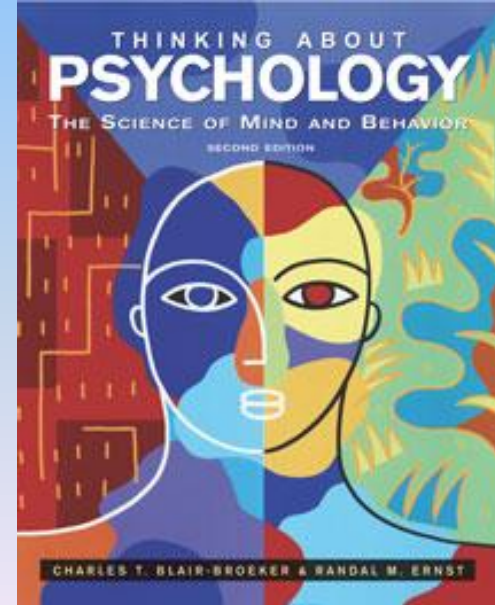


Thinking About Psychology: The Science of Mind and Behavior 2e

Charles T. Blair-Broeker
Randal M. Ernst



Cognitive Domain



Learning Chapter



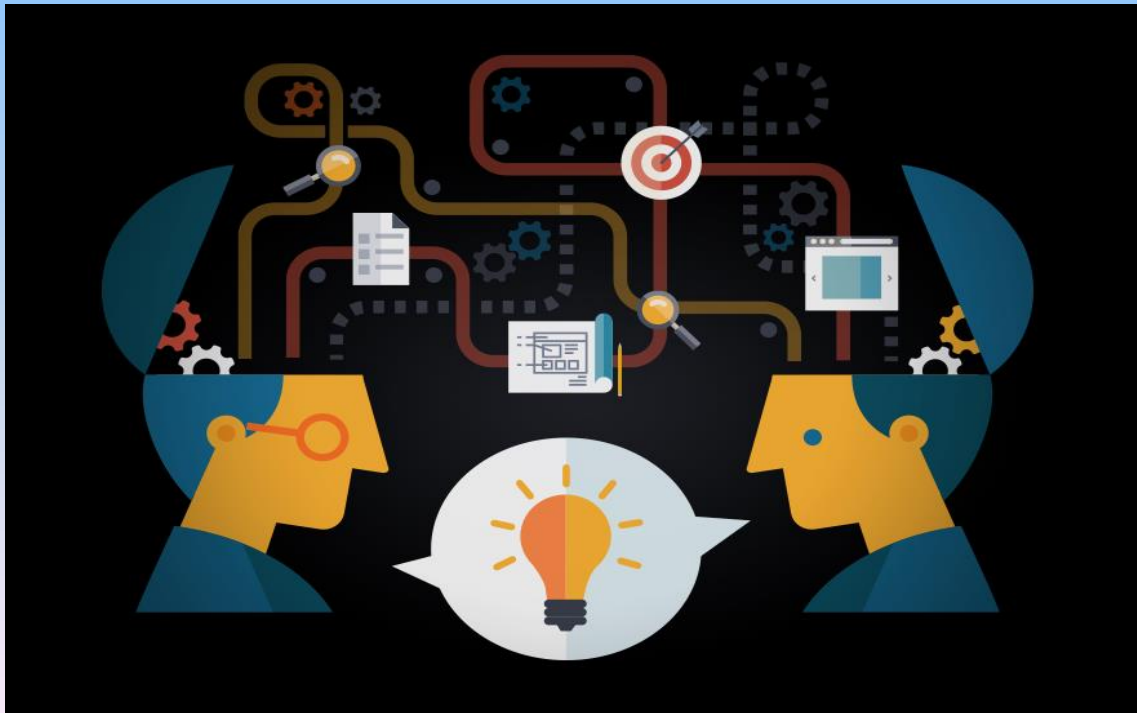
Modules 19-21 ~ Learning

- What is learning?
- How do people learn?
- The next 3 Modules examine different ways that we *learn*.



Learning

- A relatively permanent *change in behavior* caused by experience



Module 19

Classical Conditioning

Classical Conditioning

- Form of *learning by association*
- Type of learning where a *stimulus* gains the power to cause a *response*
- The stimulus predicts another stimulus that already naturally produces that response

Stimulus-Response

- *Stimulus* - anything in the environment that one can respond to
- *Response* – any behavior or action

Learning by Association

- Your book gives an example of how someone learns to associate the seemingly random word “flush” with scalding hot water in the shower.



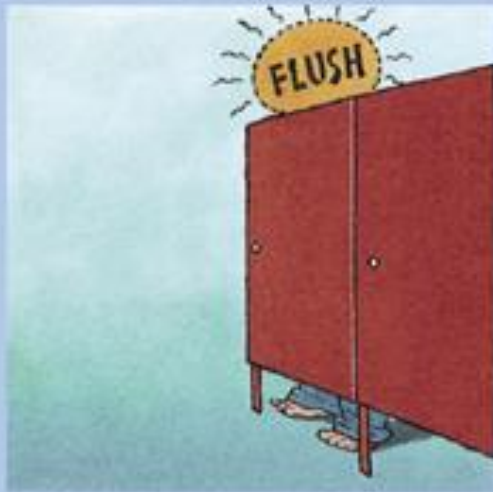
How conditioning works

- It is a *natural* response (unconditioned or unlearned) to jump out of hot water if you feel it burning you in the shower.
- This a reflexive, automatic response to the hot water. Therefore *no learning* has taken place.
- However, when someone shouting the word “flush” causes you to jump away from the water (rather than the hot temp. causing it) then you have been conditioned – learning has taken place.

Stimulus-Response Relationship

Two related events:

Stimulus 1:
Calling the
word "Flush!"
before
flushing the
toilet warns
that water in
the shower
will soon be
scalding.



Stimulus 2:
When the
toilet is
flushed,
hot water
in the
shower
gets much
hotter.



Stimulus-Response Relationship

Result after repetition:

Stimulus:
We hear
"Flush!"



Response:
We jump,
anticipating
hot water.



Module 19: Classical Conditioning

Components of Classical Conditioning

Unconditioned Stimulus (UCS)

- Stimulus that triggers a response *reflexively* and *automatically*
- i.e. hot water

Unconditioned Response (UCR)

- *Automatic* response to the unconditioned stimulus (didn't *learn* this response)
- The relationship between the UCS and UCR must be reflexive and not learned
- i.e. jumping out of the hot water is an *unconditioned* response

Conditioned Stimulus (CS)

- Previously *neutral* stimulus that, through learning, gains the power to cause a response
- The CS must be a neutral stimulus before conditioning occurs.
- i.e. hearing someone shout “Flush!”

