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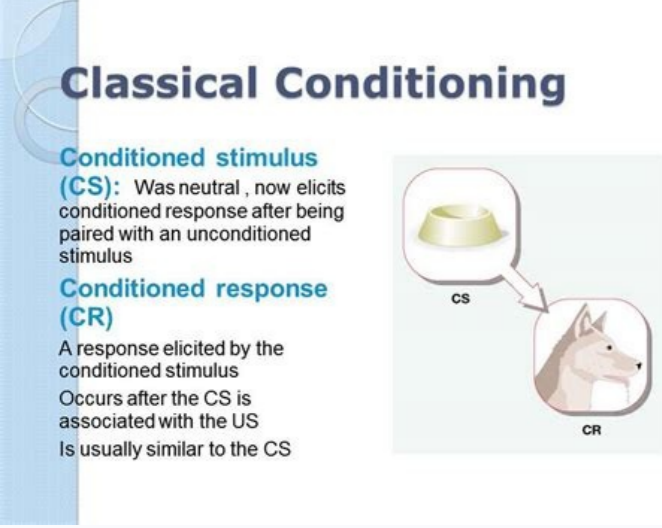
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## What is classical conditioning theory of learning how does this theory apply to consumers

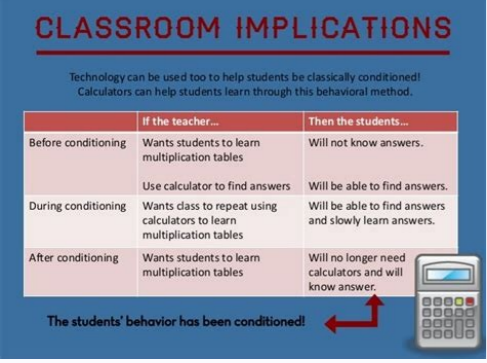
Discovered by Russian physiologist Ivan Pavlov, classical conditioning is a type of unconscious or automatic learning. This learning process creates a conditioned response through associations between an unconditioned stimulus and a neutral stimulus. In simple terms, classical conditioning involves placing a neutral stimulus before a naturally occurring reflex. One of the best-known examples of classical conditioning is Pavlov's classic experiments with dogs. In these experiments, the neutral signal was the sound of a tone and the naturally occurring reflex was salivating in response to food. By associating the neutral stimulus (sound) with the unconditioned stimulus (food), the sound of the tone alone could produce a salivation response. Verywell / Joshua Seong Although classical conditioning was not discovered by a psychologist, it has had a tremendous influence over the school of thought in psychology known as behaviorism. Behaviorism assumes that all learning occurs through interactions with the environment and that environment shapes behavior. Classical conditioning—also sometimes referred to as Pavlovian conditioning—uses a few different terms to help explain the learning process. Knowing these basics will help you understand classical conditioning. An unconditioned stimulus is a stimulus or trigger that leads to an automatic response. If a cold breeze makes you shiver, for instance, the cold breeze is an unconditioned stimulus; it produces an involuntary response (the shivering). A neutral stimulus is a stimulus that doesn't initially trigger a response on its own. If you hear the sound of a fan but don't feel the breeze, for example, it wouldn't necessarily trigger a response.



That would make it a neutral stimulus. A conditioned stimulus is a stimulus that was once neutral (didn't trigger a response) but now leads to a response. If you previously didn't pay attention to dogs, but then got bit by one, and now you feel fear every time you see a dog, the dog has become a conditioned stimulus. An unconditioned response is an automatic response or a response that occurs without thought when an unconditioned stimulus is present. If you smell your favorite food and your mouth starts watering, the watering is an unconditioned response. A conditioned response is a learned response or a response that is created where no response existed before. Going back to the example of being bit by a dog, the fear you experience after the bite is a conditioned response. Classical conditioning involves forming an association between two stimuli, resulting in a learned response.



