

Overcoming Academic Procrastination: A Behavioral-Cognitive Approach

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ABSTRACT

Procrastination, the act of delaying tasks, is an issue affecting students regardless of skin color, age, or gender. Young students constitute a significant proportion of individuals in the United States who struggle with academic procrastination. This research paper adopts the framework of a behavioral-cognitive psychology approach, employing both cognitive behavioral therapy (CBT) and operant conditioning to uncover how academic procrastination occurs. CBT is the forefront instrument proposed to identify the cognitive processes contributing to the behavior procrastination. The role of operant conditioning serves as a tool to unlearn the behavior. The study aimed to explore the potential of a behavioral-cognitive approach to addressing the external distractions that can cause academic procrastination. Based on the current literature available regarding how CBT and operant conditioning are applied, it is concluded that this method has a probability of reducing procrastination. The study contains a preliminary model that aims to reduce academic procrastination by unlearning the behavior and addressing the underlying causes. Further research on the impact operant conditioning holds on influencing an individual is required to solidify these findings.

Introduction

Early behaviorism had a few major themes that governed the rules of all behavioral psychology. One, the claim that all human beings are blank slates, meaning that everything that you are (i.e., skills, hobbies, habits) is what you experience. In other words, it focused solely on the environment and nurturing aspects of psychology. Two, the branch's fixation on observable states, such as stimuli and responses (Bloom, n.d., 1:01; Watson, 1913). Some of these ideas have fallen off in favor of more recent research within animal and human cognition. However, many of these ideas from this field of psychology still hold relevance today. To an extent, the whole of psychological research today also stands on the shoulders of behavior psychology (Abramson, 2013; Bloom, n.d.-c., 9:38).

Cognitive psychology was the response to the issues discussed with behaviorism. Cognitive psychologists focus on how people take in and process information (American Psychological Association [APA], 2014). The products of this phenomenon are called thoughts. Thoughts are products of the mind and are a present focus in understanding human behavior (American Dictionary of Psychology, n.d.). How a person's thoughts can lead to certain prejudices, or 'cognitive biases' will be discussed further. These cognitive biases result in inaccurate memories and rash decisions.

A behavioral psychologist places importance on three key factors: a stimulus, a response, and the environmental factors (Bloom, n.d., 3:03) that affect an individual. A behaviorist would define procrastination as a response that stems from stimuli and other external factors. One stimulus considered to be a cause of academic procrastination is external distractions, including the example of flashing lights (Grunschel et al., 2013, Sirois, 2014). Procrastination is considered the response to being distracted (Svartdal et. al, 2020). Like this example, most forms of procrastination have both a stimulus and external factors that dictate the origin of a person's motive for procrastinating. Using a behavioral-cognitive approach that analyzes these stimuli and environmental features in procrastination, a treatment

such as cognitive behavioral therapy (CBT) can identify these traits. Further on, Operant conditioning is a method that will be described to modify the behavior identified.

The article explores the idea that based on the current behavioral standpoint, academic procrastination is a response to a stimulus. By incorporating both cognitive and behavioral psychology values, a new method is synthesized to remove procrastination. Hence, this literature review explores how this behavior can be rectified using therapeutic and conditioning techniques.

Early Origins

The branch of Behavioral Psychology

The psychology branch of behaviorism started as an opposing response to Sigmund Freud's psychodynamic perspective (Bloom, n.d., 2:21). Sigmund Freud was an Austrian neurologist who published his first book of psychology, "The Interpretation of Dreams," in 1900, after encouraging his patients in his clinic to talk about their experiences (Yale, 2014, 5:01–5:40). The psychodynamic perspective was a psychology branch that emphasized the unconscious, the thoughts and motivations underneath a conscious stream of thought (Abramson, 2013). It gained popularity over the course of the early 20th century, with psychodynamic therapy at the forefront of clinical treatment. However, his ideas soon came under speculation from later psychologists.

