I'm not a bot

Content warning: Please be advised, the below article might mention substance use-related topics that could be triggering to the reader. If you or someone you love is struggling with substance use, contact SAMHSAs National Helpline at 1-800-662-HELP (4357). Support is available 24/7. Please see ourGet Help Now page for more immediate resources.Reinforcement psychology is the study of the effect of reinforcement techniques on behavior. Much of reinforcement psychology is based on theearly research of B.F. Skinner, who is considered the father of operant conditioning research. Skinner's research was based on theLaw of Effect, posited by Edward Thorndike. Skinner introduced the concepts of reinforcement and punishment to this framework.The principle of reinforcement suggests that when we follow behavior with pleasant consequences, that behavior is likely to be repeated. Additionally, behavior followed by unpleasant consequences may be less likely to be repeated.The definition of reinforcement in psychologyThe term "reinforcement" may refer to anything that increases the probability that a response will occur. The term "reinforcement psychology" refers to the effect of reinforcement on behavior. Reinforcement may increase or strengthen the response, whether positive or negative.GettyReinforcement psychology can strengthen healingStart your process with BetterHelpWhen we praise a child for helping clean up their toys, they may continue helping with clean up in the future. When we offer a treat to a dog during training, they may repeat the behavior we're teaching them in the future.Categories of reinforcementThere are two categories of reinforcement called primary reinforcement and secondary reinforcement.Primary reinforcementPrimary reinforcement occurs naturally and doesn't require the subject to learn anything new. The principle of primary reinforcement is sometimes referred to as unconditional reinforcement. Primary reinforcement assists the survival of people, plants, and animals. Natural cycles can provide food, sleep, water, and air.Our experiences and our genetics may play a factor in primary reinforcement. If we don't like a particular food, we might choose not to eat it. Similarly, people who become sunburned easily may choose to avoid long hours at the beach, bathing in the sun.Secondary reinforcementSecondary reinforcement is also known as conditioned reinforcement. This reinforcement category involves using a reinforcer paired with another reinforcer. We may find an example of this in dog training, where a trainer uses a clicker in conjunction with a treat.The primary reinforcer is the dog treat, and the secondary reinforcer is the clicker. When the treat is used along with the clicker and praise, the clicker may eventually be able to serve as the primary reinforcer, and the treat can be taken away completely.Types of reinforcement in psychologyReinforcement can be positive or negative. When reinforcement is positive, the trainer adds something to increase or invoke a response. An example of this could be giving a child a sugary treat as a reward for toilet training.Negative reinforcement can be removing something to prompt the desired behavior. An example of negative reinforcement could be a child owing their parents money. If the parents ask the child to pay 90% of the money back by a specific date and the child complies, the parents may waive the remaining 10% of the balance.Positive and negative in this context don't necessarily pertain to "good and bad." As in mathematics, positive means adding something, and negative means taking something away.Factors that may influence response strengthHow and when someone reinforces a behavior are factors that may affect the overall strength of the response. The following items can measure the strength of a reinforcement response:PersistenceFrequencyDurationAccuracy of response after reinforcement stopsThere are two other terms in reinforcement psychology: continuous reinforcement and partial reinforcement.Continuous reinforcementContinuous reinforcement means you reinforce a certain behavior every time it happens. For example, if your dog always sits when you ask, you may choose to offer a treat every time.Partial reinforcementPartial reinforcement means that once the subject has acquired the behavior, the trainer may offer reinforcement part of the time and still get the same positive effect.Skinner identified four main types of reinforcement schedules associated with partial reinforcement, including:Fixed-ratio schedules: Reinforcing a behavior after a specific number of responses have occurred.Fixed-interval schedules: Reinforcing a behavior after a specific period has elapsed.Variable-ratio schedules: Reinforcing the behavior after an unpredictable number of responses.Variable-interval schedules: Reinforcing the behavior after an unpredictable period has elapsed.In the same example above, partial reinforcement might mean that after 15 times of your dog sitting, you only provide a treat for every five occurrences instead of every time. A partial reinforcement schedule is thought to lead to slower adoption of the desired behavior. However, these schedules of reinforcement can also decrease the likelihood of a behavior going extinct. Variable-interval schedules, for example, are thought to promote positive behaviors in the classroom. Partial schedules can be used for positive and negative reinforcement.iStock/FatCameraApplications for reinforcementThe basic principles in reinforcement psychology are often used in many facets of life, including education, clinical, and community settings.Application in the educational settingOne effect of the development of reinforcement psychology was the development of positive behavioral supports and interventions (PBIS) to modify student behavior at school and in the classrooms.PBIS is a program that uses universal behavioral interventions recognized worldwide to prevent disruptive behaviors. PBIS may be used at the schoolwide, classroom, and individual student levels. PBIS may be most successful when schools employ the interventions at all three levels.At the schoolwide level,a team of researchersdid a three-year study of over 438,500 students in the Chicago Public School system between 2001-2004.The study involved promoting four schoolwide expectations, which were:Be respectfulBe responsibleBe academically engagedBe caringThe study showed vast reductions in office discipline referrals and suspensions and increases in math test scores. In other studies, schools report that their students showed drastically improved social skills.Schools were able to decrease the amount of time and resources they needed to address behavioral issues. Many studies showed that PBIS resulted in higher test scores and academic achievement.Application in the clinical settingReinforcement psychology has proven helpful in a variety of clinical settings. One of the first applications of reinforcement techniques pertains to children who live with severe social anxiety.A 2008 study conducted by a team of researchers involved a 12-year-old boy by the name of Luke. Luke was selectively mute at school.Researchers believe thatselective mutism is often a symptom of social anxiety. The clinicians studied the boy as teachers used reinforcement techniques to increase Luke's verbalization.They used either a few prompts or no prompts in the regular classroom setting to achieve the goal of helping him lessen his anxiety enough that he could speak. The experiment found that contingent positive reinforcement is the most functional therapy design for students who live with selective mutism.Application in treating substance use concernsReinforcement techniques are also commonly used to treat substance abuse. Substance use can reinforce behavior because it creates pleasant sensations while reducing anxiety, increasing someone's ability to be social, feel energized, or sleep more.However, the reinforcement of substance use can be an unhealthy reinforcer that may cause dependence or addiction. Substance abuse counselors may use positive and negative reinforcements to encourage healthy behavior and help clients substitute new habits for unhealthy ones.Positive reinforcement in substance abuse therapyPositive reinforcements are often used in substance abuse treatment to relieve the client of the stressful situations causing them to seek an escape. Positive reinforcements may include involving one's family in treatment to have social connections during treatment.Other positive reinforcements may be allowing the client to move up to higher levels in the program that offer more fun and engaging activities such as yoga, rock climbing, outdoor meditation, ropes courses, and more.Negative reinforcement in substance abuse therapyNegative reinforcement may also be successful in substance abuse therapy. A therapist may allow the client to feel their stressors and encounter their fears, but instead of letting them succumb to urges, the counselor may teach other coping skills.By changing thought patterns, meditating, or substituting healthy thought patterns instead of using substances, clients may learn that they can experience joy and happiness and live stress-free lives in new ways.Application in community settingsThe concept of positive reinforcement has been tested in community settings with very positive results. In a 21-week experiment that involved paying volunteers to pick up trash at the Cache National Forest, located primarily in Utah, volunteers picked up over 187 bags of trash. Volunteers consistently performed well, whether supervised or not, and the practice has been effective over the long term.Norway uses the concept of positive reinforcementin its prison system. Prisoners receive the same services as non-incarcerated individuals. Their only consequence is the lack of freedom. The average sentence is only eight months long. Inmates have all the same rights as citizens outside the prison, including the right to study and vote.In this prison, inmates are encouraged to go to school or work and are offered step-down services, including social and professional training and transitional housing to help prevent recidivism. About 40% of the prisons are open, where inmates go to their cells only at night.Reinforcement therapyMany who struggle with substance use disorders and other mental health conditions see no way out of their symptoms. Recently, online therapy has become a popular and widely used method of treating these concerns.A studyby the Canadian Agency for Drugs and Technologies in Health showed that online therapy reduced patient substance use. Getting help online isproving to be just as effective as other forms of care as technology improves and people find new ways to create relationships with therapists online. Thus, online therapy may be beneficial when it comes to managing the symptoms of substance use, anxiety, OCD, or other mental illness symptoms with reinforcement therapy.If you are struggling with mental health issues, it might be beneficial to seek a consultation from an online therapist. Counselors on online platforms such as BetterHelp can give you guidance and treatment from the comfort of your home.Getty/PeopleImagesReinforcement psychology can