

What is Learning?

- **Learning** – any relatively permanent change in behavior brought about by experience or practice
 - When people learn, some part of their brain is physically changed to record what they have learned.
 - Any kind of change in the way an organism behaves is learning.

the neighborhood Jerry Van Amerongen



An instantaneous learning experience.

©Reprinted with special permission of King Features Syndicate.

Learning VS. Innate Behaviors



- **Reflexes** – motor or neural reactions to specific stimuli in the environment
- **Instincts** – innate behaviors that are triggered by a broader range of events, such as aging and the change of seasons
- Both reflexes and instincts help an organism to adapt to its environment and do not have to be learned.

Pavlov & Classical Conditioning

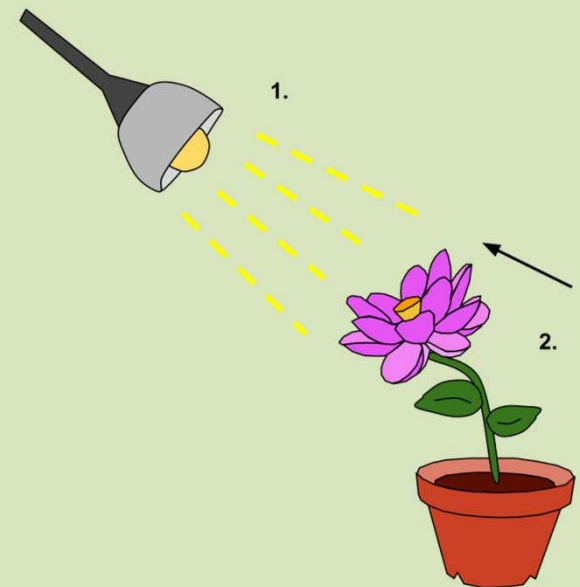
- **Ivan Pavlov** – Russian physiologist (person who studies the workings of the body) who discovered classical conditioning through his work on digestion in dogs



- **Classical conditioning** – learning that involves the association of two stimuli

Classical Conditioning Concepts

- **Stimulus**: anything that causes a reaction to occur
- **Response**: the reaction to a stimulus
- **Unconditioned**: unlearned, naturally occurring
- **Conditioned**: learned
- **Neutral**: no effect



Classical Conditioning Concepts

- **Unconditioned stimulus (UCS)** - a naturally occurring stimulus that leads to an involuntary response
- **Unconditioned response (UCR)** - an involuntary response to a naturally occurring or unconditioned stimulus
- *Example: Trina screamed after being pricked with a pin. (no learning necessary)*



Classical Conditioning Concepts

- **Conditioned stimulus (CS)** - stimulus that becomes able to produce a learned reflex response by being paired with the original unconditioned stimulus
- **Conditioned response (CR)** - learned reflex response to a conditioned stimulus
- *Example: Malcom salivated at the sound of the ice cream truck bell. (“associative learning” has occurred)*