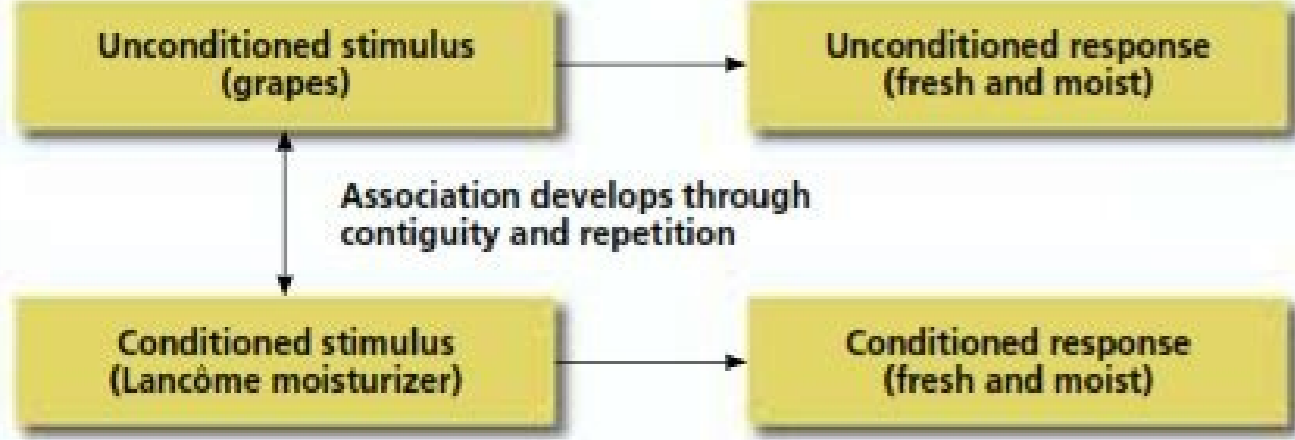
There are three basic phases of this process. The first part of the classical conditioning process requires a naturally occurring stimulus that will automatically elicit a response. Salivating in response to the smell of food is a good example of a naturally occurring stimulus. During this phase of the process, the unconditioned stimulus (UCS) results in an unconditioned response (UCR).



Presenting food (the UCS) naturally and automatically triggers a salivation response (the UCR). At this point, there is also a neutral stimulus that produces no effect—yet. It isn't until the neutral stimulus is paired with the UCS that it will come to evoke a response. Let's take a closer look at the two critical components of this phase of classical conditioning: The unconditioned stimulus is one that unconditionally, naturally, and automatically triggers a response. For example, when you smell one of your favorite foods, you may immediately feel hungry. In this example, the smell of the food is the unconditioned stimulus. The unconditioned response is the unlearned response that occurs naturally in response to the unconditioned stimulus. In our example, the feeling of hunger in response to the smell of food is the unconditioned response. In the before conditioning phase, an unconditioned stimulus is paired with an unconditioned response. A neutral stimulus is then introduced. During the second phase of the classical conditioning process, the previously neutral stimulus is repeatedly paired with the unconditioned stimulus.

Characteristics	Social Learning Theory	Operant Conditioning
Definition	Theory that proposes that learning occurs by observation	Theory that proposes that learning occurs when a behavior is followed by consequences
Key concepts	Identification, reinforcement, meditational (cognitive) processes	Reinforcement, punishment, extinction
Strengths	Incorporates and emphasizes the role of cognitive processes; explains some of the more complex behaviors	Wide practical application in shaping behavior in many settings; helped humanity better incorporate animals in its activities.
Weaknesses	Cannot account for covert behaviors such as thinking and feeling; heavy emphasis on environment as the main influence on behavior	Does not take into account hereditary and cognitive factors; difficult to extrapolate animal experiments onto humans
Proponent	Albert Bandura	Burrhus Frederic Skinner
Experiments	Bobo Doll experiment	Rat and pigeon experiments
Other terms	Social cognitive theory	Skinnerian conditioning; instrumental learning