Freud's ideas of how human behavior came to be had three key components: the id, the ego, and the superego, which he proposed to explain the subconscious levels in our mind. While Freud's ideas greatly contributed to understanding the inner workings of the human brain, there was one central issue with these concepts. Psychologists found them too abstract and unscientific because these ideas could not be observed in any shape or form (Bloom, n.d., 2:21; Bloom, n.d.-d, 0:45). Science is defined by its ability to be distinguished as true or false. Since there was no method to observe concepts such as the id and the ego, they could not be verified.

Unlike the psychodynamic perspective, behaviorism focuses on observable human behavior and actions (Bloom, n.d., 0:53; Watson, 1913). The behaviorist viewpoint believed that all behaviors in animals and humans are learned through means of stimuli and responses (Watson, 1913). It placed importance on breaking down complex behaviors into simple pieces that could be easily understood. Behaviorism follows the following order of events (American Dictionary of Psychology, n.d.; Bloom, n.d., 3:03):

1. Stimulus

"n. Any agent, event, or situation—internal or external—that elicits a response from an organism."

Simplified definition: Anything that provokes a reaction from someone

2. Responses to Stimuli

"n. Any glandular, muscular, neural, or other reaction to a stimulus. A response is a clearly defined, measurable unit of behavior discussed in terms of its result (e.g., pressing a lever, indicating *yes* vs. *no* on a survey item) or its physical characteristics (e.g., raising an arm)."

Simplified definition: A reaction that is caused by a catalyst

3. Features of the Environment

"The ascription of one's own or another's behavior, an event, or an outcome to causes outside the person concerned, such as luck, pressure from other people, or external circumstances. Also called environmental attribution; external attribution."

Simplified definition: Consisting of influences to behavior caused by non-genetic causes.

Examples of these features include:

- Upbringing (parents, teachings, moral values)
- Location of habitat (urban v. rural)
- Education (teachers, schools)

Behaviorism dominated the focus of psychology in the mid-20th century, but has fallen out of favor from the criticism of many psychologists for generalizing the complexity of human behavior. The main issue came from the term "reductionism," the generalization of human behavior. Reductionism in behaviorism neglects insight into how humans come to behave in a way other than their environment (Bloom, n.d.-c, 10:49). It was a huge limit in behaviorism, as it ignored both human biological and cognitive processes. It is now apparent that there are both psychological and biological components to learning, and behaviorism acknowledges this. Despite its many problems, it widely contributes to the field of psychology today, including the creation of behavioral modification appliances, such as classical and operant conditioning.

Behavior Conditioning

Classical Conditioning

Findings from 20th-century behavioral psychologists and researchers Ivon Pavlov, B.F. Skinner, and Edward Thorndike helped develop classical and operant conditioning, tools directed towards modifying behavioral responses to stimuli (Bloom, n.d.-a; Bloom, n.d.-b). Before exploring the studies and research that these scientists have conducted, defining behavior is imperative. As stated previously (see p. 2), the branch of behaviorism focuses on the observation of three components: stimuli, response to stimuli, and environmental factors. Behavior is a response. Any psychological or physiological response to a stimulus is counted as a behavior (American Dictionary of Psychology, n.d.). With that said, these researchers and their experiments most likely sought to understand how to control and manipulate responses toward stimuli (Bloom, n.d.-a, 0:52–1:17; Bloom, n.d.-b, 2:03–4:00; Bouton, 2023; Wolpe & Plaud, 1997). Interestingly enough, the original purpose of some of these experiments did not focus on behavior (Wolpe & Plaud, 1997).