strengthen healingStart your process with BetterHelpReinforcement therapy may be one way to learn to increase positive behaviors in your life and remove those that no longer serve you. If you'd like to learn more about reinforcement and how to practice it, consider reaching out to a counselor to learn research-based techniques and skills.What are the 4 types of reinforcement? The four types of reinforcement are:Positive reinforcement: This is a stimulus or event in operant conditioning that involves the use of praise and reward to increase the possible occurrence of a specific response.Negative reinforcement: This is a stimulus or event in operant conditioning that can be stopped or withheld to increase the possible occurrence of a specific response.Positive punishment: This is a stimulus or event in operant conditioning that involves the use of an unpleasant incentive to increase the possible occurrence of a specific response.Negative punishment: This is a stimulus or event in operant conditioning that involves the removal or withholding of an unpleasant incentive to increase the possible occurrence of a specific response.What is reinforcement?Reinforcement is a fundamental aspect of operant conditioning that is used to describe the strengthening of a situation or element. In behavioral psychology, the term refers to the application of any stimulus which facilitates and increases the likelihood of a specific response occurring. In some instances, reinforcement is also used to describe an enhanced behavioral effect or element, especially when this enhancement improves the depth and durability of memory.What is an example of positive reinforcement?A positive reinforcement is essentially a reward for a correct response. One example of a positive reinforcement is when you give your child a treat every time they complete their homework. Your child will eventually come to understand that doing their homework comes with the added benefit of a treat, which gives them more interest in studying. Offering your child compliments is also another form of positive reinforcement because it not only expresses your satisfaction but gives them the impression that you recognize their efforts.What is reinforcement behavior?Reinforcement behavior is any action that constantly reoccurs in response to a stimulus. Reinforcement is an aspect of behavioral psychology that aims to influence the actions or reaction (behavior) of an individual or organism in relation to an activity or object (bait). For example, if your dog barks at the sound of a whistle after years of training, this is a reinforced behavior.What is punishment reinforcement?Punishment is often regarded as the opposite of reinforcement. In the same way that reinforcement can be positive and negative, punishment can also be positive and negative. Punishment psychology is an operant conditioning technique that decreases the likelihood of an event or response reoccurring often through the use of an unpleasant or unfavorable consequence. The aim of punishment is to penalize a behavior as a means to dissuade its repetition.What is the best type of reinforcement?Positive reinforcement is generally regarded as the most effective form of reinforcement behavior, especially when it occurs immediately after the behavior. A positive enforcement not only encourages the desired response, but also enables both the operant and respondent to focus on the most pleasant aspect of the situation.What are reinforcement techniques?Reinforcement techniques are operant conditioning methods designed to increase the likelihood of a desired response. There are three types of reinforcement techniques: positive, negative, and extinguishing. Each technique represents reward, punishment, and ignorance.The first type of reinforcement is focused on reward. This is regarded as a positive reinforcement because it helps to encourage desirable behavior.The second type of reinforcement is punishment, which is regarded as a negative reinforcement because it is an action taken to discourage undesirable behavior.The third type of reinforcement technique is extinguishing, which neither rewards nor punishes a behavior. The purpose of extinction is to disregard the behavior, thereby decreasing its significance, until it becomes extinct.What is natural reinforcement?A natural reinforcement is a classical conditioning method that aims to achieve a response on the premise of an innate behavior. For example, if an individual enjoys listening to music, you can base your conversation with them around their favorite genre, artist, or song to help them build or improve their social skills. A natural reinforcer doesnt require a contrived mode of conditioning to stimulate the desired response.What are the elements of reinforcement?The four primary elements of reinforcement are reward, policy, value function, and environment. These elements are considered most integral in reinforcement learning.What are examples of reinforcement?Here are a few examples of positive and negative reinforcements:At a social media management firm, your boss gives you a bonus as part of your salary for doubling the total followers for an account you manage. The bonus payment (treat) acts as an enforcer that motivates you to surpass the minimum number of followers (response) you are expected to gain every month. This is an example of a positive reinforcement.Another theoretical scenario: you owe your parents some money, you are expected to find work to pay them back or face the consequences of giving up your car keys. In this case, you are engaging in a behavior (getting a job) to avoid an unfavorable stimulus (being unable to use your car). This is an example of a negative reinforcement.Is positive reinforcement classical conditioning?Positive reinforcement is a form operant conditioning. Classical conditioning focuses on instinctive responses that occur as a result of experience, unlike operant conditioning, which focuses on strengthening and weakening involuntary behavior. Classical conditioning is a concept often associated with the Russian psychologist Ivan Pavlov.What are five types of reinforcers?The five types of reinforcers are:Positive reinforcerNegative reinforcerPrimary reinforcerSecondary reinforcerPunishmentIs reinforcement better than punishment?Research has shown that it is easier to encourage a good behavior than it is to discourage a bad behavior. It is for this reason that reinforcement is regarded as being more effective than punishment. Punishment can trigger negative emotions such as anger and resentment, which, in comparison to the positive emotions that reinforcement can generate, make it a less sustainable and potentially less healthy option.What is an example of reinforcement?A dog owner gives their dog a carrot (reinforcing stimulus) every time the animal fetches a ball. The dog receives (reinforcing stimulus) two carrots every time the ball is fetched under a stipulated amount of time. But when the dog fails to fetch the ball, the owner withholds the treat, or stops the game (punishment).What is operant conditioning?Operant conditioning, sometimes called instrumental conditioning, is a learning procedure that employs the use of reward and punishment to strengthen a particular behavior. Through operant conditioning, an individual is able to associate an action with a consequence. Here, the predetermined nature of the consequence applied is meant to instill the desired response to an action. The term operant conditioning was coined by American psychologist B. F. Skinner in 1937, and he is generally regarded as the father of operant conditioning.One of teachers most valued behavior management tools is reinforcement. Reinforcement can be used to teach new skills, teach a replacement behavior for an interfering behavior, increase appropriate behaviors, or increase on-task behavior (AFIRM Team, 2015). Reinforcement may seem like a simple strategy that all teachers use, but it is often not used as effectively as it could be. The goal of this article is to describe how reinforcement can be used more systematically in the classroom.Before we describe when and how reinforcement should be used, it is important to describe the difference between two types of reinforcement, positive and negative. Positive reinforcement is the delivery of a reinforcer to increase appropriate behaviors whereas negative reinforcement is the removal of an aversive event or condition, which also increases appropriate behavior (AFIRM Team, 2015). An example of positive reinforcement is providing a sticker to a student once theyve completed an assignment. An example of negative reinforcement is allowing the student to leave circle time for a five-minute break after they use a break card. As you can see, the goal of both positive and negative reinforcement is to increase desired behaviors.Reinforcement is only truly being used if following an appropriate behavior, a consequence (a reinforcer or removal of an aversive event) is provided and it increases the likelihood of the student using the behavior in the future (AFIRM Team, 2015). Reinforcement often fails to increase the desired behavior in the future when the reinforcer is not actually motivating to the student. We can prevent this by including the student in the process of identifying reinforcers through reinforcer surveys or reinforcement sampling. A reinforcer survey asks the student to answer questions and checklists to identify their reinforcers. One example of a reinforcer survey can be found here: . Reinforcer surveys can be individualized to include the students interests and classroom limitations. For students who have limited communication skills, reinforcement sampling may be a more appropriate strategy to identify their likes and dislikes (Berg, Wacker, & Steege, 1995). A teacher will first observe the student, and then talk to the students parents, and other staff who work with the student to gather possible reinforcers. There are two types of reinforcers to choose from (Alberto & Troutman, 2009). Primary reinforcers are those that are innately reinforcing, such as edibles (small pieces of food or drink) or sensory experiences (light up toys, fans, massagers). Secondary reinforcers include tangible items, activities, special privileges, social praise, and attention. Once these items are gathered, the teacher will then present the reinforcers in pairs to the student and see which one they choose. The teacher should continue to present sets of two reinforcer choices until all choices have been paired with one another. The reinforcer with the highest percentage of being chosen (# of times chosen/ # of times presented) can be considered a true reinforcer. Intervention Central provides further instructions on how to conduct a reinforcement sampling and also provides a data sheet to record the students choices (.Once the teacher has identified reinforcers and data has been collected on the frequency or duration of the target behavior, delivery of the reinforcement can commence. In the beginning, the teacher or other staff member will want to provide the reinforcement every single time the student uses the target skill or behavior. The goal of continuous reinforcement is to teach students that when they use