As a result of this pairing, an association between the previously neutral stimulus and the UCS is formed. At this point, the once neutral stimulus becomes known as the conditioned stimulus (CS). The subject has now been conditioned to respond to this stimulus. The conditioned stimulus is a previously neutral stimulus that, after becoming associated with the unconditioned stimulus, eventually comes to trigger a conditioned response. In our earlier example, suppose that when you smelled your favorite food, you also heard the sound of a whistle. While the whistle is unrelated to the smell of the food, if the sound of the whistle was paired multiple times with the smell, the whistle sound would eventually trigger the conditioned response. In this case, the sound of the whistle is the conditioned stimulus. The during conditioning phase involves repeatedly pairing a neutral stimulus with an unconditioned stimulus. Eventually, the neutral stimulus becomes the conditioned stimulus. Once the association has been made between the UCS and the CS, presenting the conditioned stimulus alone will come to evoke a response—even without the unconditioned stimulus. The resulting response is known as the conditioned response (CR). The conditioned response is the learned response to the previously neutral stimulus. In our example, the conditioned response would be feeling hungry when you heard the sound of the whistle. In the after conditioning phase, the conditioned stimulus alone triggers the conditioned response. Behaviorists have described a number of different phenomena associated with classical conditioning. Some of these elements involve the initial establishment of the response while others describe the disappearance of a response.



Here is a closer look at five key principles of classical conditioning. Acquisition is the initial stage of learning, when a response is first established and gradually strengthened. During the acquisition phase of classical conditioning, a neutral stimulus is repeatedly paired with an unconditioned stimulus. As you may recall, an unconditioned stimulus is something that naturally and automatically triggers a response without any learning. After an association is made, the subject will begin to emit a behavior in response to the previously neutral stimulus, which is now known as a conditioned stimulus. It is at this point that we can say that the response has been acquired. Once the response has been established, you can gradually reinforce the response to make sure the behavior is well learned. Extinction is when the occurrences of a conditioned response decrease or disappear. In classical conditioning, this happens when a conditioned stimulus is no longer paired with an unconditioned stimulus. For example, if the smell of food (the unconditioned stimulus) had been paired with the sound of a whistle (the conditioned stimulus), the sound of the whistle would eventually come to evoke the conditioned response of hunger. However, if the smell of food were no longer paired with the whistle, eventually the conditioned response (hunger) would disappear. Sometimes a learned response can suddenly reemerge, even after a period of extinction. This is called spontaneous recovery.

For example, imagine that after training a dog to salivate to the sound of a bell, you stop reinforcing the behavior and the response becomes extinct. After a rest period during which the conditioned stimulus is not presented, you ring the bell and the animal spontaneously recovers the previously learned response. If the conditioned stimulus and the unconditioned stimulus are paired repeatedly, the response will be strengthened. In John B. Watson's famous Little Albert Experiment, for example, a small child was conditioned to fear a white rat. The child demonstrated stimulus generalization by also exhibiting fear in response to other fuzzy white objects, including stuffed toys and Watson's own hair.