Ivan Pavlov originally conducted an experiment on dog saliva to study digestion (Wolpe & Plaud, 1997). Pavlov came to notice that the dog did not only produce saliva when they saw the food but also when the person who gave it entered the same room. Pavlov decided to have rounds where he would ring a bell and shortly give food to the dog. After a few rounds, this resulted in the dogs dripping saliva not only when they saw food, but also when they heard the bell ring. To explain, Pavlov had the dog interact with two different stimuli, the food and the bell. The food was a stimulus that automatically provoked a response, hence the name unconditioned stimulus. The bell, however, did not originally provoke a reaction from the dog, hence the name neutral stimulus. Pavlov's experiment resulted in the neutral stimulus becoming conditioned to produce the same response that the dog gave to the bell. Pavlov's experiment gave rise to classical conditioning, a behavior modification tool that results in an individual pairing two stimuli together: a neutral stimulus and an unconditioned stimulus. Over time, the individual would associate the neutral stimulus with the physiological stimulus, and each would provoke an identical response, just like in Pavlov's experiment, where the dog associated the bell with the food and drooled when either stimulus was present (Bloom, n.d.-a, 0:52–1:17; Bouton, 2023). Unlike classical conditioning, operant conditioning and learning is more than pairing an automatic response to a stimulus.

Operant conditioning

Learning is a fundamental part of classical conditioning. The same can be said for operant conditioning as well. Operant conditioning, or instrumental conditioning, is defined as "the process in which behavioral change (i.e., learning) occurs as a function of the consequences of [a] behavior" (American Dictionary of Psychology, n.d.). Simplified, operant conditioning is the use of consequences to change a behavior (Bloom, n.d.-b, 0:08–0:49; Mandriota, 2021). Consequences consist of both rewards and punishments (Bouton, 2023). Operant conditioning was first built on Edward Thorndike's theory, derived from his experiments in shaping human and animal behavior. Edward Thorndike's experiment, "Thorndike's Box," consisted of placing a cat in a puzzle box in which the cat would attempt various movements to escape. Once the cat had escaped, it was rewarded with food. Thorndike repeated the same scenario consecutively with the cat, and in between each session, he would give the cat more food (Bloom n.d.-b, 1:32–3:55; Bouton, 2023). Through repeated scenarios, the cat would become quicker at escaping the box. The experiment demonstrated the learning ability of animals through conditioning.

Thorndike's theory, "Law of Effect," stated that behavior associated with gratification will be increased and behavior associated with pain will be decreased (Bouton, 2023). The psychologist B.F. Skinner would exemplify this law and coin the term "operant conditioning" (Staddon & Cerutti, 2003). He described the "shaping" of animal and human behavior and compared it with Charles Darwin's theory of natural selection (Bouton, 2023; Skinner, 1963). One of his best-known experiments, the Skinner Box, was used to understand the relationship between a behavior and its consequences. The box consisted of a rat inside a cage with a lever inside and nearby. The rat had not received any food and would search through the cage to find food to satisfy its hunger. Eventually, it would come towards the lever and activate it, causing food to drop from a dispenser. From this, the rat would associate the lever and food together and continue actively pressing the lever whenever it was hungry (Bouton, 2023; Mandriota, 2021). This is a prime example of what Skinner would coin "operant conditioning," demonstrating how organisms associate voluntary behaviors with certain outcomes.

he following definitions define the parameters set for operant conditioning (American Dictionary of Psychology, n.d., Gordan & Krishanan, 2014):

Positive Punishment

Definition: The use of removing an undesired behavior by adding sources of discomfort or pain to someone

Ex: Adding community service or extra assignments to a student not paying attention in class

Negative Punishment

Definition: The use of removing an undesired behavior by removing sources of pleasure from someone

Ex: Removing a toy from a child for misbehavior

Positive Reinforcement

Definition: The use of increasing a desired behavior by adding sources of gratification to someone

Ex: Giving a child a piece of candy for every good deed they do

Negative Reinforcement

Definition: The use of increasing a desired behavior by removing sources of discomfort or pain from someone

Ex: Removing chores/tasks a child has to do as a reward for good behavior

With operant conditioning, there are also four time schedules of reinforcement used. Fixed ratio reinforcement, variable ratio reinforcement, fixed interval reinforcement, and variable interval reinforcement (Bloom n.d.-b, 9:39–13:30;

UC Scout n.d., 3:26–6:50) The term "fixed" refers to using set numbers. The term "variable" refers to a random set of numbers. The term "ratio" refers to the amount of a behavior. The term "interval" refers to an amount of time.