Conditioned Response

- Response to the conditioned stimulus
- Usually the same behavior as the UCR
- i.e. jumping out of the water because of the word *flush* (not because of the hot water)
- Learned to associate a new stimulus (the word *flush*) with another stimulus (hot water)

Module 19: Classical Conditioning

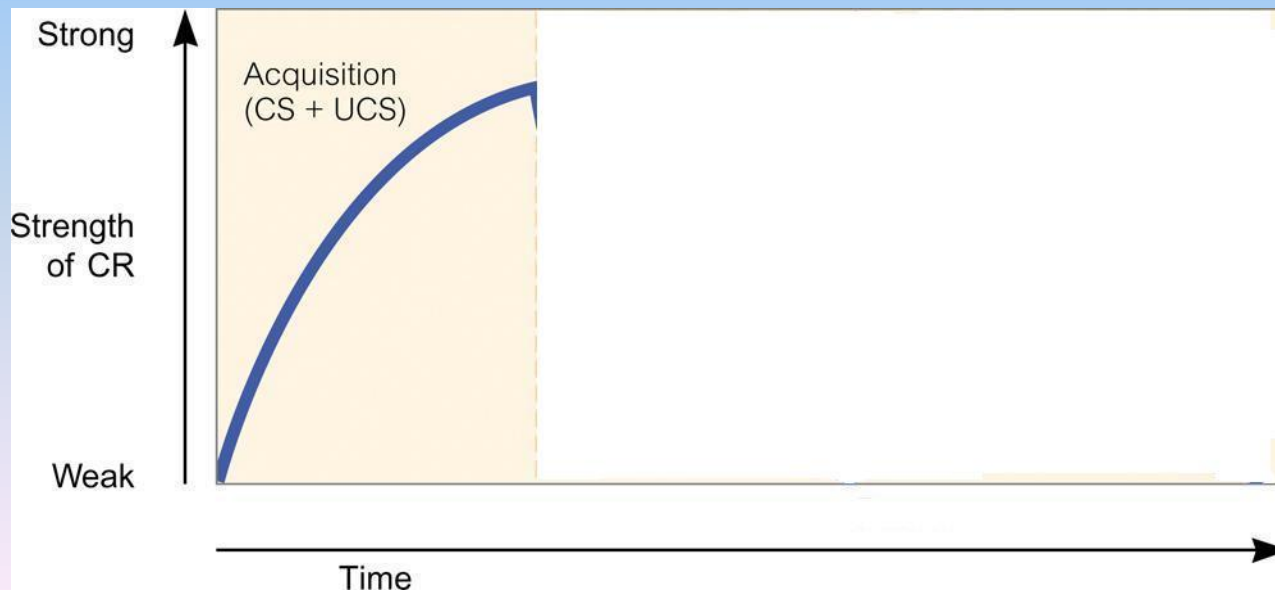
Classical Conditioning Processes: Acquisition

Acquisition

- The most basic process in classical conditioning
- Process of developing a new, learned response
- The subject learns a new response (CR) to a previously neutral stimulus (CS)
- The word *flush* didn't used to make you do anything. Now it makes you jump away from the anticipated hot water.

Acquisition

- Acquisition occurs as the CS (*flush!*) and the UCS (hot water) are repeatedly paired.
- The strength of the CR, in this case, would be the distance that the person jumped away



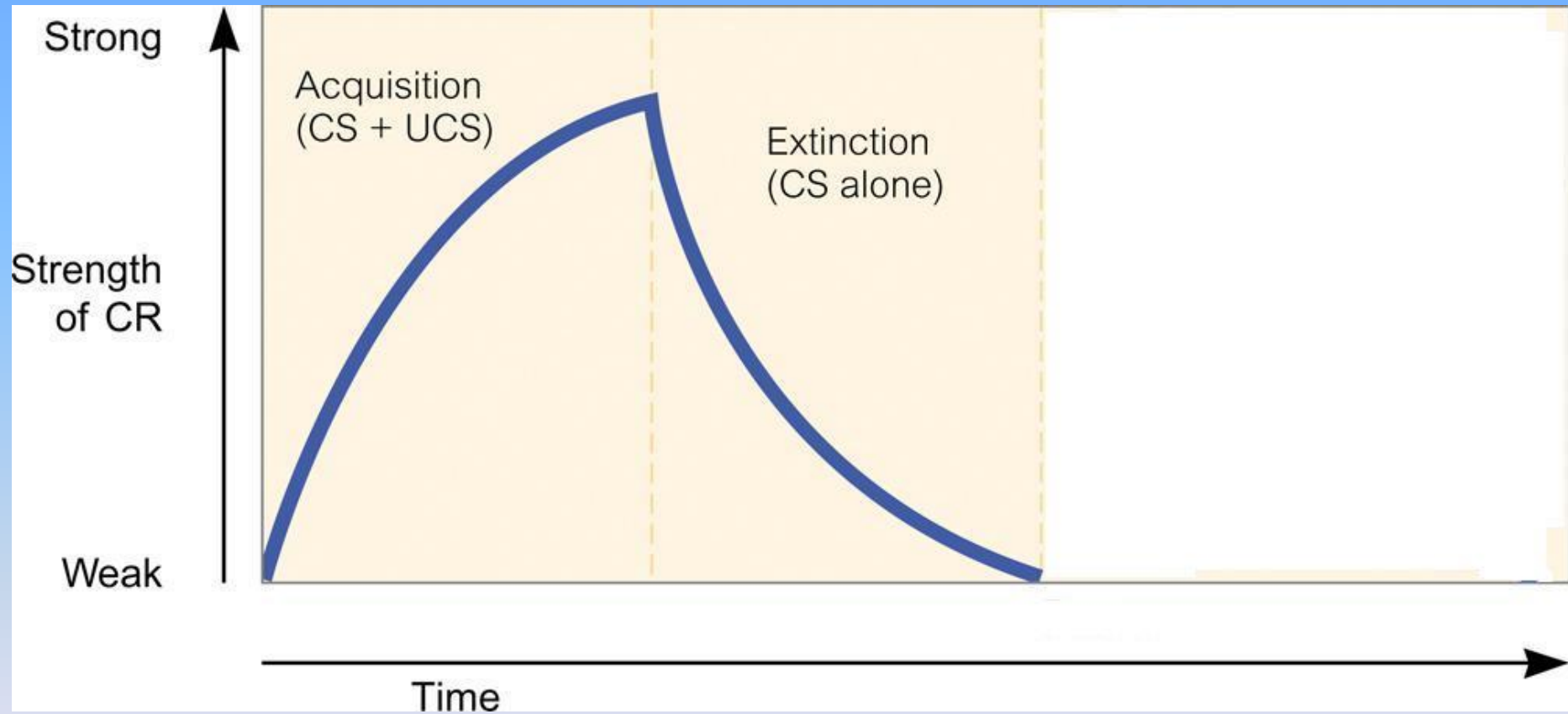
Module 19: Classical Conditioning

Classical Conditioning Processes: Extinction and Spontaneous Recovery

Extinction

- *Diminishing* of a learned response
- In classical conditioning, the continual presentation of the CS without the UCS
- If the word flush (CS) is shouted, but there is no hot water (UCS) then you will gradually *extinguish* the behavior (jumping away from the water/the CR)