appropriate behavior, they get rewarded. In order to make this strong connection, reinforcers need to be provided immediately following the target skill. The longer the time is between the behavior and the delivery of the reinforcer, the weaker the association will be. It is also important to pair the reinforcer with behavior specific praise (Great job writing your name or Super work sitting in your seat). Behavior specific praise does two things: (1) it tells the student exactly what they are being reinforced for and (2) it helps students become more motivated by social reinforcers through the pairing of the desired item or activity with the praise and teacher attention (AFIRM Team, 2015).Sometimes a teacher may begin using reinforcement, but over time they find it becoming less effective. In these cases, we need to think of depravation and satiation (AFIRM Team, 2015). Depravation is keeping the reinforcer away from the student until they have exhibited the desired behavior. If the reinforcer is play dough, we make sure that the play dough is taken away from the free time area and the student isnt given play dough at home. This ensures that when they receive the play dough contingent on their appropriate behavior, it will be highly reinforcing. Satiation occurs when the reinforcer has been overused and is no longer motivating. To avoid satiation, a variety of reinforcers should be used and new ones should be introduced. We may also want to teach the skill in several short periods. For example, a teacher who wants to teach the student how to follow a one-step direction may provide three opportunities to access the reinforcer and then wait an hour to do it again. Although edibles can be very rewarding, they should be avoided as it is easy for a student to satiate on food and are not always the most age-appropriate reinforcer. In cases where no other reinforcers could be identified for the student, the edible should be broken up into small bites.Some teachers may worry about using reinforcement due to the possibility of the student depending on the reinforcer to engage in the appropriate behavior or the need to provide high rates of reinforcement. This is a legitimate concern, but can be avoided by having a plan for how the reinforcement will be thinned. Reinforcement thinning is decreasing the overall rate or density of reinforcement provided to the individual when they emit the target behavior (Hagopian, Boelter, & Jarmolowicz, 2011). Three different ways to systematically decrease reinforcement are delay schedules, chained schedules, and multiple schedules. Delay schedules involve increasing the wait time between when the student produces the appropriate behavior and when they receive their reinforcer. A teacher may provide a verbal response wait or provide a picture card that indicates wait after they emit the behavior. Chained schedules are usually used for behaviors that are maintained by escape. In these cases, the teacher will progressively increase the number of steps, amount of time, or the number of demands before the student can access the escape or reinforcement. Prior to the demands, the teacher should tell the student about the set criterion or provide a visual of the number of steps. The last type of thinning is multiple schedules. With multiple schedules, the reinforcement component is decreased while the extinction component (time where no reinforcement is provided) is increased. This can be done by providing cue cards. For individuals who can read, they may be presented with cards that say Reinforcement Available or Reinforcement Not Available while others may be shown red or white cards. When shown the Reinforcement Available or white card, the student will receive reinforcement each time they produce the appropriate behavior and during the Not Available or red card, they do not receive reinforcement. The goal is to progressively increase the use of the red card while still maintaining appropriate behavior.Once a system of reinforcement has been individualized for a student, everyone who interacts with the student should be aware of the system. Individuals who work with the student should be aware of the possible reinforcers and how to avoid satiation of those reinforcers. By having a variety of school personnel, and in different settings across the school day using the reinforcement system, the student will be more likely to generalize their appropriate behavior to other areas.ReferencesAFIRM Team. (2015). Reinforcement. Chapel Hill, NC: National Professional Development Center on Autism Spectrum Disorder, FPG Child Development Center, University of North Carolina. 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They must also have a relevant academic degree, at least 3 years of experience, and have credentials from their professional organization. This includes completing the necessary education, exams, training, and practice requirements. We refer to therapists across our sites and apps according to their professional title and credentials, specific to the U.S., U.K., Australia, Germany, France, or the Netherlands, as applicable.For other uses, see Reinforcement (disambiguation).Consequence affecting an organism's future behaviorOperant conditioning chamber for reinforcement trainingIn behavioral psychology, reinforcement refers to consequences that increase the likelihood of an organism's future behavior, typically in the presence of a particular antecedent stimulus.[1] For example, a rat can be trained to push a lever to receive food whenever a light is turned on; in this example, the light is the antecedent stimulus, the lever pushing is the operant behavior, and the food is the reinforcer. Likewise, a student that receives attention and praise when answering a teacher's question will be more likely to answer future questions in class; the teacher's question is the antecedent, the student's response is the behavior, and the praise and attention are the reinforcements. Punishment is the inverse to reinforcement, referring to any behavior that decreases the likelihood that a response will occur. In operant conditioning terms, punishment does not need to involve any type of pain, fear, or physical actions; even a brief spoken expression of disapproval is a type of punishment.[2]Consequences that lead to appetitive behavior such as subjective "wanting" and "liking" (desire and pleasure) function as rewards or positive reinforcement.[3] There is also negative reinforcement, which involves taking away an undesirable stimulus. An example of negative reinforcement would be taking an aspirin to relieve a headache.Reinforcement is an important component of operant conditioning and behavior modification. The concept has been applied in a variety of practical areas, including parenting, coaching, therapy, self-help, education, and management.Addiction and dependence glossary[4][5][6]addiction a biopsychosocial disorder characterized by persistent use of drugs (including alcohol) despite substantial harm and adverse consequencesaddictive drug psychoactive substances that with repeated use are associated with significantly higher rates of substance use disorders, due in large part to the drug's effect on brain reward systemsdependence an adaptive state associated with a withdrawal syndrome upon cessation of repeated exposure to a stimulus (e.g., drug intake)drug sensitization or reverse tolerance the escalating effect of a drug resulting from repeated administration at a given dosedrug withdrawal symptoms that occur upon cessation of repeated drug usephysical dependence dependence that involves persistent physicalsomatic withdrawal symptoms (e.g., delirium tremens and nausea)psychological dependence dependence that is characterised by emotional-motivational withdrawal symptoms (e.g., anhedonia and anxiety) that affect cognitive functioning.reinforcing stimuli stimuli that increase the probability of repeating behaviors paired with themrewarding stimuli stimuli that the brain interprets as intrinsically positive and desirable or as something to approachsensitization an amplified response to a stimulus resulting from repeated exposure to itsubstance use disorder a condition in which the use of substances leads to clinically and functionally significant impairment or distresstolerance the diminishing effect of a drug resulting from repeated administration at a given dosevteIn the behavioral sciences, the terms "positive" and "negative" refer when used in their strict technical sense to the nature of the action performed by the conditioner rather than to the responding operant's evaluation of that action and its consequence(s). "Positive" actions are those that add a factor, be it pleasant or unpleasant, to the environment, whereas "negative" actions are those that remove or withhold from the environment a factor of either type. In turn, the strict sense of "reinforcement" refers only to reward-based conditioning; the introduction of unpleasant factors and the removal or withholding of pleasant factors are instead referred to as "punishment", which when used in its strict sense thus stands in contradistinction to "reinforcement". Thus, "positive reinforcement" refers to the addition of a pleasant factor, "positive punishment" refers to the addition of an unpleasant factor, "negative reinforcement" refers to the removal or withholding of an unpleasant factor, and "negative punishment" refers to the removal or withholding of a pleasant factor.This usage is at odds with some non-technical usages of the four term combinations, especially in the case of the term "negative reinforcement", which is often used to denote what technical parlance would describe as "positive punishment" in that the non-technical usage interprets "reinforcement" as subsuming both reward and punishment and "negative" as referring to the responding operant's evaluation of the factor being introduced. By contrast, technical parlance would use the term "negative reinforcement" to describe encouragement of a given behavior by creating a scenario in which an unpleasant factor is or will be present but engaging in the behavior results in either escaping from that factor or preventing its occurrence, as in Martin Seligmans experiment involving dogs learning to avoid electric shocks.B.F. Skinner was a well-known and influential researcher who articulated many of the theoretical constructs of reinforcement and behaviorism. Skinner defined reinforcers according to the change in response strength (response rate) rather than to more subjective criteria, such as what is pleasurable or valuable to someone. Accordingly, activities, foods or items considered pleasant or enjoyable may not necessarily be reinforcing (because they produce no increase in the response preceding them). Stimuli, settings, and activities only fit the definition of reinforcers if the behavior that immediately precedes the potential reinforcer increases in similar situations in the future; for example, a child who receives a cookie when he or she asks for one. If the frequency of "cookie-requesting behavior" increases, the cookie can be seen as reinforcing "cookie-requesting behavior". If however, "cookie-requesting behavior" does not increase the cookie cannot be considered reinforcing.The sole criterion that determines if a stimulus is reinforcing is the change in probability of a behavior after administration of that potential reinforcer. Other theories may focus on additional factors such as whether the person expected a behavior to produce a given outcome, but in the behavioral theory, reinforcement is defined by an increased probability of a response.The study of reinforcement has produced an enormous body of reproducible experimental results. Reinforcement is the central concept and procedure in special education, applied behavior analysis, and the experimental analysis of behavior and is a core concept in some medical and psychopharmacology models, particularly addiction, dependence, and compulsion.Laboratory research on reinforcement is usually dated from the work of Edward Thorndike, known for his experiments with cats escaping from puzzle boxes.