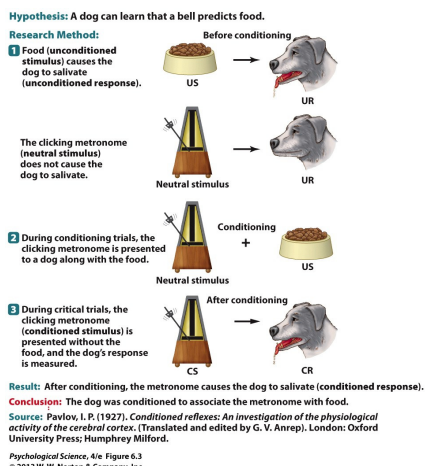




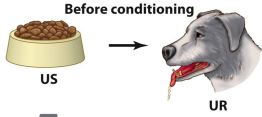
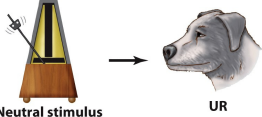


## Differences Between Classical and Operant Conditioning

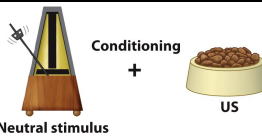
Classical Conditioning	Operant Conditioning
<p>In classical conditioning, the organism learns an <i>association between two stimuli</i>—the UCS and NS (eg. food and tone)—that occurs before the natural response (eg. salivation).</p>	<p>In operant conditioning, the organism learns an <i>association between behavior and its consequences</i>. Behavior changes because of the consequence that occur <i>after</i> it.</p>
 <p><b>Hypothesis:</b> A dog can learn that a bell predicts food.</p> <p><b>Research Method:</b></p> <ol style="list-style-type: none"> <li>Food (unconditioned stimulus) causes the dog to salivate (unconditioned response). US → UR</li> <li>The clicking metronome (neutral stimulus) does not cause the dog to salivate. Neutral stimulus → UR</li> <li>During conditioning trials, the clicking metronome is presented to a dog along with the food. Neutral stimulus + US → UR</li> <li>During critical trials, the clicking metronome (conditioned stimulus) is presented without the food, and the dog's response is measured. CS → CR</li> </ol> <p><b>Result:</b> After conditioning, the metronome causes the dog to salivate (conditioned response).</p> <p><b>Conclusion:</b> The dog was conditioned to associate the metronome with food.</p> <p><b>Source:</b> Pavlov, I. P. (1927). <i>Conditioned reflexes: An investigation of the physiological activity of the cerebral cortex</i>. (Translated and edited by G. V. Anrep). London: Oxford University Press; Humphrey Milford.</p> <p><b>Psychological Science, 41e, Figure 6.3</b> © 2013 W. W. Norton &amp; Company, Inc.</p> <p style="text-align: center;">UCS → UCR NS</p> <p style="text-align: center;">CS → CR</p>	<div style="display: flex; justify-content: space-around;"> <div data-bbox="824 940 1117 1228"> <p><b>POSITIVE REINFORCEMENT</b></p> <p>Behavior is followed by a desirable event or state.</p>  <p>\$10 for an A makes it more likely a student will earn more As.</p> </div> <div data-bbox="1133 940 1425 1228"> <p><b>NEGATIVE REINFORCEMENT</b></p> <p>Behavior ends an undesirable event or state.</p>  <p>Taking aspirin relieves headaches and makes it more likely that aspirin will be taken in the future.</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div data-bbox="824 1249 1117 1537"> <p><b>TWO FORMS OF PUNISHMENT</b></p> <p>Behavior is followed by an undesirable event.</p>  <p>A toddler burned by a hot stove will be less likely to touch the stove again.</p> </div> <div data-bbox="1133 1249 1425 1537"> <p>Behavior ends a desirable event or state.</p>  <p>A boy who loses his TV privileges for pulling his sister's hair will be less likely to pull her hair again.</p> </div> </div>
<p>Classical conditioning usually deals with reflexive or involuntary responses such as physiological or emotional responses.</p>	<p>Operant conditioning usually deals with voluntary behaviors such as active behaviors that operate on the environment.</p>