Therefore, operant conditioning using a fixed ratio reinforces the individual only after a set number of behaviors is accomplished. Operant conditioning using a fixed interval reinforces the individual only after a set amount of time has passed. Operant conditioning using a variable ratio reinforces an individual after a random amount of the behavior has been elicited. Operant conditioning using variable intervals reinforces an individual after a random amount of time has passed (UC Scout, n.d.; 3:26–6:45). Each of these reinforcement schedules is better suited to some situations than others. For instance, a fixed ratio will most likely be used to reinforce the behavior of reading by giving the individual a reward per N number of pages read.

Using these reinforcement schedules can help make operant conditioning more efficacious in changing behavior. In the example that Professor Paul Bloom from Yale University uses in (Bloom n.d.-b, 9:38–13:15) his Introduction to Psychology course, he demonstrates how time schedules can be used in shaping human behavior. One useful concept that he explains is the partial reinforcement effect. Bloom states that rewarding a behavior every time it is achieved will have both children and animals alike expecting a reward for every desired behavior they do. In a few instances where they are not rewarded, they will stop the behavior almost instantly (Gordan & Krishanan, 2014). However, if you were to reward the behavior every N number of times, the individual would be conditioned to believe they will eventually be rewarded for a desired behavior, even if they aren't rewarded in the next few times. So what Bloom advises is to reinforce a behavior at irregular intervals (Bloom n.d.-b, 13:26–13:32).

There are also sub-types of reinforcement that can be categorized into four groups: social, token, tangible, and activity reinforcements (Gordon et al., 2014). Social reinforcements are mostly verbal, including acts of encouragement or granting a smile to someone. Token reinforcements act as a form of currency or usage of a continued symbol that holds value to someone. Tangible reinforcements are physical gifts handed to an individual as a reward, like a piece of candy. Finally, activity reinforcement holds the promise of giving a person the opportunity to enjoy something including a ticket to the movies or a vacation. These categories of reinforcement are important to consider having individuals learn behaviors more effectively once cognitive behavioral therapy (CBT) identifies the cause.

Cognitive Behavioral Therapy

Cognitive Behavioral Therapy - Patient Thought Process

Aaron Beck (1921–2021), an American psychiatrist, is known for being the founder of CBT (Chand et al., n.d.). As a psychiatrist, he began research on how psychodynamic therapy could help patients with depression, the most common therapy treatment at the time (Beck Institute, n.d.). Beck continued to delve into his patients' past experiences and childhoods. However, throughout his observations, he noticed that his patients diagnosed with depression had a common trait: they all expressed one-sided negative thoughts about their situations and problems, which he coined the term "automatic thoughts" (Chand et al., n.d.). These automatic thoughts were a form of negative bias. He began treatment for these negatively perceived thoughts and saw how they were connected with his patients' actions and behaviors. From this experience, he created a form of therapy treatment drawing from behavioral and cognitive psychology that many psychologists and psychiatrists use today (Davis et al., 2017).

Biases are known to have multiple causes for their involvement in human behavior. This article defines cognitive biases as consequences of the brain simplifying information, which the brain does to take shortcuts. Since our brains do not have an infinite memory capacity, Hilbert (2012) argues that we are limited by bounded rationality, going with not the best choice but the most satisfactory. He describes mental shortcuts, or heuristics, that we take to ease the effort our brains take to process information. In doing so, we use means of association and availability to help with this. These are the biological and cognitive reasons for our biases. There are also emotional, moral, and social reasons that prevent us from being completely objective (Hilbert, 2012). It may include the social environment an

individual was raised in and the current emotions one is experiencing. Cognitive biases are heavily prevalent in thoughts and are heavily incorporated into CBT, which the field of cognitive psychology contributed to developing. These are the types of biases that CBT works to destabilish.