Extinction

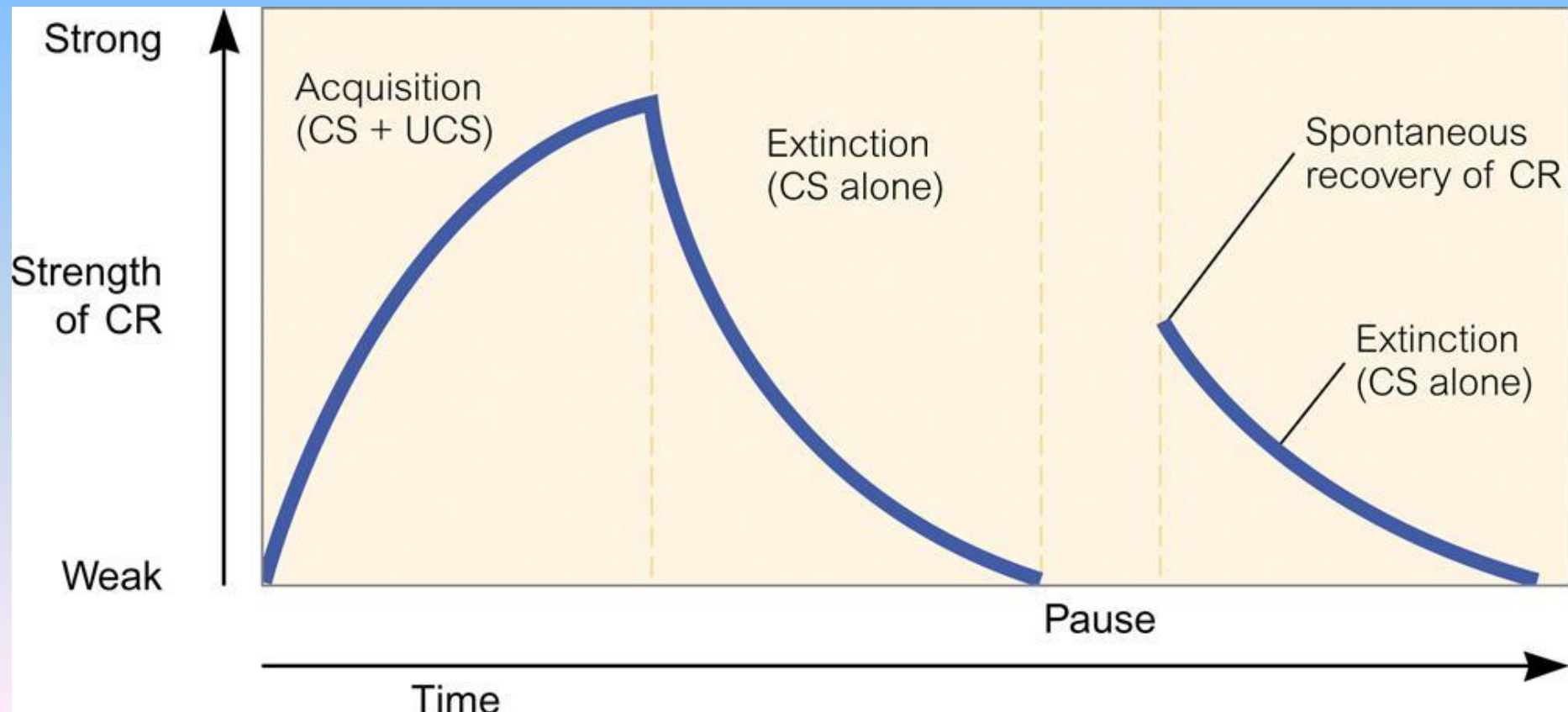


Spontaneous Recovery

- The *return* of an extinguished classically conditioned response after a rest period
- If a couple months passed and you returned to the same situation and someone yelled “Flush!” the renewed response would be evidence of spontaneous recovery.

Spontaneous Recovery

- The recovered response is weaker than the original one, however, and it can be extinguished more easily.