## Classical Conditioning

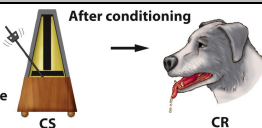
### Before Conditioning:

	"examples"	Terminology
<p><b>1</b> Food (unconditioned stimulus) causes the dog to salivate (unconditioned response).</p>  <p>US → UR</p> <p>The clicking metronome (neutral stimulus) does not cause the dog to salivate.</p>  <p>Neutral stimulus → UR</p> <p><small>Psychological Science, 4th Edition, Figure 6.3 part 1 © 2013 W. W. Norton &amp; Company, Inc.</small></p>	Food → drooling	US → UR (sometimes written as UCS → UCR)
	Tuning fork → no response	Neutral stimulus (NS) → no response

### During Conditioning:

	"examples"	Terminology
<p><b>2</b> During conditioning trials, the clicking metronome is presented to a dog along with the food.</p>  <p>Neutral stimulus + US</p> <p><small>Psychological Science, 4th Edition, Figure 6.3 part 2 © 2013 W. W. Norton &amp; Company, Inc.</small></p>	Food + bell → drooling	US + CS → UR (sometimes CS is written as NS)

### After Conditioning:

	"examples"	Terminology
<p><b>3</b> During critical trials, the clicking metronome (conditioned stimulus) is presented without the food, and the dog's response is measured.</p>  <p>CS → CR</p> <p><small>Psychological Science, 4th Edition, Figure 6.3 part 3 © 2013 W. W. Norton &amp; Company, Inc.</small></p>	bell → drooling	CS → CR

## Operant Conditioning

Operant conditioning is the basic learning process that involves changing the probability that a response will be repeated by manipulating the consequences (reinforcements or punishments) of that response.

### Reinforcements

A consequence that follows a behavior that makes that behavior more likely to occur in the future.

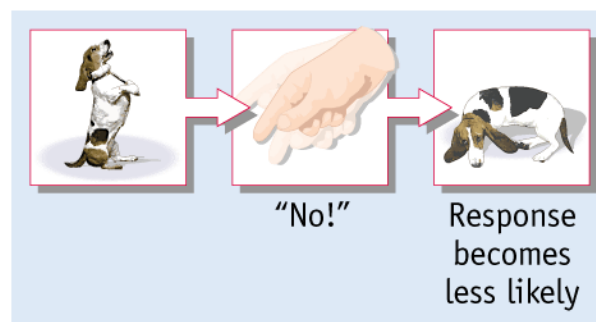
Behaviors that are reinforced are more likely to occur.



### Punishments

A consequence that follows a behavior that makes that behavior less likely to occur in the future.

Behaviors that are punished are less likely to occur.



Check your understanding of the usual differences between classical conditioning and operant conditioning by indicating the type of conditioning process involved in each of the following examples. In the space on the left, place a

- **C** if the example involves classical conditioning,
- **O** if it involves operant conditioning, or
- **B** if it involves both.
- **N** if not sure

1. Whenever Marcia takes her dog out for a walk, she wears the same old blue windbreaker. Eventually, she notices that her dog becomes very excited whenever she puts on this windbreaker.
2. *The Creatures* are a successful rock band with three hit albums to their credit. They begin their U. S. tour featuring many new, unreleased songs, all of which draw silence from their concert fans. The same fans cheer wildly when *The Creatures* play any of their old hits. Gradually, the band reduces the number of new songs it plays and starts playing more of the old standbys.
3. When Cindy and Mel first fell in love, they listened constantly to *The Creatures'* hit song *Transatlantic Obsession*. Although several years have passed, whenever they hear this song, they experience a warm, romantic feeling.
4. For nearly 20 years Ralph has worked as a machinist in the same factory. His new foreman is never satisfied with his work and criticizes him constantly. After a few weeks of heavy criticism, he experiences anxiety whenever he arrives at work. He starts calling in sick more and more frequently to evade this anxiety.