CS – ice
cream truck

CR –
salivation
when hear
ice cream
truck bell

Classical Conditioning

UCS
Loud Noise → UCR
Startle

NS → UCS → UCR
White Rat Loud Noise Startle

CS → CR
White Rat Startle

Classical Conditioning

UCS
Dog Bite → UCR
Frightened

NS → UCS → UCR
Sight of Dog Dog Bite Frightened

CS → CR
Sight of Dog Frightened

Classical Conditioning

UCS
Kiss → UCR
Racing Heart

NS → UCS → UCR
Sight of Significant Other → Kiss → Racing Heart

CS → CR
Sight of Significant Other → Racing Heart

Pavlov's experiment

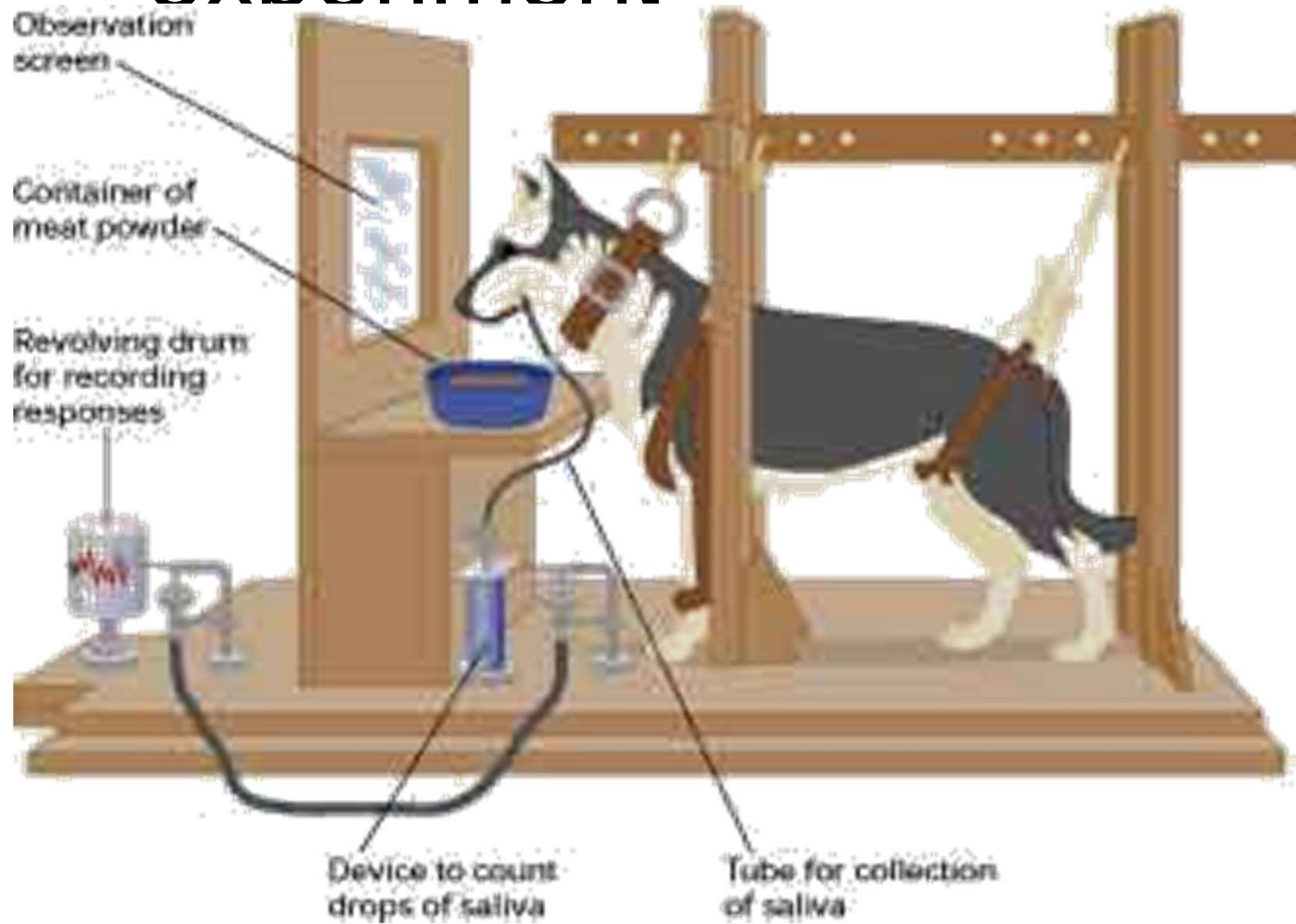
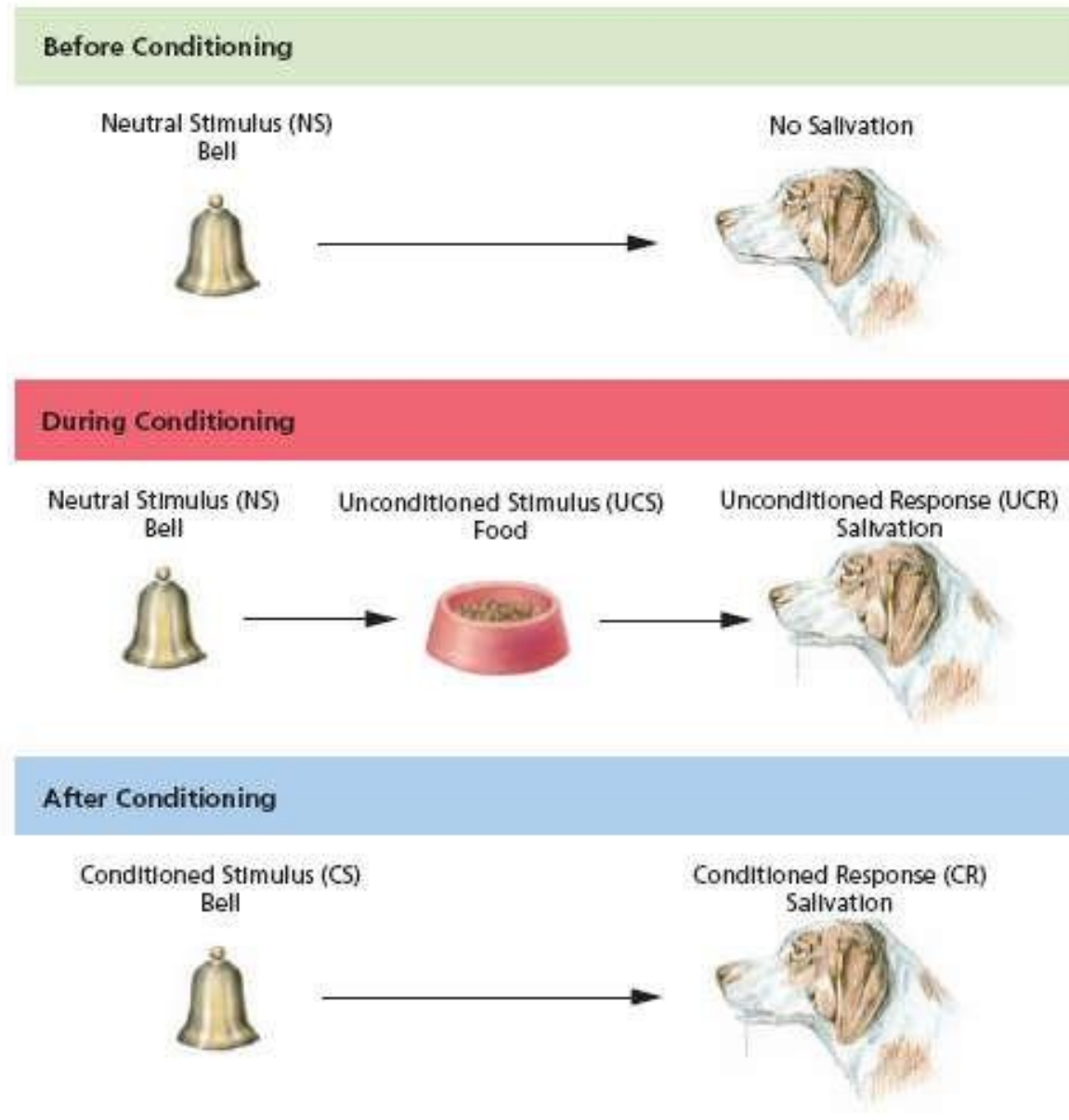