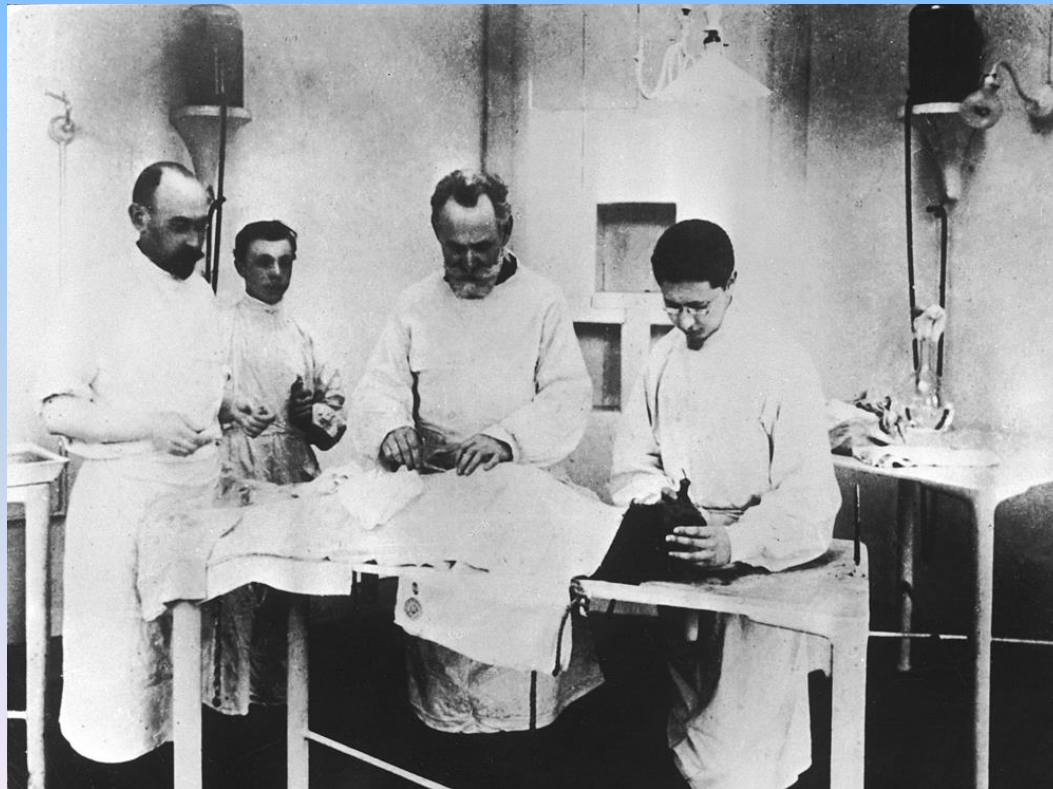


Module 19: Classical Conditioning

Ivan Pavlov's Discovery

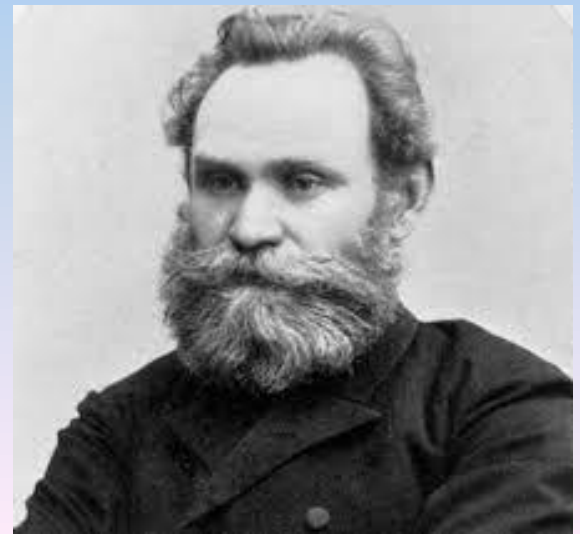
Ivan Pavlov (1849-1936)

- Russian learning theorist famous for discovery of classical conditioning

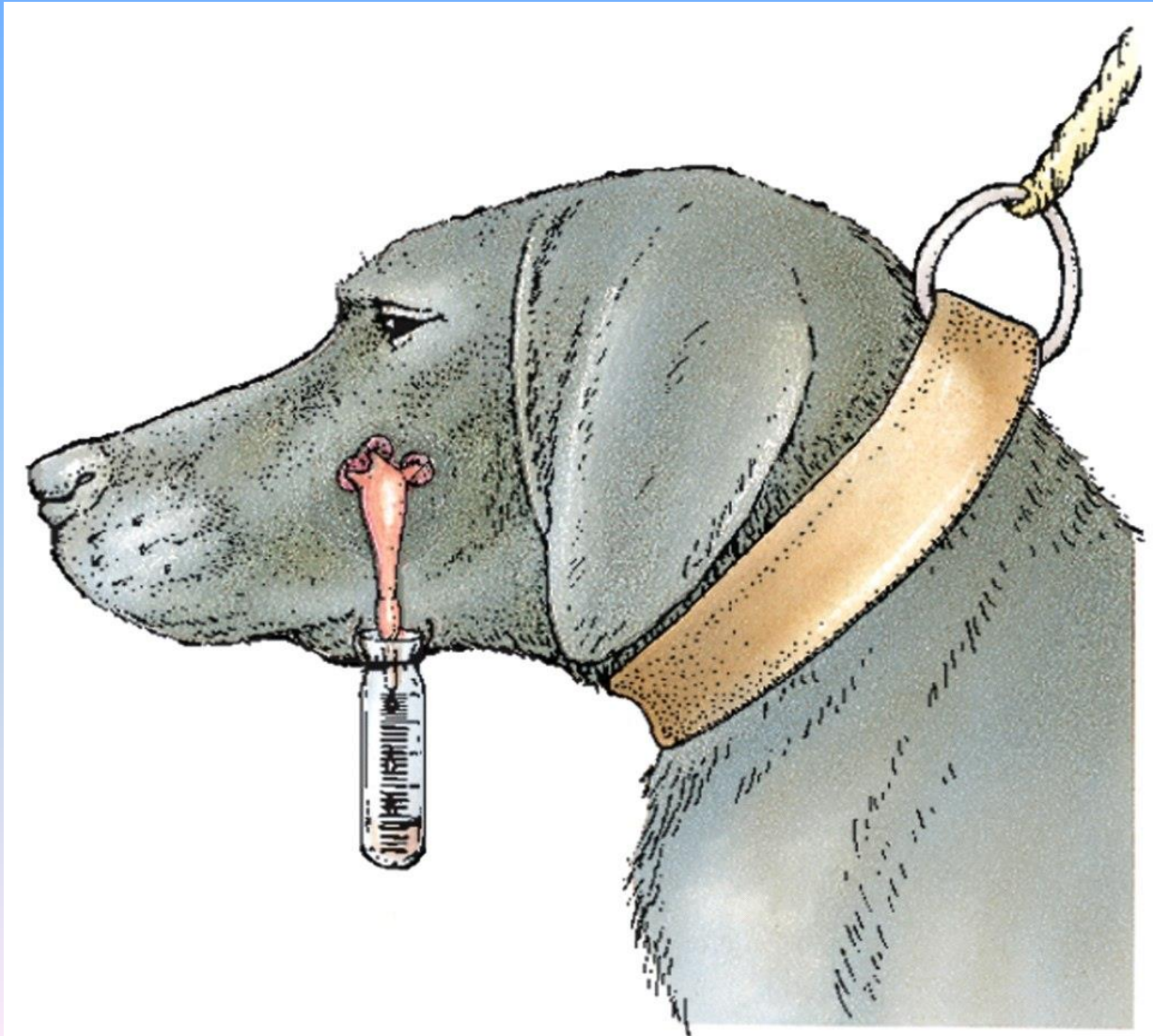


Pavlov's Dogs

- Pavlov was actually a physiologist, not a psychologist.
- While investigating the effects of salivation (drool) on the digestive process, he unexpectedly was led into the realm of behavioral psychology.