Discrimination is the ability to differentiate between a conditioned stimulus and other stimuli that have not been paired with an unconditioned stimulus. For example, if a bell tone were the conditioned stimulus, discrimination would involve being able to tell the difference between the bell tone and other similar sounds. Because the subject is able to distinguish between these stimuli, they will only respond when the conditioned stimulus is presented. It can be helpful to look at a few examples of how the classical conditioning process operates both in experimental and real-world settings. John B. Watson's experiment with Little Albert is an example of the fear response. The child initially showed no fear of a white rat, but after the rat was paired repeatedly with loud, scary sounds, the child began to cry when the rat was present. Prior to the conditioning, the white rat was a neutral stimulus. The unconditioned stimulus was the loud, clanging sounds, and the unconditioned response was the fear response created by the noise. By repeatedly pairing the rat with the unconditioned stimulus, the white rat (now the conditioned stimulus) came to evoke the fear response (now the conditioned response). This experiment illustrates how phobias can form through classical conditioning. In many cases, a single pairing of a neutral stimulus (a dog, for example) and a frightening experience (being bitten by the dog) can lead to a lasting phobia (being afraid of dogs). Another example of classical conditioning is the development of conditioned taste aversions. Researchers John Garcia and Bob Koelling first noticed this phenomenon when they observed how rats that had been exposed to nausea-causing radiation developed an aversion to flavored water after the radiation and water were presented together. In this example, the radiation represents the unconditioned stimulus and nausea represents the unconditioned response. After the pairing of the two, the flavored water is the conditioned stimulus, while nausea that formed when exposed to the water alone is the conditioned response. Later research demonstrated that such classically conditioned aversions could be produced through a single pairing of the conditioned stimulus and the unconditioned stimulus. Researchers also found that such aversions can even develop if the conditioned stimulus (the taste of the food) is presented several hours before the unconditioned stimulus (the nausea-causing stimulus). Why do such associations develop so quickly? Forming such associations can have survival benefits. If an animal eats something that makes it ill, it needs to avoid eating the same food in the future to avoid sickness or even death. This is an example of biological preparedness. Some associations form more readily because they aid in survival. In one famous field study, researchers injected sheep carcasses with a poison that would make coyotes sick but not kill them. The goal was to help sheep ranchers reduce the number of sheep lost to coyote killings. Not only did the experiment work by lowering the number of sheep killed, it also caused some of the coyotes to develop such a strong aversion to sheep that they would actually run away at the scent or sight of a sheep.

Classical conditioning can also have applications in business and marketing. For example, it can be used to help people form favorable attitudes toward products, businesses, or brands. While there may not be a direct link between the item and the consumer response, creating this association may help motivate people to purchase certain products because they have developed a favorable opinion of them due to classical conditioning. Operant conditioning is a learning method in which a specific behavior is associated with either a positive or negative consequence. This form of learning links voluntary actions with receiving either a reward or punishment, often to strengthen or weaken those voluntary behaviors. Classical conditioning is a learning process focused more on involuntary behaviors, using associations with neutral stimuli to evoke a specific involuntary response. Some psychologists maintain that classical conditioning represents a reductive, mechanical explanation for some behaviors. Some other criticisms of classical conditioning center on the fact that: Classical conditioning does not take human individuality and free will into account; it generally does not predict human behavior; people can form associations but still not act upon them. Many different factors can impact the associations and outcomes. People can choose to not act on the associations they have made through classical conditioning. However, the approach still holds great fascination for researchers and relevance in modern psychology. In reality, people do not respond exactly like Pavlov's dogs.

There are, however, numerous real-world applications for classical conditioning. For example, many dog trainers use classical conditioning techniques to help people train their pets. These techniques are also useful for helping people cope with phobias or anxiety problems. Therapists might, for example, repeatedly pair something that provokes anxiety with relaxation techniques in order to create an association. Teachers can apply classical conditioning in the class by creating a positive classroom environment to help students overcome anxiety or fear. Pairing an anxiety-provoking situation, such as performing in front of a group, with pleasant surroundings helps the student learn new associations. Instead of feeling anxious and tense in these situations, the child will learn to stay relaxed and calm. Frequently Asked Questions Who discovered classical conditioning? Ivan Pavlov discovered classical conditioning. Pavlov was passionate about physiology, even earning gold medals for his work in this field. It was in his position as director of a physiological laboratory that he began to connect physiological research with reflex response and regulation. Why is classical conditioning considered a form of implicit memory? Implicit memory is a memory that you can recall effortlessly or without thought. Classical conditioning uses this automatic memory to create associations with a neutral stimulus. The association is learned without conscious awareness. Which therapies are based on the principles of classical conditioning? Behavioral therapies use the principles of classical conditioning to help people change negative behaviors. The thought behind these therapies is that we learn from our environment. Cognitive behavioral therapy and exposure therapy are two types of behavioral therapy.