[7] A number of others continued this research, notably B.F. Skinner, who published his seminal work on the topic in The Behavior of Organisms, in 1938, and elaborated this research in many subsequent publications.[8] Notably Skinner argued that positive reinforcement is superior to punishment in shaping behavior.[9] Though punishment may seem just the opposite of reinforcement, Skinner claimed that they differ immensely, saying that positive reinforcement results in lasting behavioral modification (long-term) whereas punishment changes behavior only temporarily (short-term) and has many detrimental side-effects.A great many researchers subsequently expanded our understanding of reinforcement and challenged some of Skinner's conclusions. For example, Azrin and Holz defined punishment as a consequence of behavior that reduces the future probability of that behavior,[10] and some studies have shown that positive reinforcement and punishment are equally effective in modifying behavior.[citation needed] Research on the effects of positive reinforcement, negative reinforcement and punishment continue today as those concepts are fundamental to learning theory and apply to many practical applications of that theory.This section needs additional citations for verification. Please help improve this article by adding citations to reliable sources in this section. Unsourced material may be challenged and removed. (December 2024) (Learn how and when to remove this message)Main article: Operant conditioningOperant conditioningExtinctionReinforcementIncrease behaviorPunishmentDecrease behaviorPositive reinforcementAdd appetitive stimulusfollowing correct behaviorNegative reinforcementPositive punishmentAdd noxious stimulusfollowing behaviorNegative punishmentRemove appetitive stimulusfollowing behaviorEscapeRemove noxious stimulusfollowing correct behaviorActive avoidanceBehavior avoids noxious stimulusThe term operant conditioning was introduced by Skinner to indicate that in his experimental paradigm, the organism is free to operate on the environment. In this paradigm, the experimenter cannot trigger the desirable response; the experimenter waits for the response to occur (to be emitted by the organism) and then a potential reinforcer is delivered. In the classical conditioning paradigm, the experimenter triggers (elicits) the desirable response by presenting a reflex eliciting stimulus, the unconditional stimulus (UCS), which they pair (precede) with a neutral stimulus, the conditional stimulus (CS).Reinforcement is a basic term in operant conditioning. For the punishment aspect of operant conditioning, see punishment (psychology).Positive reinforcement occurs when a desirable event or stimulus is presented as a consequence of a behavior and the chance that this behavior will manifest in similar environments increases.[11]:253 For example, if reading a book is fun, then experiencing the fun positively reinforces the behavior of reading fun books. The person who receives the positive reinforcement (i.e., who has fun reading the book) will read more books to have more fun.The high probability instruction (HPI) treatment is a behaviorist treatment based on the idea of positive reinforcement.Negative reinforcement increases the rate of a behavior that avoids or escapes an aversive situation or stimulus.[11]:252253 That is, something unpleasant is already happening, and the behavior helps the person avoid or escape the unpleasantness. In contrast to positive reinforcement, which involves adding a pleasant stimulus, in negative reinforcement, the focus is on the removal of an unpleasant situation or stimulus. For example, if someone feels unhappy, then they might engage in a behavior (e.g., reading books) to escape from the aversive situation (e.g., their unhappy feelings).[11]:253 The success of that avoidant or escapist behavior in removing the unpleasant situation or stimulus reinforces the behavior.Doing something unpleasant to people to prevent or remove a behavior from happening again is punishment, not negative reinforcement.[11]:252 The main difference is that reinforcement always increases the likelihood of a behavior (e.g., channel surfing while bored temporarily alleviated boredom; therefore, there will be more channel surfing while bored), whereas punishment decreases it (e.g., hangovers are an unpleasant stimulus, so people learn to avoid the behavior that led to that unpleasant stimulus).Extinction occurs when a given behavior is ignored (i.e. followed up with no consequence). Behaviors disappear over time when they continuously receive no reinforcement. During a deliberate extinction, the targeted behavior spikes first (in an attempt to produce the expected, previously reinforced effects), and then declines over time. Neither reinforcement nor extinction need to be deliberate in order to have an effect on a subject's behavior. For example, if a child reads books because they are fun, then the parents' decision to ignore the book reading will not remove the positive reinforcement (i.e., fun) the child receives from reading books. However, if a child engages in a behavior to get attention from the parents, then the parents' decision to ignore the behavior will cause the behavior to go extinct, and the child will find a different behavior to get their parents' attention. Reinforcers serve to increase behaviors whereas punishers serve to decrease behaviors; thus, positive reinforcers are stimuli that the subject will work to attain, and negative reinforcers are stimuli that the subject will work to be rid of or to end.[12] The table below illustrates the adding and subtracting of stimuli (pleasant or aversive) in relation to reinforcement vs. punishment.Comparison chartRewarding (pleasant) stimulusAversive (unpleasant) stimulusPositive (adding a stimulus)Positive reinforcementExample: Reading a book because it is fun and interestingPositive punishmentExample: Telling someone that their actions are inconsiderate[2]Negative (taking a stimulus away)Negative punishmentExample: Loss of privileges (e.g., screen time or permission to attend a desired event) if a rule is brokenNegative reinforcementExample: Reading a book because it allows the reader to escape feelings of boredom or unhappinessDistinguishing between positive and negative reinforcement can be difficult and may not always be necessary. Focusing on what is being removed or added and how it affects behavior can be more helpful.An event that punishes behavior for some may reinforce behavior for others.Some reinforcement can include both positive and negative features, such as a drug addict taking drugs for the added euphoria (positive reinforcement) and also to eliminate withdrawal symptoms (negative reinforcement).Reinforcement in the business world is essential in driving productivity. Employees are constantly motivated by the ability to receive a positive stimulus, such as a promotion or a bonus. Employees are also driven by negative reinforcement, such as by eliminating unpleasant tasks.Though negative reinforcement has a positive effect in the short term for a workplace (i.e. encourages a financially beneficial action), over-reliance on a negative reinforcement hinders the ability of workers to act in a creative, engaged way creating growth in the long term.[13]A primary reinforcer, sometimes called an unconditioned reinforcer, is a stimulus that does not require pairing with a different stimulus in order to function as a reinforcer and most likely has obtained this function through the evolution and its role in species' survival.[14][pageneeded] Examples of primary reinforcers include food, water, and sex. Some primary reinforcers, such as certain drugs, may mimic the effects of other primary reinforcers. While these primary reinforcers are fairly stable through life and across individuals, the reinforcing value of different primary reinforcers varies due to multiple factors (e.g., genetics, experience). Thus, one person may prefer one type of food while another avoids it. Or one person may eat much food while another eats very little. So even though food is a primary reinforcer for both individuals, the value of food as a reinforcer differs between them.A secondary reinforcer, sometimes called a conditioned reinforcer, is a stimulus or situation that has acquired its function as a reinforcer after pairing with a stimulus that functions as a reinforcer. This stimulus may be a primary reinforcer or another conditioned reinforcer (such as money). When trying to distinguish primary and secondary reinforcers in human examples, use the "caveman test." If the stimulus is something that a caveman would naturally find desirable (e.g. candy) then it is a primary reinforcer. If, on the other hand, the caveman would not react to it (e.g. a dollar bill), it is a secondary reinforcer. As with primary reinforcers, an organism can experience satisfaction and deprivation with secondary reinforcers.A generalized reinforcer is a conditioned reinforcer that has obtained the reinforcing function by pairing with many other reinforcers and functions as a reinforcer under a wide-variety of motivating operations. (One example of this is money because it is paired with many other reinforcers).[15]:83In reinforcer sampling, a potentially reinforcing but unfamiliar stimulus is presented to an organism without regard to any prior behavior.Socially-mediated reinforcement involves the delivery of reinforcement that requires the behavior of another organism. For example, another person is providing the reinforcement.The Premack principle is a special case of reinforcement elaborated by David Premack, which states that a highly preferred activity can be used effectively as a reinforcer for a less-preferred activity.[15]:123Reinforcement hierarchy is a list of actions, rank-ordering the most desirable to least desirable consequences that may serve as a reinforcer. A reinforcement hierarchy can be used to determine the relative frequency and desirability of different activities, and is often employed when applying the Premack principle.