Pavlov's Method of Collecting Saliva

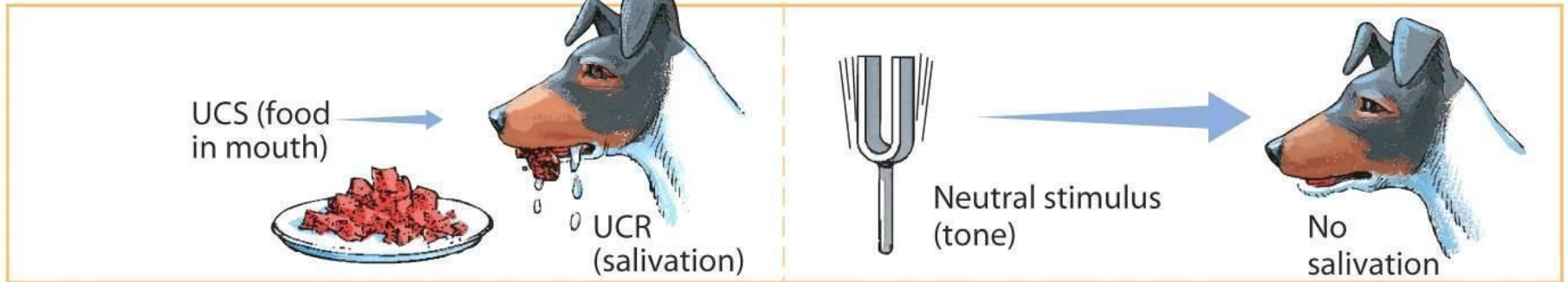


Pavlov's Research Apparatus



Pavlov's Experiment

BEFORE CONDITIONING

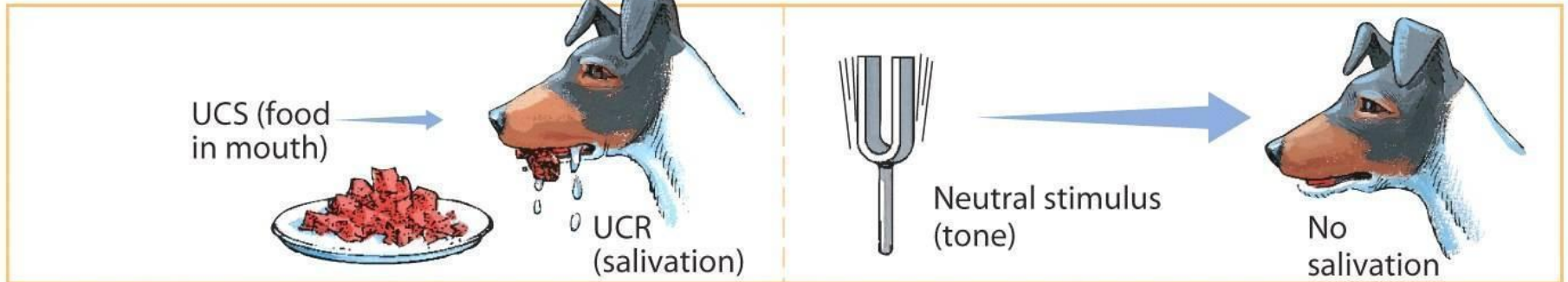


An unconditioned stimulus (UCS) produces an unconditioned response (UCR).

A neutral stimulus produces no salivation response.

Pavlov's Experiment

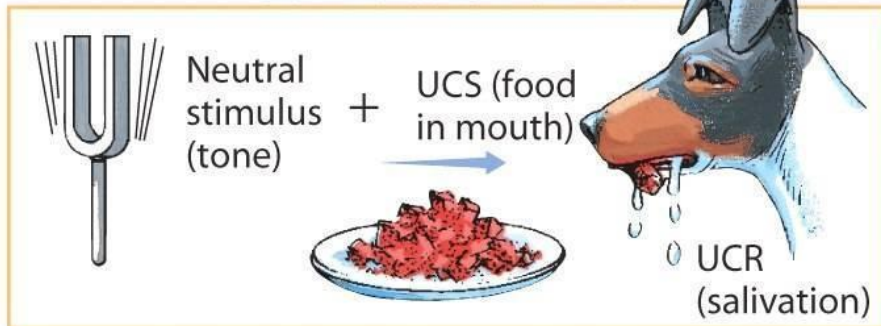
BEFORE CONDITIONING



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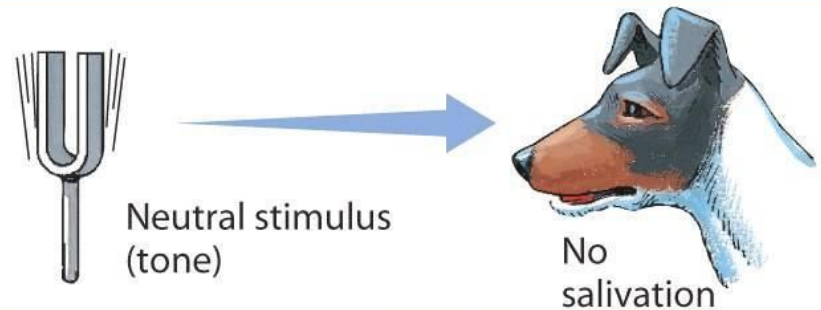
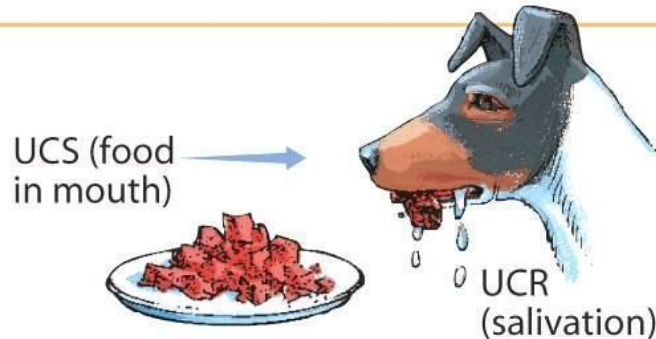
DURING CONDITIONING



The unconditioned stimulus is repeatedly presented just after the neutral stimulus. The unconditioned stimulus continues to produce an unconditioned response.

Pavlov's Experiment

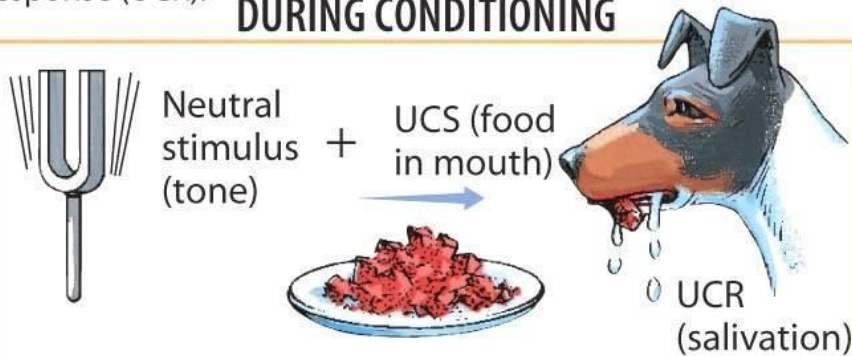
BEFORE CONDITIONING



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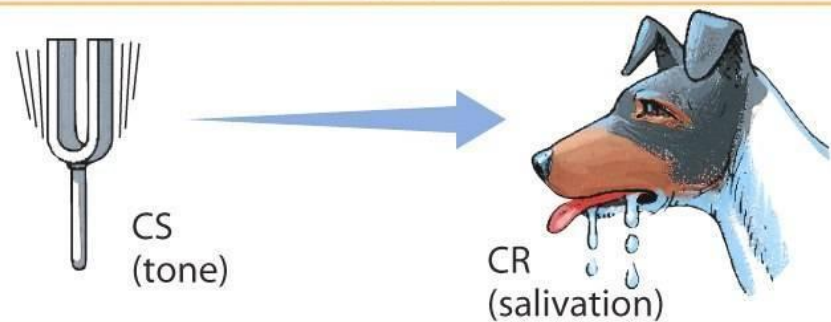
A neutral stimulus produces no salivation response.

DURING CONDITIONING



The unconditioned stimulus is repeatedly presented just after the neutral stimulus. The unconditioned stimulus continues to produce an unconditioned response.