CBT is a modern form of psychotherapy used by therapists, counselors, psychiatrists, psychologists, and social workers (APA 2012; APA 2017a; Beck Institute, n.d.-b; NIMH, n.d.). It is used today as a dominant therapy method in numerous clinics and hospitals. This form of psychotherapy was developed from behavioral and cognitive psychology (Davis et al., 2017) and is far different from early forms of treatment. For example, while psychodynamic therapy focuses on a patient's early experiences and their influences on them, CBT focuses on correcting unwanted behavior to prevent the actions that come from it (Davis et al., 2017; Gillihan, 2016).

Finding roots in both behaviorism and cognitive psychology, CBT uses these two understandings of human behavior and integrates them into one treatment (Davis et al., Gillihan, 2016).

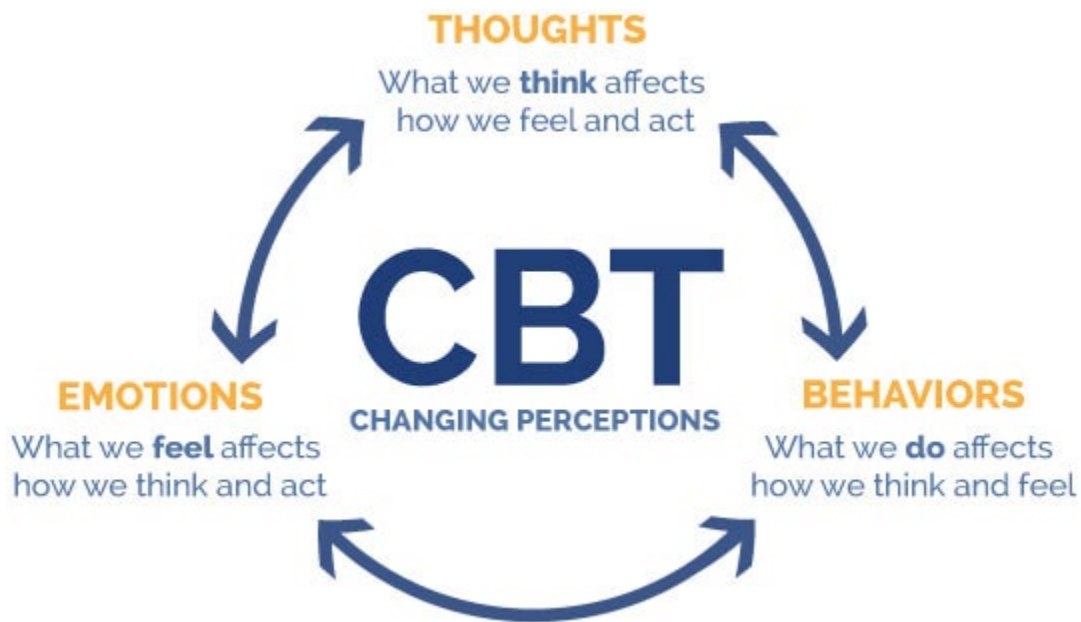


Figure 1. Understanding Cbt. (Ugueto, 2019)

This figure shows the interconnected processes of cognitive and behavioral therapy. Cognitive Therapy focuses on the change of thoughts while behavior therapy focuses on the change of behavior. CBT is the combination of both behavior and cognitive therapy, and focuses on the changing of thoughts and behavior. These two processes are interconnected with a patient's feelings.

CBT is a therapeutic treatment used by psychologists and psychiatrists to identify and correct the unwanted behaviors of their patients (APA, 2017). CBT uses a unique thought process that integrates both behavioral and cognitive approaches to provide a more holistic treatment for the patient. The key objective is to identify the three main components of a patient's actions: behaviors, thoughts, and feelings. Aaron Beck believed that these three factors affect one another and are key variables to examine to solve a client's problem (Beck Institute, n.d.). If an individual believes a stimulus to be damaging or harmful, a response to the stimulus would more likely be negative (Beck Institute, n.d.-b). By identifying the behavior, one can identify a person's feelings and perceptions on the matter at hand.