[citation needed]Contingent outcomes are more likely to reinforce behavior than non-contingent responses. Contingent outcomes are those directly linked to a causal behavior, such a light turning on being contingent on flipping a switch. Note that contingent outcomes are not necessary to demonstrate reinforcement, but perceived contingency may increase learning.Contiguous stimuli are stimuli closely associated by time and space with specific behaviors. They reduce the amount of time needed to learn a behavior while increasing its resistance to extinction. [citation needed] Giving a dog a piece of food immediately after sitting is more contiguous with (and therefore more likely to reinforce) the behavior than a several minute delay in food delivery following the behavior.Noncontingent reinforcement refers to response-independent delivery of stimuli identified as reinforcers for some behaviors of that organism. However, this typically entails time-based delivery of stimuli identified as maintaining aberrant behavior, which decreases the rate of the target behavior.[16] As no measured behavior is identified as being strengthened, there is controversy surrounding the use of the term noncontingent "reinforcement".[17]In his 1967 paper, Arbitrary and Natural Reinforcement, Charles Ferster proposed classifying reinforcement into events that increase the frequency of an operant behavior as a natural consequence of the behavior itself, and events that affect frequency by their requirement of human mediation, such as in a token economy where subjects are rewarded for certain behavior by the therapist.In 1970, Baer and Wolf developed the concept of "behavioral traps."[18] A behavioral trap requires only a simple response to enter the trap, yet once entered, the trap cannot be resisted in creating general behavior change. It is the use of a behavioral trap that increases a person's repertoire, by exposing them to the naturally occurring reinforcement of that behavior. Behavioral traps have four characteristics:They are "baited" with desirable reinforcers that "lure" the student into the trap.Only a low-effort response already in the repertoire is necessary to enter the trap.Interrelated contingencies of reinforcement inside the trap motivate the person to acquire, extend, and maintain targeted skills.[19]They can remain effective for long periods of time because the person shows few, if any, satiation effects.Thus, artificial reinforcement can be used to build or develop generalizable skills, eventually transitioning to naturally occurring reinforcement to maintain or increase the behavior. Another example is a social situation that will generally result from a specific behavior once it has met a certain criterion.Behavior is not always reinforced every time it is emitted, and the pattern of reinforcement strongly affects how fast an operant response is learned, what its rate is at any given time, and how long it continues when reinforcement ceases. The simplest rules controlling reinforcement are continuous reinforcement, where every response is reinforced, and extinction, where no response is reinforced. Between these extremes, more complex schedules of reinforcement specify the rules that determine how and when a response will be followed by a reinforcer.Specific schedules of reinforcement reliably induce specific patterns of response, and these rules apply across many different species. The varying consistency and predictability of reinforcement is an important influence on how the different schedules operate. Many simple and complex schedules were investigated at great length by B.F. Skinner using pigeons.A chart demonstrating the different response rate of the four simple schedules of reinforcement, each hatch mark designates a reinforcer being givenRatio schedule the reinforcement depends only on the number of responses the organism has performed.Continuous reinforcement (CRF) a schedule of reinforcement in which every occurrence of the instrumental response (desired response) is followed by the reinforcer.[15]:86Simple schedules have a single rule to determine when a single type of reinforcer is delivered for a specific response.Fixed ratio (FR) schedules deliver reinforcement after every nth response.[15]:88 An FR 1 schedule is synonymous with a CRF schedule.(ex. Every three times a rat presses a button, that rat receives a slice of cheese)Variable ratio schedule (VR) reinforced on average every nth response, but not always on the nth response.[15]:88(ex. Gamblers win 1 out every an 10 turns on a slot machine, however this is an average and they could hypothetically win on any given turn)Fixed interval (FI) reinforced after n amount of time.(ex. Every 10 minutes, a rat receives a slice of cheese when it presses a button. Eventually, the rat will learn to ignore the button until each 10 minute interval has elapsed)Variable interval (VI) reinforced on an average of n amount of time, but not always exactly n amount of time.[15]:89(ie. A radio host gives away concert tickets approximately every hour, but the exact minutes may vary)Fixed time (FT) Provides a reinforcing stimulus at a fixed time since the last reinforcement delivery, regardless of whether the subject has responded or not. In other words, it is a non-contingent schedule.Variable time (VT) Provides reinforcement at an average variable time since last reinforcement, regardless of whether the subject has responded or not.Simple schedules are utilized in many differential reinforcement[20] procedures:Differential reinforcement of alternative behavior (DRA) - A conditioning procedure in which an undesired response is decreased by placing it on extinction or, less commonly, providing contingent punishment, while simultaneously providing reinforcement contingent on a desirable response. An example would be a teacher attending to a student only when they raise their hand, while ignoring the student when he or she calls out.Differential reinforcement of other behavior (DRO) Also known as omission training procedures, an instrumental conditioning procedure in which a positive reinforcer is periodically delivered only if the participant does something other than the target response. An example would be reinforcing any hand action other than nose picking.[15]:338Differential reinforcement of incompatible behavior (DRI) Used to reduce a frequent behavior without punishing it by reinforcing an incompatible response. An example would be reinforcing clapping to reduce nose pickingDifferential reinforcement of low response rate (DRL) Used to encourage low rates of responding. It is like an interval schedule, except that premature responses reset the time required between behavior.Differential reinforcement of high rate (DRH) Used to increase high rates of responding. It is like an interval schedule, except that a minimum number of responses are required in the interval in order to receive reinforcement.Fixed ratio: activity slows after reinforcer is delivered, then response rates increase until the next reinforcer delivery (post-reinforcement pause).Variable ratio: rapid, steady rate of responding; most resistant to extinction.Fixed interval: responding increases towards the end of the interval; poor resistance to extinction.Variable interval: steady activity results, good resistance to extinction.Ratio schedules produce higher rates of responding than interval schedules, when the rates of reinforcement are otherwise similar.Variable schedules produce higher rates and greater resistance to extinction than most fixed schedules. This is also known as the Partial Reinforcement Extinction Effect (PREE).The variable ratio schedule produces both the highest rate of responding and the greatest resistance to extinction (for example, the behavior of gamblers at slot machines).Fixed schedules produce "post-reinforcement pauses" (PRP), where responses will briefly cease immediately following reinforcement, though the pause is a function of the upcoming response requirement rather than the prior reinforcement.[21]The PRP of a fixed interval schedule is frequently followed by a "scallop-shaped" accelerating rate of response, while fixed ratio schedules produce a more "angular" response.fixed interval scallop: the pattern of responding that develops with fixed interval reinforcement schedule, performance on a fixed interval reflects subject's accuracy in telling time.Organisms whose schedules of reinforcement are "thinned" (that is, requiring more responses or a greater wait before reinforcement) may experience "ratio strain" if thinned too quickly. This produces behavior similar to that seen during extinction.Ratio strain: the disruption of responding that occurs when a fixed ratio response requirement is increased too rapidly.Ratio run: high and steady rate of responding that completes each ratio requirement. Usually higher ratio requirement causes longer post-reinforcement pauses to occur.Partial reinforcement schedules are more resistant to extinction than continuous reinforcement schedules.Ratio schedules are more resistant than interval schedules and variable schedules more resistant than fixed ones.Momentary changes in reinforcement value lead to dynamic changes in behavior.[22]Compound schedules combine two or more different simple schedules in some way using the same reinforcer for the same behavior. There are many possibilities; among those most often used are:Alternative schedules' A type of compound schedule where two or more simple schedules are in effect and whichever schedule is completed first results in reinforcement.[23]Conjunctive schedules A complex schedule of reinforcement where two or more simple schedules are in effect independently of each other, and requirements on all of the simple schedules must be met for reinforcement.Multiple schedules Two or more schedules alternate over time, with a stimulus indicating which is in force. Reinforcement is delivered if the response requirement is met while a schedule is in effect.Mixed schedules Either of two, or more, schedules may occur with no stimulus indicating which is in force. Reinforcement is delivered if the response requirement is met while a schedule is in effect.Administrating two reinforcement schedules at the same timeConcurrent schedules A complex reinforcement procedure in which the participant can choose any one of two or more simple reinforcement schedules that are available simultaneously. Organisms are free to change back and forth between the response alternatives at any time.Concurrent-chain schedule of reinforcement' A complex reinforcement procedure in which the participant is permitted to choose during the first link which of several simple reinforcement schedules will be in effect in the second link. Once a choice has been made, the rejected alternatives become unavailable until the start of the next trial.Interlocking schedules A single schedule with two components where progress in one component affects progress in the other component. In an interlocking FR 60 FI 120-s schedule, for example, each response subtracts time from the interval component such that each response is "equal" to removing two seconds from the FI schedule.Chained schedules Reinforcement occurs after two or more successive schedules have been completed, with a stimulus indicating when one schedule has been completed and the next has startedTandem schedules Reinforcement occurs when two or more successive schedule requirements have been completed, with no stimulus indicating when a schedule has been completed and the next has