AFTER CONDITIONING



The neutral stimulus alone now produces a conditioned response (CR), thereby becoming a conditioned stimulus (CS).

Module 19: Classical Conditioning

Generalization and Discrimination

Generalization

- Producing the *same response* to two similar stimuli
- For example, a child who develops a classically conditioned fear of all buzzing insects after a painful bee sting has *generalized her fear of bees to all buzzing insects* (like flies and mosquitoes) because she has learned to associate a buzzing insect sound (CS) with pain (UCS).
- The more similar the substitute stimulus is to the original used in conditioning, the stronger the generalized response.

Discrimination

- Producing *different responses* to two stimuli
- The subject learns that one stimuli predicts the UCS and the other does not.
- To discriminate, in this sense, means to be able to *tell the difference* between two things
- i.e. in the buzzing insect example, being able to distinguish between a buzzing bee and a buzzing mosquito

Module 19: Classical Conditioning

John Watson and the Classical Conditioning of Emotions

Behaviorism



- Founded by John Watson
- Published the landmark book, *Psychology as the Behaviorist Views It* (1913)
- View that psychology should only study *observable* behaviors, not mental processes (like Freud whom Watson totally disagreed with)
- No need to understand what is going on inside the learner's head; when someone has *learned* something it is reflected in the *behavior*

Father of Behaviorism



Give me a dozen healthy infants, well-formed, and my own specified world in which to bring them up in and I'll guarantee to take any one at random and train him to become any type of specialist I might select—doctor, lawyer, artist, merchant chief, and, yes, even beggarman and thief, regardless of his talents, penchants, tendencies, abilities, vocations, and race of his ancestors.

(John B. Watson)

izquotes.com

Little Albert

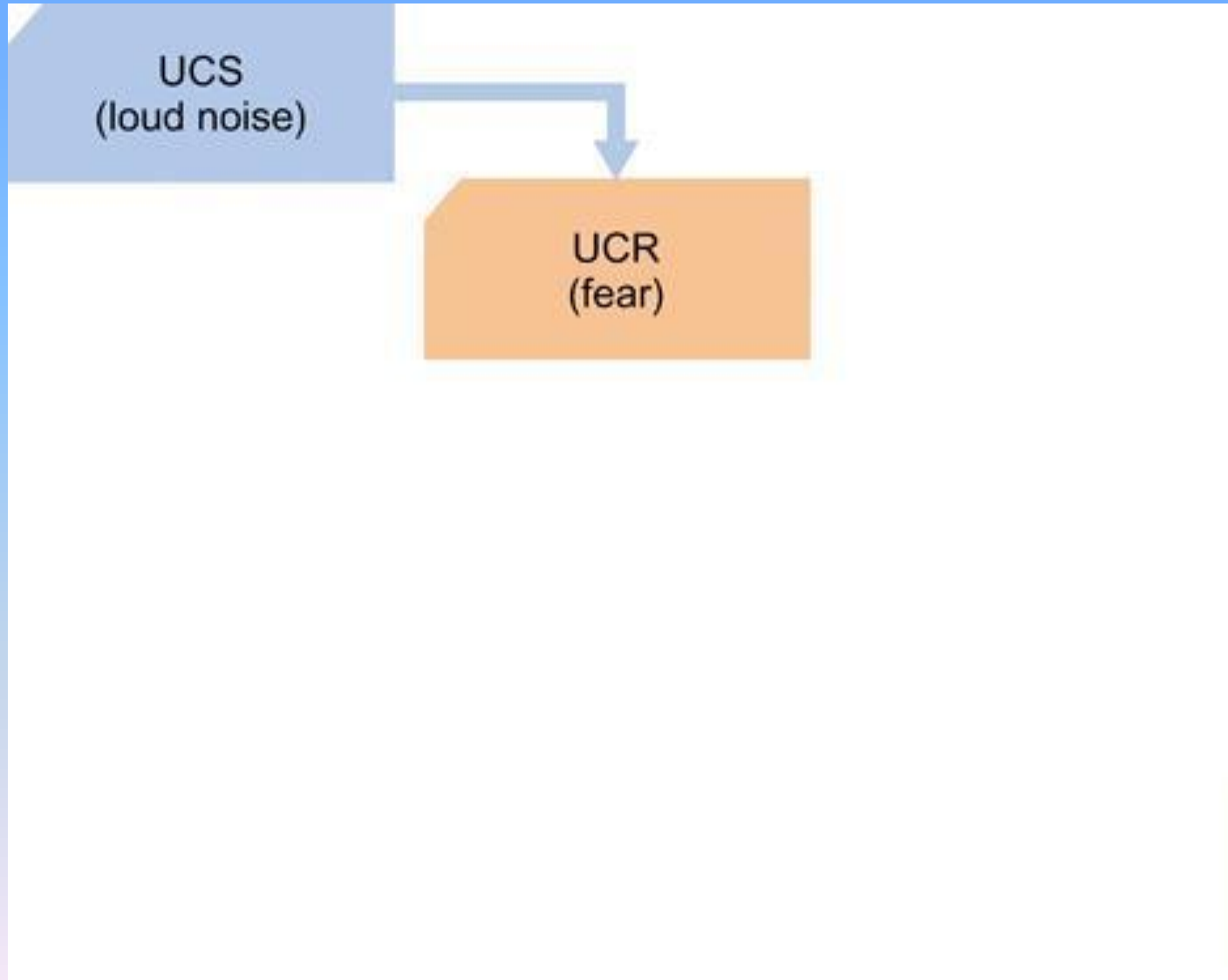
- 11-month-old infant
- Watson and Rosalie Rayner, *conditioned* Albert *to be frightened* of white rats
- Demonstrated that his fear was a predictable outcome of an *environmental* condition and was *not* from a *repressed, unconscious* conflict