FIGURE 5.1 Classical Conditioning

Before conditioning takes place, the sound of the bell does not cause salivation and is a neutral stimulus, or NS. During conditioning, the sound of the bell occurs just before the presentation of the food (the UCS). The food causes salivation, the UCR. When conditioning has occurred after several pairings of the bell with the food, the bell will begin to elicit a salivation response from the dog without any food. This is learning, and the sound of the bell is now a CS and the salivation to the bell is the CR.

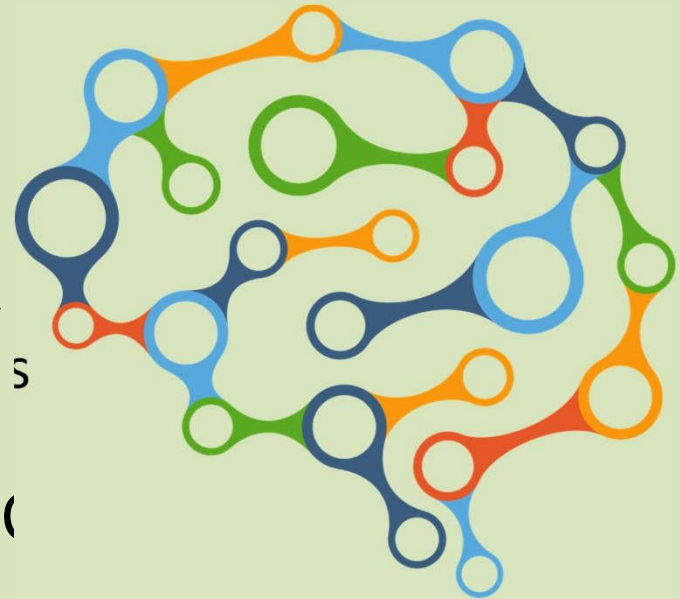
Acquisition - the repeated pairing of the NS and the UCS; the organism is in the process of acquiring learning.



Classical Conditioning Concepts

Although classical conditioning happens quite easily, there are a few basic principles that researchers have discovered:

1. The NS must come *before* the UCS
2. During the period of “acquisition”—time during which the learning takes place, the NS and UCS must come very close together in time—ideally, only several seconds apart.
3. The NS must be paired with the UCS several times, often many times, before conditioning can take place.
4. The CS is usually some stimulus that is distinctive or stands out from other competing stimuli.



Classical Conditioning Concepts

- **Extinction** - the disappearance or weakening of a learned response following the removal or absence of the unconditioned stimulus (in classical conditioning)
 - *Example: Alexander became less afraid of his doctor once he stopped receiving shots.*

- **Spontaneous recovery** – the reappearance of a learned response after extinction has occurred
 - *Example: After six months of not seeing his doctor, Alexander returned only to find that he was afraid of him again.*

Classical Conditioning Concepts

- **Stimulus generalization** - the tendency to respond to a stimulus that is only similar to the original conditioned stimulus with the conditioned response
 - *Example: Jermaine screamed when he saw a shrub that looked like a dog from far away.*

- **Stimulus discrimination** - the tendency to stop making a generalized response to a stimulus that is similar to the original conditioned stimulus because the similar stimulus is never paired with the unconditioned stimulus
 - *Example: After realizing that the white bunny was different than the white rat, Little Albert stopped startling when he saw the white bunny.*

John B. Watson & Classical Conditioning

John B. Watson and Classical Conditioning

- Watson believed that human behavior, just like animal behavior, is primarily the result of conditioned responses. He proposed that just as reflexes can be conditioned (as proven by Ivan Pavlov), so can human emotions, such as fear.
- Watson, along with graduate student, Rosalie Rayner, demonstrated through their experiments with a baby called Little Albert that phobias can be conditioned (1920).
- Little Albert became afraid of a white rat as well as many things that were similar in color and texture (e.g., a white rabbit, a furry coat, and a Santa Clause mask), thus further demonstrating “stimulus generalization.”
- Though an important finding, today, Watson’s experiment would be considered unethical.