started.Higher-order schedules completion of one schedule is reinforced according to a second schedule; e.g. in FR2 (FI10 secs), two successive fixed interval schedules require completion before a response is reinforced.This section may require cleanup to meet Wikipedia's quality standards. The specific problem is: convert Author (Year) citations to wiki style. Please help improve this section if you can. (January 2024) (Learn how and when to remove this message)The psychology term superimposed schedules of reinforcement refers to a structure of rewards where two or more simple schedules of reinforcement operate simultaneously. Reinforcers can be positive, negative, or both. An example is a person who comes home after a long day at work. The behavior of opening the front door is rewarded by a big kiss on the lips by the person's spouse and a rip in the pants from the family dog jumping enthusiastically. Another example of superimposed schedules of reinforcement is a pigeon in an experimental cage pecking at a button. The pecks deliver a hopper of grain every 20th peck, and access to water after every 200 pecks.Superimposed schedules of reinforcement are a type of compound schedule that evolved from the initial work on simple schedules of reinforcement by B.F. Skinner and his colleagues (Skinner and Ferster, 1957). They demonstrated that reinforcers could be delivered on schedules, and further that organisms behaved differently under different schedules. Rather than a reinforcer, such as food or water, being delivered every time as a consequence of some behavior, a reinforcer could be delivered after more than one instance of the behavior. For example, a pigeon may be required to peck a button switch ten times before food appears. This is a "ratio schedule". Also, a reinforcer could be delivered after an interval of time passed following a target behavior. An example is a rat that is given a food pellet immediately following the first response that occurs after two minutes has elapsed since the last lever press. This is called an "interval schedule".In addition, ratio schedules can deliver reinforcement following fixed or variable number of behaviors by the individual organism. Likewise, interval schedules can deliver reinforcement following fixed or variable intervals of time following a single response by the organism. Individual behaviors tend to generate response rates that differ based upon how the reinforcement schedule is created. Much subsequent research in many labs examined the effects on behaviors of scheduling reinforcers.If an organism is offered the opportunity to choose between or among two or more simple schedules of reinforcement at the same time, the reinforcement structure is called a "concurrent schedule of reinforcement". Brechner (1974, 1977) introduced the concept of superimposed schedules of reinforcement in an attempt to create a laboratory analogy of social traps, such as when humans overharvest their fisheries or tear down their rainforests. Brechner created a situation where simple reinforcement schedules were superimposed upon each other. In other words, a single response or group of responses by an organism led to multiple consequences. Concurrent schedules of reinforcement can be thought of as "or" schedules, and superimposed schedules of reinforcement can be thought of as "and" schedules. Brechner and Linder (1981) and Brechner (1987) expanded the concept to describe how superimposed schedules and the social trap analogy could be used to analyze the way energy flows through systems.Superimposed schedules of reinforcement have many real-world applications in addition to generating social traps. Many different human individual and social situations can be created by superimposing simple reinforcement schedules. For example, a human being could have simultaneous tobacco and alcohol addictions. Even more complex situations can be created or simulated by superimposing two or more concurrent schedules. For example, a high school senior could have a choice between going to Stanford University or UCLA, and at the same time have the choice of going into the Army or

the Air Force, and simultaneously the choice of taking a job with an internet company or a job with a software company. That is a reinforcement structure of three superimposed concurrent schedules of reinforcement.Superimposed schedules of reinforcement can create the three classic conflict situations (approachapproach conflict, approachavoidance conflict, and avoidanceavoidance conflict) described by Kurt Lewin (1935) and can operationalize other Lewinian situations analyzed by his force field analysis. Other examples of the use of superimposed schedules of reinforcement as an analytical tool are its application to the contingencies of rent control (Brechner, 2003) and problem of toxic waste dumping in the Los Angeles County storm drain system (Brechner, 2010).In operant conditioning, concurrent schedules of reinforcement are schedules of reinforcement that are simultaneously available to an animal subject or human participant, so that the subject or participant can respond on either schedule. For example, in a two-alternative forced choice task, a pigeon in a Skinner box is faced with two pecking keys; pecking responses can be made on either, and food reinforcement might follow a peck on either. The schedules of reinforcement arranged for pecks on the two keys can be different. They may be independent, or they may be linked so that behavior on one key affects the likelihood of reinforcement on the other.It is not necessary for responses on the two schedules to be physically distinct. In an alternate way of arranging concurrent schedules, introduced by Findley in 1958, both schedules are arranged on a single key or other response device, and the subject can respond on a second key to change between the schedules. In such a "Findley concurrent" procedure, a stimulus (e.g., the color of the main key) signals which schedule is in effect.Concurrent schedules often induce rapid alternation between the keys. To prevent this, a "changeover delay" is commonly introduced: each schedule is inactivated for a brief period after the subject switches to it.When both the concurrent schedules are variable intervals, a quantitative relationship known as the matching law is found between relative response rates in the two schedules and the relative reinforcement rates they deliver; this was first observed by R.J. Herrnstein in 1961. Matching law is a rule for instrumental behavior which states that the relative rate of responding on a particular response alternative equals the relative rate of reinforcement for that response (rate of behavior = rate of reinforcement). Animals and humans have a tendency to prefer choice in schedules.[24]Main article: Shaping (psychology)Shaping is the reinforcement of successive approximations to a desired instrumental response. In training a rat to press a lever, for example, simply turning toward the lever is reinforced at first. Then, only turning and stepping toward it is reinforced. Eventually the rat will be reinforced for pressing the lever. The successful attainment of one behavior starts the shaping process for the next. As training progresses, the response becomes progressively more like the desired behavior, with each subsequent behavior becoming a closer approximation of the final behavior.[25]The intervention of shaping is used in many training situations, and also for individuals with autism as well as other developmental disabilities. When shaping is combined with other evidence-based practices such as Functional Communication Training (FCT),[26] it can yield positive outcomes for human behavior. Shaping typically uses continuous reinforcement, but the response can later be shifted to an intermittent reinforcement schedule.Shaping is also used for food refusal.[27] Food refusal is when an individual has a partial or total aversion to food items. This can be as minimal as being a picky eater to so severe that it can affect an individual's health. Shaping has been used to have a high success rate for food acceptance.[28]Main article: ChainingChaining involves linking discrete behaviors together in a series, such that the consequence of each behavior is both the reinforcement for the previous behavior, and the antecedent stimulus for the next behavior. There are many ways to teach chaining, such as forward chaining (starting from the first behavior in the chain), backwards chaining (starting from the last behavior) and total task chaining (teaching each behavior in the chain simultaneously). People's morning routines are a typical chain, with a series of behaviors (e.g. showering, drying off, getting dressed) occurring in sequence as a well learned habit.Challenging behaviors seen in individuals with autism and other related disabilities have successfully managed and maintained in studies using a scheduled of chained reinforcements.[29] Functional communication training is an intervention that often uses chained schedules of reinforcement to effectively promote the appropriate and desired functional communication response.[30]This section needs expansion. You can help by adding to it. (February 2024)There has been research on building a mathematical model of reinforcement. This model is known as MPR, which is short for mathematical principles of reinforcement. Peter Killeen has made key discoveries in the field with his research on pigeons.[31]Reinforcement and punishment are ubiquitous in human social interactions, and a great many applications of operant principles have been suggested and implemented. Following are a few examples.Positive and negative reinforcement play central roles in the development and maintenance of addiction and drug dependence. An addictive drug is intrinsically rewarding; that is, it functions as a primary positive reinforcer of drug use. The brain's reward system assigns it incentive salience (i.e., it is "wanted" or "desired"),[32][33][34] so as an addiction develops, deprivation of the drug leads to craving. In addition, stimuli associated with drug use e.g., the sight of a syringe, and the location of use become associated with the intense reinforcement induced by the drug.[32][33][34] These previously neutral stimuli acquire several properties: their appearance can induce craving, and they can become conditioned positive reinforcers of continued use.[32][33][34] Thus, if an addicted individual encounters one of these drug cues, a craving for the associated drug may reappear. For example, anti-drug agencies previously used posters with images of drug paraphernalia as an attempt to show the dangers of drug use. However, such posters are no longer used because of the effects of incentive salience in causing relapse upon sight of the stimuli illustrated in the posters.In drug dependent individuals, negative reinforcement occurs when a drug is self-administered in order to alleviate or "escape" the symptoms of physical dependence (e.g., tremors and sweating) and/or psychological dependence (e.g., anhedonia, restlessness, irritability, and anxiety) that arise during the state of drug withdrawal.