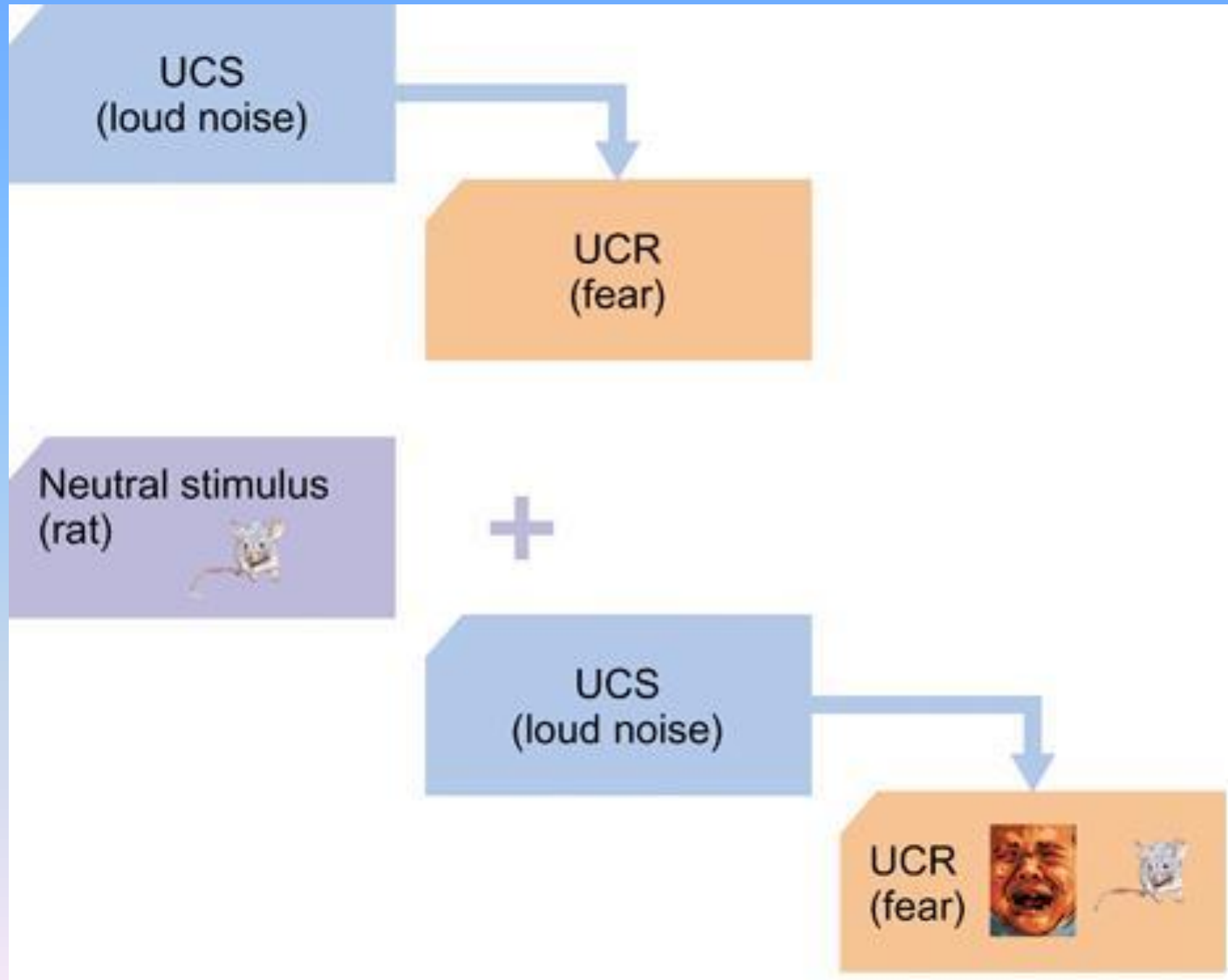
Led to questions about
experimental ethics