Classical conditioning (also known as Pavlovian or respondent conditioning) is learning through association and was discovered by Pavlov, a Russian physiologist. In simple terms, two stimuli are linked together to produce a new learned response in a person or animal. John Watson proposed that the process of classical conditioning (based on Pavlov's observations) was able to explain all aspects of human psychology. If you pair a neutral stimulus (NS) with an unconditioned stimulus (US) that already triggers an unconditioned response (UR) that neutral stimulus will become a conditioned stimulus (CS), triggering a conditioned response (CR) similar to the original unconditioned response. Everything from speech to emotional responses was simply patterns of stimulus and response. Watson completely denied the existence of the mind or consciousness. Watson believed that all individual differences in behavior were due to different learning experiences. Watson (1924, p. 104) famously said: Give me a dozen healthy infants, well-formed, and my own specified world 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 beggar-man and thief, regardless of his talents, penchants,

tendencies, abilities, vocations and the race of his ancestors. How Classical Conditioning Works There are three stages of classical conditioning. Stimuli are given special scientific names: Stage 1: Before Conditioning: In this stage, the unconditioned stimulus (UCS) produces an unconditioned response (UCR) in an organism. In basic terms, this means that a stimulus in the environment has produced a behavior / response which is unlearned (i.e., unconditioned) and therefore is a natural response which has not been taught. In this respect, no new behavior has been learned yet. For example, a stomach virus (UCS) would produce a response of nausea (UCR). In another example, a perfume (UCS) could create a response of happiness or desire (UCR). This stage also involves another stimulus which has no effect on a person and is called the neutral stimulus (NS). The NS could be a person, object, place, etc. The neutral stimulus in classical conditioning does not produce a response until it is paired with the unconditioned stimulus. Stage 2: During Conditioning: During this stage, a stimulus which produces no response (i.e., neutral) is associated with the unconditioned stimulus, at which point it now becomes known as the conditioned stimulus (CS). For example, a stomach virus (UCS) might be associated with eating a certain food such as chocolate (CS). Also, perfume (UCS) might be associated with a specific person (CS). For classical conditioning to be effective, the conditioned stimulus should occur before the unconditioned stimulus, rather than after it, or during the same time. Thus, the conditioned stimulus acts as a type of signal or cue for the unconditioned stimulus. In some cases, conditioning may take place if the NS occurs after the UCS (backward conditioning), but this normally disappears quite quickly. The most important aspect of the conditioning stimulus is the it helps the organism predict the coming of the unconditional stimulus. Often during this stage, the UCS must be associated with the CS on a number of occasions, or trials, for learning to take place. However, one trial learning can happen on certain occasions when it is not necessary for an association to be strengthened over time (such as being sick after food poisoning or drinking too much alcohol). Stage 3: After Conditioning: Now the conditioned stimulus (CS) has been associated with the unconditioned stimulus (UCS) to create a new conditioned response (CR). For example, a person (CS) who has been associated with nice perfume (UCS) is now found attractive (CR). Also, chocolate (CS) which was eaten before a person was sick with a virus (UCS) now produces a response of nausea (CR). Classical Conditioning Examples Pavlov's Dogs The most famous example of classical conditioning was Ivar Pavlov's experiment with dogs, who salivated in response to a bell tone. Pavlov showed that when a bell was sounded each time the dog was fed, the dog learned to associate the sound with the presentation of the food. He first presented the dogs with the sound of a bell; they did not salivate so this was a neutral stimulus. Then he presented them with food, they salivated. The food was an unconditioned stimulus and salivation was an unconditioned (innate) response. He then repeatedly presented the dogs with the sound of the bell first and then the food (pairing) after a few repetitions the dogs salivated when they heard the sound of the bell. The bell had become the conditioned stimulus and salivation had become the conditioned response. Fear Response Watson & Rayner (1920) were the first psychologists to apply the principles of classical conditioning to human behavior by looking at how this learning process may explain the development of phobias. They did this in what is now considered to be one of the most ethically dubious experiments ever conducted - the case of Little Albert. Albert B.'s mother was a wet nurse in a children's hospital. Albert was described as 'healthy from birth' and 'on the whole stolid and unemotional'. When he was about nine months old, his reactions to various stimuli (including