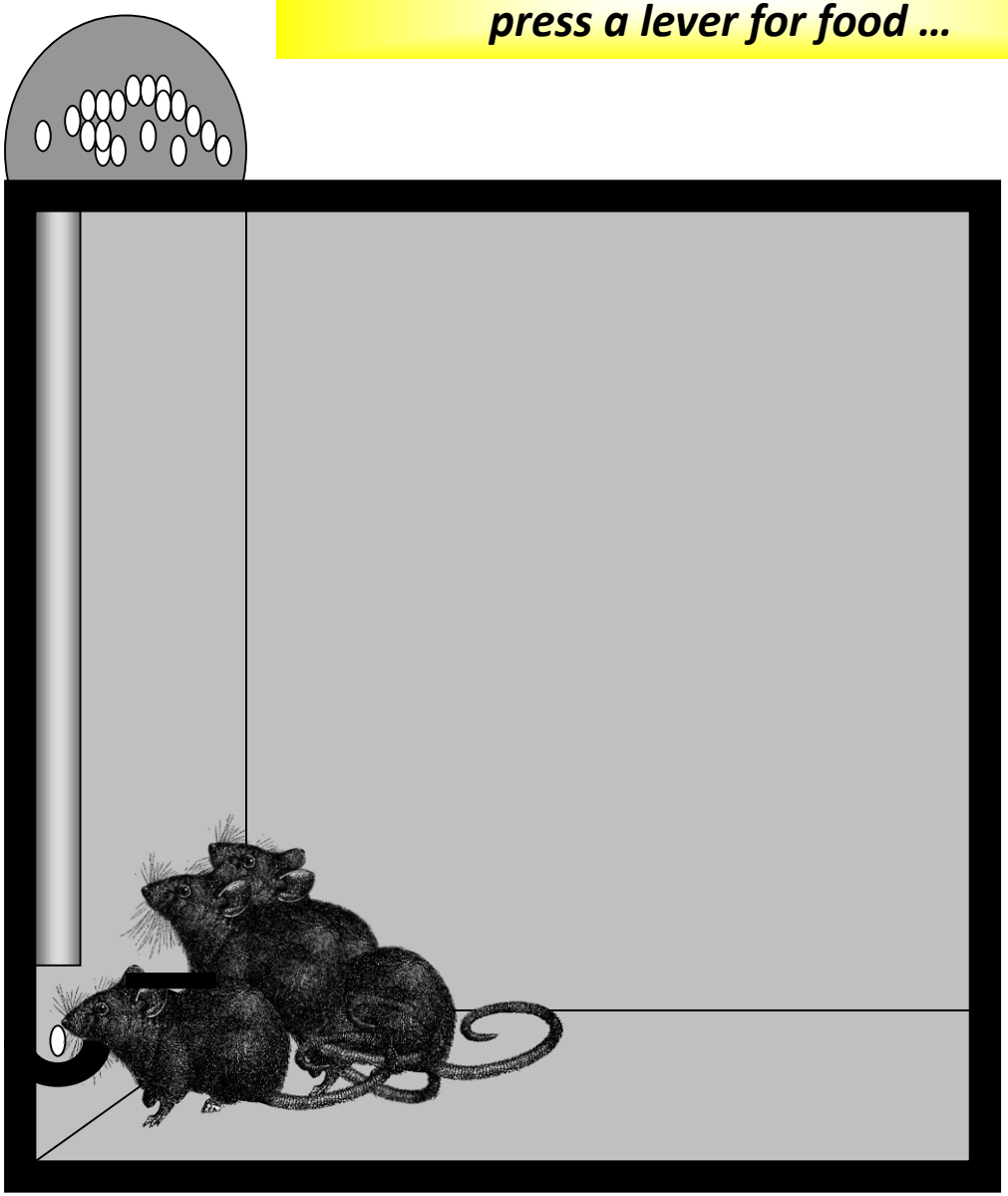
When the mouse is spending all its time touching the lever with the front part of its body, the researcher stops giving food.

It isn't long before the mouse accidentally touches the lever with his feet, and presses it.

When the lever is pressed, food is automatically delivered.

The mouse will continue pressing the lever whenever he wants food.