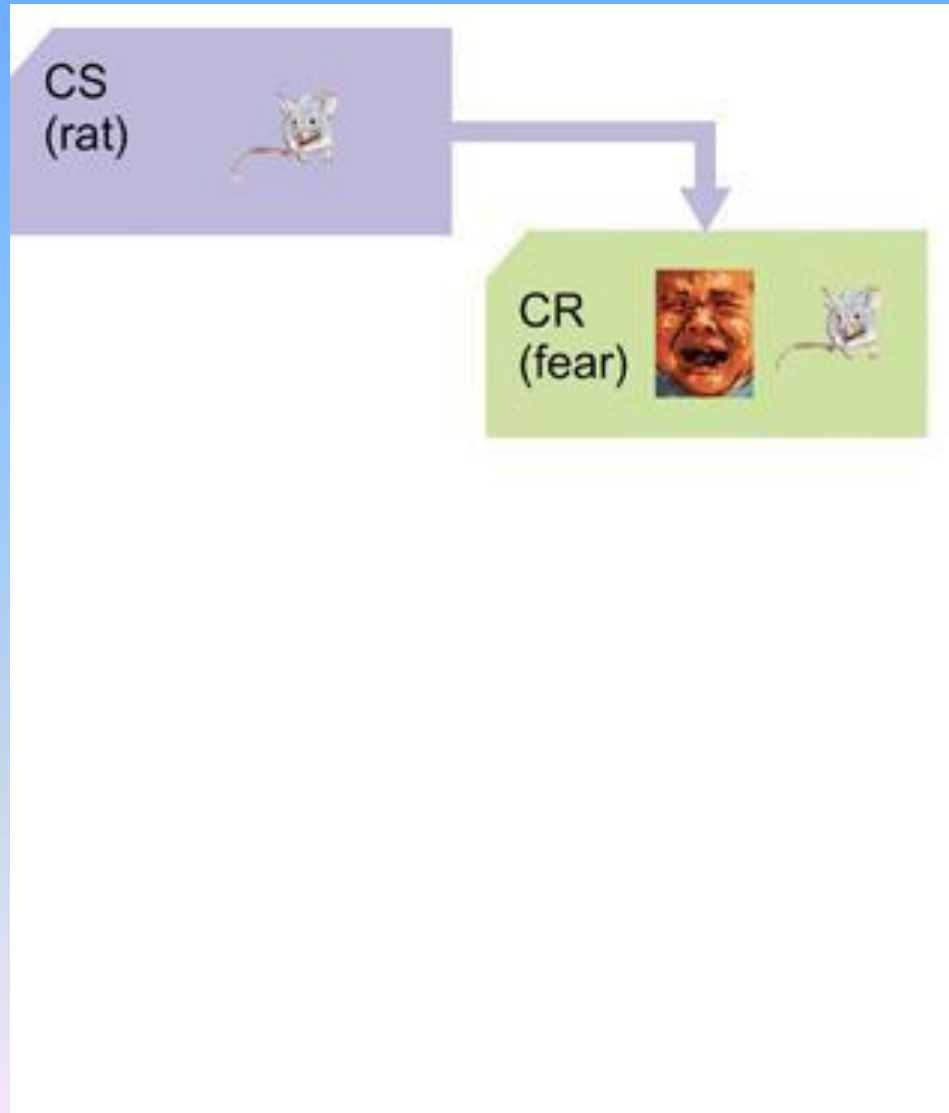
Little Albert – Before Conditioning



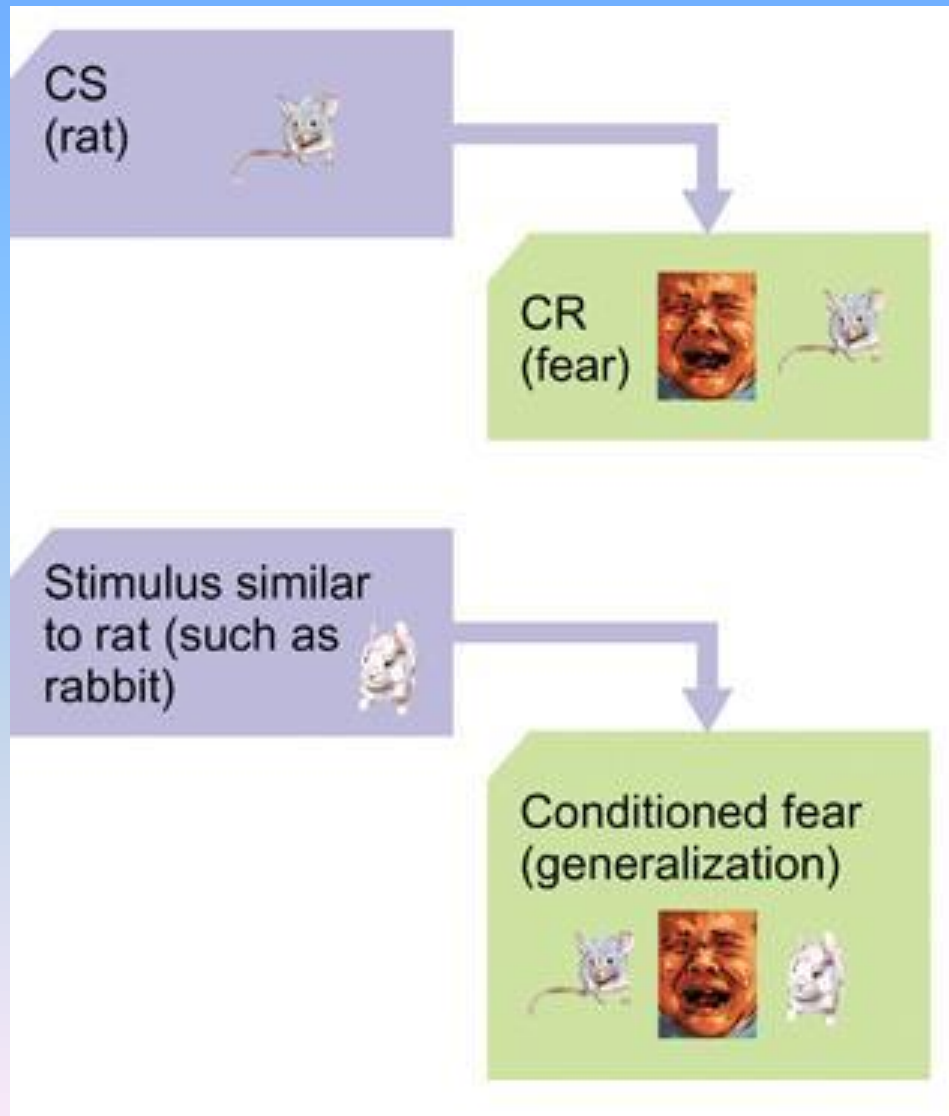
Little Albert – During Conditioning



Little Albert – After Conditioning



Little Albert - Generalization



Advertising

- *Nestea* commercials repeatedly pair images of cool, refreshing swimming pools and Nestea iced tea.
- The *images of pools* function as a UCS to produce in viewers a feeling of being cool and refreshed.



Ahh! Nestea!

- After being repeatedly paired with these images, the *product name* becomes a CS.
- Alone, it, too, produces a CR of being cool and refreshed.
- Then when you walk in the grocery store and see a dozen brands of iced tea, you are more likely to select Nestea because just looking at that label makes you feel cool and refreshed.



Module 19: Classical Conditioning

Cognition and Biological Predispositions

Cognition

- *Mental processes*
- What effect does cognition have on learning?
- Unlike Watson, contemporary psychologists believe it is impossible to understand classical conditioning without reference to cognitive processes

Robert Rescorla (1940-)

- Developed a theory emphasizing the importance of *cognitive processes* in classical conditioning
- Developed theory with Allan Wagner
- Pointed out that subjects had to determine (think) whether the CS was a reliable predictor of the UCS



Reliable Predictor?

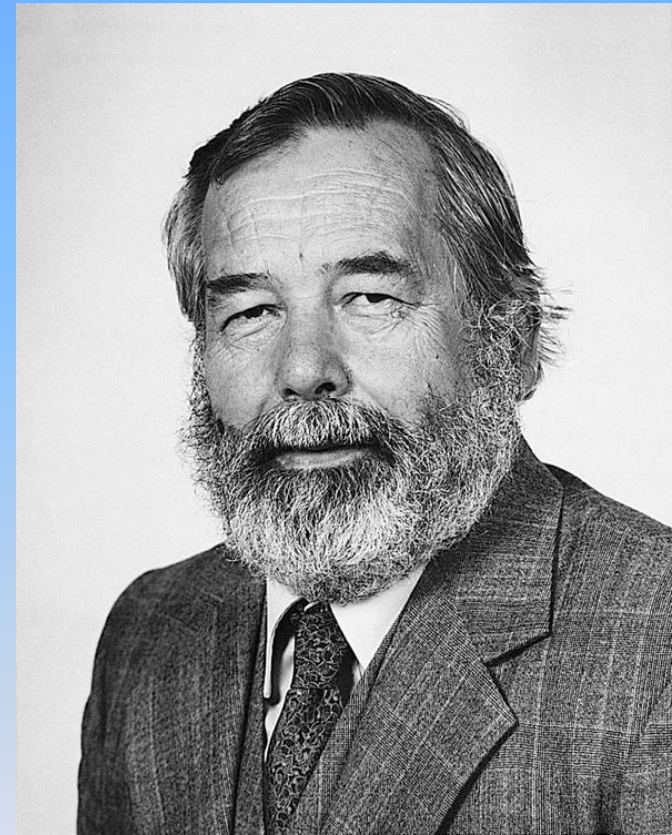


- If a formerly neutral stimulus (“Flush!”) allows the learner to *reliably predict* that a UCS (hot water) is about to occur, the neutral stimulus will turn into a CS.
- However, if the UCS is *not* predictable, the neutral stimulus *will stay neutral*.
- Determining whether an event is predictable is a *cognitive process*, a mental assessment that *requires thinking*.

The “Garcia Effect”

John Garcia (1917-2012)

- Discovered that it was possible to use a nausea-producing drug as a UCS to condition an aversion response to a particular taste.
- Subjects become classically conditioned to *avoid specific tastes*, because the *tastes* are *associated* with nausea.



Taste Aversion



- We are biologically predisposed to develop an aversion to *the food we ate* before becoming sick rather than to *the place* we ate the food.
- If you got sick after eating a particular food you now may no longer be able to even handle the smell of it, but you don't have an aversion to where you ate it or who you were with.

Biological Predisposition



- Classical Conditioning is influenced by *biological predispositions*
- May protect us from revisiting foods that could be poisonous.
- From an evolutionary perspective, people who easily developed taste aversions were *more likely to survive and have offspring*. Those who ate tainted food were less likely to live to reproduce.