a white rat, burning newspapers and a hammer striking a four-foot steel bar just behind his head) were tested. Only the last of these frightened him, so this was designated the unconditioned stimulus (UCS) and fear the unconditioned response (UCR). The other stimuli were neutral because they did not produce fear. When Albert was just over eleven months old, the rat and the UCSwere presented together: as Albert reached out to stroke the animal, Watson struck the bar behind his head. This occurred seven times in total over the next seven weeks. By this time the rat, the conditioned stimulus (CS), on its own frightened Albert, and fear was now a conditioned response (CR). The CR transferred spontaneously to the rabbit, the dog and other stimuli that had been previously neutral. Five days after conditioning, the CR produced by the rat persisted. After ten days it was 'much less marked', but it was still evident a month later Carter and Tiffany, 1999 support the cue reactivity theory, they carried out a meta-analysis reviewing 41 cue-reactivity studies that compared responses of alcoholics, cigarette smokers, cocaine addicts and heroin addicts to drug-related versus neutral stimuli. They found that dependent individuals reacted strongly to the cues presented and reported craving and physiological arousal. Addiction Cue reactivity is the theory that people associate situations (e.g. meeting with friends/ places (e.g. pub) with the rewarding effects of nicotine, and these cues can trigger a feeling of craving. These factors become smoking-related cues. Prolonged use of nicotine creates an association between these factors and smoking based on classical conditioning. Nicotine is the unconditioned stimulus (UCS), and the pleasure caused by the sudden increase in dopamine levels is the unconditioned response (UCR). Following this increase, the brain tries to lower the dopamine back to a normal level. The stimuli that have become associated with nicotine were neutral stimuli (NS) before "learning" took place but they became conditioned stimuli (CS), with repeated pairings. They can produce the conditioned response (CR). However, if the brain has not received nicotine, the levels of dopamine drop, and the individual experiences withdrawal symptoms therefore is more likely to feel the need to smoke in the presence of the cues that have become associated with the use of nicotine. Classroom Learning The implications of classical conditioning in the classroom are less important than those of operant conditioning, but there is a still need for teachers to try to make sure that students associate positive emotional experiences with learning. If a student associates negative emotional experiences with school, then this can obviously have bad results, such as creating a school phobia. For example, if a student is bullied at school they may learn to associate the school with fear. It could also explain why some students show a particular dislike of certain subjects that continue throughout their academic career. This could happen if a student is humiliated or punished in class by a teacher. Principles of Classical Conditioning In classical conditioning, a neutral stimulus (NS) is a stimulus that initially does not evoke a response until it is paired with the unconditioned stimulus. For example, in Pavlov's experiment, the bell was the neutral stimulus, and only produced a response when it was paired with food. In classical conditioning, the unconditioned stimulus is a feature of the environment that causes a natural and automatic unconditioned response. In Pavlov's study, the unconditioned stimulus was food. In classical conditioning, an unconditioned response is an unlearned response that occurs automatically when the unconditioned stimulus is presented. Pavlov showed the existence of the unconditioned response by presenting a dog with a bowl of food and measuring its salivary secretions. In classical conditioning, the conditioned stimulus (CS) is a substitute stimulus that triggers the same response in an organism as an unconditioned stimulus. For example, Pavlov's dog learned to salivate at the sound of a bell. Simply put, a conditioned stimulus makes an organism react to something because it is associated with something else. In classical conditioning, the conditioned response (CR) is the learned response to the previously neutral stimulus. In Ivan Pavlov's experiments in classical conditioning, the dog's salivation was the conditioned response to the sound of a bell. In the initial learning period, acquisition describes when an organism learns to connect a neutral stimulus and an unconditioned stimulus. In psychology, extinction refers to the gradual weakening of a conditioned response by breaking the association between the conditioned and the unconditioned stimuli. For example, when the bell repeatedly rang and no food was presented, Pavlov's dog gradually stopped salivating at the sound of the bell. Spontaneous Recovery is a phenomenon of Pavlovian conditioning that refers to the return of a conditioned response (in a weaker form) after a period of time following extinction. For example, when Pavlov waited a few days after extinguishing the conditioned response, and then rang the bell once more, the dog salivated again. In