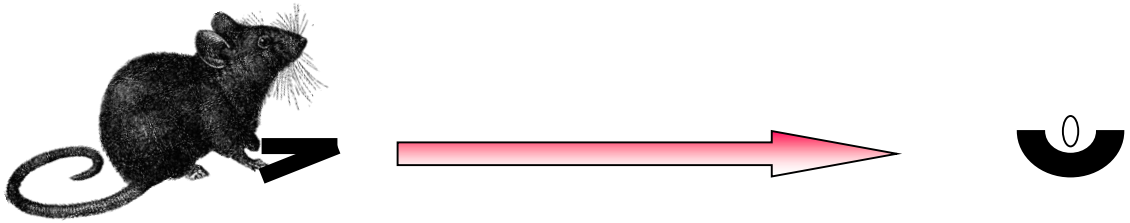
How to operantly condition a mouse to press a lever for food …



The Skinner box…

Operant conditioning: a learning theory of attachments

Summary of operant conditioning of the mouse …



Mouse performs **action**: presses lever

Mouse receives **reward**: food relieves hunger

The reward **REINFORCES** the action, so the mouse **REPEATS** it

FACT!

- A reward which makes a good situation even better is called a POSITIVE REINFORCER.
- A reward which takes away an unpleasant situation is called a NEGATIVE REINFORCER.

THINK!

For the mouse in the example above:

- Say whether food is a positive or a negative reinforcer.
- Be able to explain your decision.

Skinner Box

Reinforcers

- A **reinforcer** is anything the INCREASES a behavior.

Positive Reinforcement:

- The addition of something pleasant after desired response

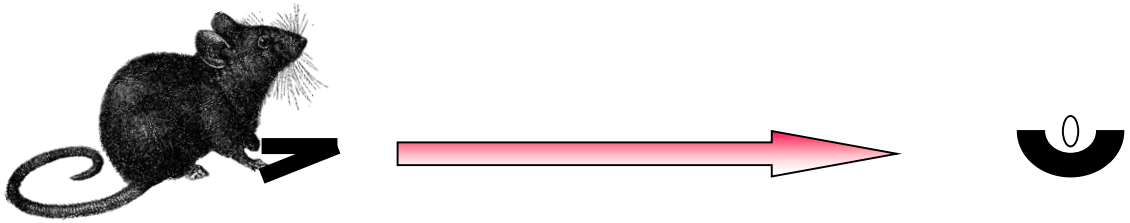
Negative Reinforcement:

- The removal of something unpleasant after a desired response.
- Two types of NR – (AKA - Aversive control)
- Escape Learning
- Avoidance Learning

(Getting kicked out of class versus cutting class)

Operant conditioning: a learning theory of attachments

Summary of operant conditioning of the mouse …



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Reinforcement

Positive reinforcement comes in many forms.

- A *concrete* reinforcer is something tangible that can be seen.
- A *social* reinforcer is a gesture from another person in response to a behavior.
- An *activity* reinforcer is an opportunity to engage in a fun activity. People will do something they don't enjoy for a chance to do something that they do enjoy.

Primary v. Secondary Reinforcers

Primary Reinforcer

- Things that are in themselves rewarding.
- Serves a biological need

Secondary Reinforcer

- A stimulus that gains it reinforcing power through its association with a primary reinforcer.
- Examples include money, clicker noise when training animals

Token Economy

- Every time a desired behavior is performed, a token is given.
- They can trade tokens in for a variety of prizes (reinforcers)
- Used in homes, prisons, mental institutions and schools.

Premack Principle

Backstreet's cheeseburgers might be a great positive reinforcer for me, but it would not work well on a vegetarian.

- *preferred* behaviors can be used to reinforce *unpreferred* behaviors.
- Is the reinforcer wanted….or at least is it more preferable than the targeted behavior?

Immediate & Delayed Reinforcers

- Immediate Reinforcer: A reinforcer that occurs instantly after a behavior. A rat gets a food pellet for a bar press.

- Delayed Reinforcer: A reinforcer that is delayed in time for a certain behavior. A paycheck that comes at the end of a week.

“Whining Billy”

Billy: Could you tie my shoes?

Dad: (Continues reading paper)

Billy: Dad, I need my shoes tied.

Dad: Uh, yeah, just a minute.

Billy: DAAAAD! TIE MY SHOES!!

Dad: How many times have I told you not to whine? Now which shoe do we do first?