[32]Main article: Animal trainingA chicken riding a skateboardAnimal trainers and pet owners were applying the principles and practices of operant conditioning long before these ideas were named and studied, and animal training still provides one of the clearest and most convincing examples of operant control. Of the concepts and procedures described in this article, a few of the most salient are: availability of immediate reinforcement (e.g. the ever-present bag of dog yummies); contingency, assuring that reinforcement follows the desired behavior and not something else; the use of secondary reinforcement, as in sounding a clicker immediately after a desired response; shaping, as in gradually getting a dog to jump higher and higher; intermittent reinforcement, reducing the frequency of those yummies to induce persistent behavior without satiation; chaining, where a complex behavior is gradually put together.[35]Main article: Parent management trainingProviding positive reinforcement for appropriate child behaviors is a major focus of parent management training. Typically, parents learn to reward appropriate behavior through social rewards (such as praise, smiles, and hugs) as well as concrete rewards (such as stickers or points towards a larger reward as part of an incentive system created collaboratively with the child).[36] In addition, parents learn to select simple behaviors as an initial focus and reward each of the small steps that their child achieves towards reaching a larger goal (this concept is called "successive approximations").[36][37] They may also use indirect rewards such through progress charts. Providing positive reinforcement in the classroom can be beneficial to student success. When applying positive reinforcement to students, it's crucial to make it individualized to that student's needs. This way, the student understands why they are receiving the praise, they can accept it, and eventually learn to continue the action that was earned by positive reinforcement. For example, using rewards or extra recess time might apply to some students more, whereas others might accept the enforcement by receiving stickers or check marks indicating praise.Main article: Behavioral economicsFurther information: Consumer demand tests (animals)Both psychologists and economists have become interested in applying operant concepts and findings to the behavior of humans in the marketplace. An exampleis the analysis of consumer demand, as indexed by the amount of a commodity that is purchased. In economics, the degree to which price influences consumption is called "the price elasticity of demand." Certain commodities are more elastic than others; for example, a change in price of certain foods may have a large effect on the amount bought, while gasoline and other essentials may be less affected by price changes. In terms of operant analysis, such effects may be interpreted in terms of motivations of consumers and the relative value of the commodities as reinforcers.[38]Main article: GamblingAs stated earlier in this article, a variable ratio schedule yields reinforcement after the emission of an unpredictable number of responses. This schedule typically generates rapid, persistent responding. Slot machines pay off on a variable ratio schedule, and they produce just this sort of persistent lever-pulling behavior in gamblers. Because the machines are programmed to pay out less money than they take in, the persistent slot-machine user invariably loses in the long run. Slots machines, and thus variable ratio reinforcement, have often been blamed as a factor underlying gambling addiction.[39]Main article: PraiseThe concept of praise as a means of behavioral reinforcement in humans is rooted in B.F. Skinner's model of operant conditioning. Through this lens, praise has been viewed as a means of positive reinforcement, wherein an observed behavior is made more likely to occur by contingently praising said behavior.[40] Hundreds of studies have demonstrated the effectiveness of praise in promoting positive behaviors, notably in the study of teacher and parent use of praise on child in promoting improved behavior and academic performance,[41][42] but also in the study of work performance.[43] Praise has also been demonstrated to reinforce positive behaviors in non-praised adjacent individuals (such as a classmate of the praise recipient) through vicarious reinforcement.[44] Praise may be more or less effective in changing behavior depending on its form, content and delivery. In order for praise to effect positive behavior change, it must be contingent on the positive behavior (i.e., only administered after the targeted behavior is enacted), must specify the particulars of the behavior that is to be reinforced, and must be delivered sincerely and credibly.[45]Acknowledging the effect of praise as a positive reinforcement strategy, numerous behavioral and cognitive behavioral interventions have incorporated the use of praise in their protocols.[46][47] The strategic use of praise is recognized as an evidence-based practice in both classroom management[46] and parenting training interventions,[42] though praise is often subsumed in intervention research into a larger category of positive reinforcement, which includes strategies such as strategic attention and behavioral rewards.Main article: Traumatic bondingTraumatic bonding occurs as the result of ongoing cycles of abuse in which the intermittent reinforcement of reward and punishment creates powerful emotional bonds that are resistant to change.[48][49]The other source indicated that [50]'The necessary conditions for traumatic bonding are that one person must dominate the other and that the level of abuse chronically spikes and then subsides. The relationship is characterized by periods of permissive, compassionate, and even affectionate behavior from the dominant person, punctuated by intermittent episodes of intense abuse. To maintain the upper hand, the victimizer manipulates the behavior of the victim and limits the victim's options so as to perpetuate the power imbalance. Any threat to the balance of dominance and submission may be met with an escalating cycle of punishment ranging from seething intimidation to intensely violent outbursts. The victimizer also isolates the victim from other sources of support, which reduces the likelihood of detection and intervention, impairs the victim's ability to receive countervailing self-referent feedback, and strengthens the sense of unilateral dependency... The traumatic effects of these abusive relationships may include the impairment of the victim's capacity for accurate self-appraisal, leading to a sense of personal inadequacy and a subordinate sense of dependence upon the dominating person. Victims also may encounter a variety of unpleasant social and legal consequences of their emotional and behavioral affiliation with someone who perpetrated aggressive acts, even if they themselves were the recipients of the aggression.Main article: Compulsion loopMost video games are designed around some type of compulsion loop, adding a type of positive reinforcement through a variable rate schedule to keep the player playing the game, though this can also lead to video game addiction.[51]Main article: Loot boxAs part of a trend in the monetization of video games in the 2010s, some games offered "loot boxes" as rewards or purchasable by real-world funds that offered a random selection of in-game items, distributed by rarity. The practice has been tied to the same methods that slot machines and other gambling devices dole out rewards, as it follows a variable rate schedule. While the general perception that loot boxes are a form of gambling, the practice is only classified as such in a few countries as gambling and otherwise legal. However, methods to use those items as virtual currency for online gambling or trading for real-world money has created a skin gambling market that is under legal evaluation.[52]The standard definition of behavioral reinforcement has been criticized as circular, since it appears to argue that response strength is increased by reinforcement, and defines reinforcement as something that increases response strength (i.e., response strength is increased by things that increase response strength). However, the correct usage[53] of reinforcement is that something is a reinforcer because of its effect on behavior, and not the other way around. It becomes circular if one says that a particular stimulus strengthens behavior because it is a reinforcer, and does not explain why a stimulus is producing that effect on the behavior. Other definitions have been proposed, such as F.D. Sheffield's "consummatory behavior contingent on a response", but these are not broadly used in psychology.[54]Increasingly, understanding of the role reinforcers play is moving away from a "strengthening" effect to a "signalling" effect.[55] That is, the view that reinforcers increase responding because they signal the behaviors that are likely to result in reinforcement. While in most practical applications, the effect of any given reinforcer will be the same regardless of whether the reinforcer is signalling or strengthening, this approach helps to explain a number of behavioral phenomena including patterns of responding on intermittent reinforcement schedules (fixed interval scallops) and the differential outcomes effect.[56] Applied behavior analysisBehavioral cuspDog trainingLearned industriousnessOverjustification effectPavlovian-instrumental transferPunishmentReinforcement sensitivity theoryReward systemToken economy^ Definition of reinforcement from the American Psychological Association Retrieved on January 30th, 2024^ a b Leaf, Justin B.; Cihon, Joseph H.; Leaf, Ronald; McEachin, John; Liu, Nicholas; Russell, Noah; Unumb, Lorri; Shapiro, Sydney; Khosrowshahi, Dara (June 2022). "Concerns About ABA-Based Intervention: An Evaluation and Recommendations". Journal of Autism and Developmental Disorders. 52 (6): 28382853. doi:10.1007/s10803-021-05137-y. ISSN1573-3432. PMC9114057. PMID34132968. Punishment, from a behavior analytic perspective, describes any context in which a response is followed by an event (i.e., stimulus change) that results in a decrease in the probability of similar responses in similar situations.... Absent from this definition are things like pain, fear, discomfort, and the like. Suppose a person parks their car taking up two spaces and a passerby comments, "That's inconsiderate." If the probability of taking up two spaces while parking subsequently decreases, we can reasonably presume that punishment occurred.^ Schultz W (July 2015). "Neuronal Reward and Decision Signals: From Theories to Data". Physiological Reviews. 