psychology, generalization is the tendency to respond in the same way to stimuli that are similar but not identical to the conditioned stimulus. For example, in Pavlov's experiment, if a dog is conditioned to salivate to the sound of a bell, it may later salivate to a higher-pitched bell. In classical conditioning, discrimination is a process through which individuals learn to differentiate among similar stimuli and respond appropriately to each one. For example, eventually, Pavlov's dog learns the difference between the sound of the 2 bells and no longer salivates at the sound of the non-food bell. Critical Evaluation Classical conditioning emphasizes the importance of learning from the environment, and supports nurture over nature. However, it is limiting to describe behavior solely in terms of either nature or nurture, and attempts to do this underestimate the complexity of human behavior. It is more likely that behavior is due to an interaction between nature (biology) and nurture (environment). The behaviorist approach has been used in the treatment of phobias, and systematic desensitization. The individual with the phobia is taught relaxation techniques and then makes a hierarchy of fear from the least frightening to the most frightening features of the phobic object. He then is presented with the stimuli in that order and learns to associate (classical conditioning) the stimuli with a relaxation response. This is counter-conditioning. The process of classical conditioning can probably account for aspects of certain other mental disorders. For example, in post-traumatic stress disorder (PTSD) sufferers tend to show classically conditioned responses to stimuli present at the time of the traumatizing event (Charney et al., 1993). But since not everyone exposed to the traumatic event develops PTSD, other factors must be involved, such as individual differences in people's appraisal of events as stressors and the recovery environment, such as family and support groups. There have been many laboratory demonstrations of human participants acquiring behavior through the process of classical conditioning. It is relatively easy to classically condition and extinguish conditioned responses, such as the eye-blink and galvanic skin responses. However, applying classical conditioning to our understanding of complex human behavior such as memory, thinking, reasoning or problem-solving has proved more problematic. In normal adults, the conditioning process can apparently be overridden by instructions: simply telling participants that the unconditioned stimulus will not occur causes an instant loss of the conditioned response, which would otherwise extinguish only slowly (Davey, 1983). Most participants in an experiment are aware of the experimenter's contingencies (the relationship between stimuli and responses) and in the absence of such awareness often fail to show evidence of conditioning (Brewer, 1974). There are also important differences between very young children or those with severe learning difficulties and older children and adults regarding their behavior in a variety of operant conditioning and discrimination learning experiments. These seem largely attributable to language development (Dugdale & Lowe, 1990). This suggests that people have rather more efficient, language-based forms of learning at their disposal than just the laborious formation of associations between a conditioned stimulus and an unconditioned stimulus. Even behavior therapy, one of the apparently more successful applications of conditioning principles to human behavior, has given way to cognitive-behavior therapy (Mackintosh, 1995). A strength of classical conditioning theory is that it is scientific. This is because it's based on empirical evidence carried out by controlled experiments. For example, Pavlov (1902) showed how classical conditioning could be used to make a dog salivate to the sound of a bell. Supporters of a reductionist approach say that it is scientific. Breaking complicated behaviors down to small parts means that they can be scientifically tested. However, some would argue that the reductionist view lacks validity. Thus, while reductionism is useful, it can lead to incomplete explanations. A final criticism of classical conditioning theory is that it is deterministic. This means that it does not allow for any degree of free will in the individual. Accordingly, a person has no control over the reactions they have learned from classical conditioning, such as a phobia. The deterministic approach also has important implications for psychology as a science. Scientists are interested in discovering laws which can then be used to predict events. However, by creating general laws of behavior, deterministic psychology underestimates the uniqueness of human beings and their freedom to choose their destiny. References Bremner, J. D., Southwick, S. M., Johnson, D. R., Yehuda, R., & Charney, D. S. (1993). Childhood physical abuse and combat-related posttraumatic stress disorder in Vietnam veterans. The American journal of psychiatry, 150(3), 327-340. Davey, B. (1983). Think aloud: Modeling the cognitive processes of reading comprehension. Journal of reading, 27(1), 44-47. 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