95 (3): 853951. doi:10.1152/physrev.00023.2014. PMC4491543. PMID26109341. Rewards in operant conditioning are positive reinforcers.... Operant behavior gives a good definition for rewards. Anything that makes an individual come back for more is a positive reinforcer and therefore a reward. Although it provides a good definition, positive reinforcement is only one of several reward functions.... Rewards are attractive. They are motivating and make us exert an effort.... Rewards induce approach behavior, also called appetitive or preparatory behavior, and consummatory behavior.... Thus any stimulus, object, event, activity, or situation that has the potential to make us approach and consume it is by definition a reward.... Intrinsic rewards are activities that are pleasurable on their own and are undertaken for their own sake, without being the means for getting extrinsic rewards.... Intrinsic rewards are genuine rewards in their own right, as they induce learning, approach, and pleasure, like perfectioning, playing, and enjoying the piano. Although they can serve to condition higher order rewards, they are not conditioned, higher order rewards, as attaining their reward properties does not require pairing with an unconditioned reward.^ Malenka RC, Nestler EJ, Hyman SE (2009). "Chapter 15: Reinforcement and Addictive Disorders". In Sydor A, Brown RY (eds.). Molecular Neuropharmacology: A Foundation for Clinical Neuroscience (2nded.). New York: McGraw-Hill Medical. pp.364375. ISBN9780071481274.^ Nestler EJ (December 2013). "Cellular basis of memory for addiction". Dialogues in Clinical Neuroscience. 15 (4): 431443. PMC3898681. PMID24459410. Despite the importance of numerous psychosocial factors, at its core, drug addiction involves a biological process: the ability of repeated exposure to a drug of abuse to induce changes in a vulnerable brain that drive the compulsive seeking and taking of drugs, and loss of control over drug use, that define a state of addiction.... A large body of literature has demonstrated that such FosB induction in D1-type [nucleus accumbens] neurons increases an animal's sensitivity to drug as well as natural rewards and promotes drug self-administration, presumably through a process of positive reinforcement... Another FosB target is cFos: as FosB accumulates with repeated drug exposure it represses c-Fos and contributes to the molecular switch whereby FosB is selectively induced in the chronic drug-treated state.41.... Moreover, there is increasing evidence that, despite a range of genetic risks for addiction across the population, exposure to sufficiently high doses of a drug for long periods of time can transform someone who has relatively lower genetic loading into an addict.^ Volkow ND, Koob GF, McLellan AT (January 2016). "Neurobiologic Advances from the Brain Disease Model of Addiction". New England Journal of Medicine. 374 (4): 363371. doi:10.1056/NEJMra1511480. PMC6135257. PMID26816013. Substance-use disorder: A diagnostic term in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) referring to recurrent use of alcohol or other drugs that causes clinically and functionally significant impairment, such as health problems, disability, and failure to meet major responsibilities at work, school, or home. Depending on the level of severity, this disorder is classified as mild, moderate, or severe.Addiction: A term used to indicate the most severe, chronic stage of substance-use disorder, in which there is a substantial loss of self-control, as indicated by compulsive drug taking despite the desire to stop taking the drug. In the DSM-5, the term addiction is synonymous with the classification of severe substance-use disorder.^ Thorndike E (June 1898). "Some Experiments on Animal Intelligence". Science. 7 (181): 81824. Bibcode:1898Sci.....7..818T. doi:10.1126/science.7.181.818. PMID17769765.^ Skinner, B. F. 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"Functional Communication Training and Chained Schedules of Reinforcement to Treat Challenging Behavior Maintained by Terminations of Activity Interruptions". Behavior Modification. 36 (5): 630649. doi:10.1177/0145445511433821. ISSN0145-4455. PMID22327267. S2CID29108702.^ Killeen PR (4 February 2010). "Mathematical principles of reinforcement". Behavioral and Brain Sciences. 17 (1): 105135. doi:10.1017/S0140525X00033628.^ a b c d Edwards S (2016). "Reinforcement principles for addiction medicine; from recreational drug use to psychiatric disorder". Neuroscience for Addiction Medicine: From Prevention to Rehabilitation - Constructs and Drugs. Progress in Brain Research. Vol.223. pp.6376. doi:10.1016/bs.pbr.2015.07.005. ISBN9780444635457. PMID26806771. Abused substances (ranging from alcohol to psychostimulants) are initially ingested at regular occasions according to their positive reinforcing properties. Importantly, repeated exposure to rewarding substances sets off a chain of secondary reinforcing events, whereby cues and contexts associated with drug use may themselves become reinforcing and thereby contribute to the continued use and possible abuse of the substance(s) of choice....An important dimension of reinforcement highly relevant to the addiction process (and particularly relapse) is secondary reinforcement (Stewart, 1992). Secondary reinforcers (in many cases also considered conditioned reinforcers) likely drive the majority of reinforcement processes in humans. In the specific case of drug [addiction], cues and contexts that are intimately and repeatedly associated with drug use will often themselves become reinforcing... A fundamental piece of Robinson and Berridge's incentive-sensitization theory of addiction posits that the incentive value or attractive nature of such secondary reinforcement processes, in addition to the primary reinforcers themselves, may persist and even become sensitized over time in league with the development of drug addiction (Robinson and Berridge, 1993)....Negative reinforcement is a special condition associated with a strengthening of behavioral responses that terminate some ongoing (presumably aversive) stimulus. In this case we can define a negative reinforcer as a motivational stimulus that strengthens such an "escape" response. Historically, in relation to drug addiction, this phenomenon has been consistently observed in humans whereby drugs of abuse are self-administered to quench a motivational need in the state of withdrawal (Wikler, 1952).^ a b c Berridge KC (April 2012). "From prediction error to incentive salience: mesolimbic computation of reward motivation". The European Journal of Neuroscience. 35 (7): 112443. doi:10.1111/j.1460-9568.2012.07990.x. PMC3325516. PMID22487042. When a Pavlovian CS+ is attributed with incentive salience it not only triggers 'wanting' for its UCS, but often the cue itself becomes highly attractive even to an irrational degree. This cue attraction is another signature feature of incentive salience. The CS becomes hard not to look at (Wiers & Stacy, 2006; Hickey et al., 2010a; Piech et al., 2010; Anderson et al., 2011). The CS even takes on some incentive properties similar to its UCS. An attractive CS often elicits behavioral motivated approach, and sometimes an individual may even attempt to 'consume' the CS somewhat as its UCS (e.g., eat, drink, smoke, have sex with, take as drug). 'Wanting' of a CS can turn also turn the formerly neutral stimulus into an instrumental conditioned reinforcer, so that an individual will work to obtain the cue (however, there exist alternative psychological mechanisms for conditioned reinforcement too).^ a b c Berridge KC, Kringelbach ML (May 2015). "Pleasure systems in the brain". Neuron. 86 (3): 64664. doi:10.1016/j.neuron.2015.02.018. PMC4425246. PMID25950633. An important goal in future for addiction neuroscience is to understand how intense motivation becomes narrowly focused on a particular target. Addiction has been suggested to be partly due to excessive incentive salience produced by sensitized or hyper-reactive dopamine systems that produce intense 'wanting' (Robinson and Berridge, 1993). But why one target becomes more 'wanted' than all others has not been fully explained. In addicts or agonist-stimulated patients, the repetition of dopamine-stimulation of incentive salience becomes attributed to particular individualized pursuits, such as taking the addictive drug or the particular compulsions. In Pavlovian reward situations, some cues for reward become more 'wanted' more than others as powerful motivational magnets, in ways that differ across individuals (Robinson et al., 2014b; Saunders and Robinson, 2013).... However, hedonic effects might well change over time. As a drug was taken repeatedly, mesolimbic dopaminergic sensitization could consequently occur in susceptible individuals to amplify 'wanting' (Leyton and Vezina, 2013; Lodge and Grace, 2011; Wolf and Ferrario, 2010), even if opioid hedonic mechanisms underwent down-regulation due to continual drug stimulation, producing 'liking' tolerance. Incentive-sensitization would produce addiction, by selectively magnifying cue-triggered 'wanting' to take the drug again, and so powerfully cause motivation even if the drug became less pleasant (Robinson and Berridge, 1993).^ McGreevy PD, Boakes RA (2007). Carrots and sticks: principles of animal training. Cambridge: Cambridge University Press. ISBN978-0-521-68691-4.^ a b Kazdin AE (2010). Problem-solving skills training and parent management training for oppositional defiant disorder and conduct disorder. Evidence-based psychotherapies for children and adolescents (2nd ed.), 211226. New York: Guilford Press.^ Forgatch MS, Patterson GR (2010). Parent management training Oregon model: An intervention for antisocial behavior in children and adolescents. Evidence-based psychotherapies for children and adolescents (2nd ed.), 15978. New York: Guilford Press.^ Domjan, M. (2009). The Principles of Learning and Behavior. 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ISBN9780996453905. {{cite book}}: ISBN / Date incompatibility (help)Skinner BF (1956). "A case history in scientific method". American Psychologist. 11 (5): 22133. doi:10.1037/h0047662.Zeiler MD (July 1968). "Fixed and variable schedules of response-independent reinforcement". Journal of the Experimental Analysis of Behavior. 11 (4): 40514. doi:10.1901/jeab.1968.11-405. PMC1338502. PMID5672249."Glossary of reinforcement terms". University of Iowa. Archived from the original on 13 April 2007.Harter JK, Shmidt FL, Keyes CL (2002). "Well-Being in the Workplace and its Relationship to Business Outcomes: A Review of the Gallup Studies.". In Keyes CL, Haidt J (eds.). Flourishing: The Positive Person and the Good Life. Washington D.C.: American Psychological Association. pp.205224.An On-Line Positive Reinforcement TutorialScholarpedia Reinforcementscienceofbehavior.com Archived 2 October 2011 at the Wayback Machine^ Burdon, William M.; St. De Lore, Jef; Prendergast, Michael L. (7 September 2011). "Developing and Implementing a Positive Behavioral Reinforcement Intervention in Prison-Based Drug Treatment: Project BRITE". Journal of Psychoactive Drugs. 43 (sup1): 4050. doi:10.1080/02791072.2011.601990. ISSN0279-1072. PMC3429341. PMID22185038.Retrieved from " is a process that focuses on increasing or strengthening a response to fulfil a task. In behavioural psychology, this method is studied to reach the desired behaviour, either by supporting

Types of positive and negative reinforcement. Positive and negative reinforcement and punishment practice. What is positive and negative punishment. Positive and negative reinforcement worksheet. An example of positive and negative reinforcement. Learning positive and negative reinforcement worksheet. Positive and negative reinforcement and punishment examples. What is positive and negative reinforcement and punishment.