Application of Operant Conditioning with CBT

Cognitive behavior therapy is used to treat an identified harmful or unwanted behavior that is causing the patient anxiety or stress (Gillihan, 2016; Mandriota, 2021). Operant conditioning assists CBT by modifying certain behaviors through forms of punishment and reinforcement. For instance:

1. John has a problem with alcohol consumption. When John gets off from a long day of work and sees alcohol, the urge to drink increases. He believes that it acts as a stress reliever. Simply, the thought process of John goes like this:

Alcohol → “This will help me feel better” → Consumption.

With CBT and operant conditioning, a practitioner uses reinforcement and punishment techniques to change the thought process between the stimulus and the reaction in John. The practitioner may switch John’s alcohol to a more bitter-tasting alcohol to punish or decrease the behavior of drinking more alcohol. This is an example of positive punishment because the practitioner is replacing a pleasurable source of alcohol with a bitter-tasting one. Conversely, the therapist may give John a healthier stress-coping mechanism, such as drinking tea, to reinforce a different behavior. This is an example of positive reinforcement.

Academic Procrastination - Identifying and Preventing

Procrastination is the intentional act of delaying tasks, actions, and decisions, knowing that it will later have negative repercussions (Wolters, 2003). Academic procrastination refers to the specific delay of student work. An example would be putting off the completion of a research paper until the very last moment. However, a behavioral psychologist would view procrastination in a different context. To a behaviorist, procrastination is a response to removing stimuli from the individual (Sirois, 2014). The etiology behind the specific category of academic procrastination is not universal for all, but common causes include external distractions, fear of failure, being overwhelmed, or a lack of interest (Sirois & Pychyl, 2013). The behaviorist would say that procrastination comes from a desire to remove oneself from stimuli deemed harmful. However, the stimulus is only deemed harmful due to the "automatic thoughts" of the individual, who perceives these tasks as detrimental. The prioritization of short-term relief in academic procrastination may lead to harmful side effects (Sirois & Pychyl, 2013).

Procrastination can have harmful effects on people who repeatedly procrastinate. Common social impacts of procrastination include reduced quality of work, a decrease in trust from others, and even being at risk of depression (Kim & Seo, 2015; Flett et al., 2016). Common physiological effects of procrastination include increased stress and sleep deprivation (Wolters, 2003). Of course, lowered grades are also incredibly common for students who regularly procrastinate academically (Grunschel et al., 2013). These effects may influence the behavior of many students in the United States.

According to an extensive study done in 2015, 60% of 98 American high school students, mostly in their sophomore year, self-reported experiencing high levels of academic procrastination (Janssen, 2015). In addition to general procrastination data, 46% of these students report procrastination for studying exams, 35% for reading weekly assignments, and 36% for writing papers. These numbers may not be representative of all high school students across America, but they do show a high percentage of procrastination.

Identifying External Distractions in Procrastination with CBT

While it is known that academic procrastination is attributed to many causes for students in the United States, this paper focuses on identifying one category of academic procrastination: external distractions. One study (Grunschel et al., 2013) stated that around 70% of students self-reported academic procrastination. They avoided tasks with distractions that provided immediate stimulation, including watching TV or communicating with friends and family. These distractions are one form of stimulus that can cause academic procrastination. External distractions are both stimuli and pieces of the environment that divert a person's attention from a task to itself (Sirois, 2014). These distractions encompass any pleasurable temptations that entice or place an individual off-task. Examples include social media, music, and video games (Grunschel et al., 2013; Sirois, 2014). When the distraction acts as a pleasurable stimulus, students find it hard to continue working, leading to procrastination in favor of mental relief. This has to do with the human brain prioritizing short-term pleasure over long-term assignments or goals (Svartal et al., 2020). Most students find the tasks they procrastinate on are arduous and mentally exhausting (Sirois & Pychyl, 2013; Sirois, 2014). Originally, according to Sirois (2013), one study found that students did not mean to study less or work less on their tasks. However, these so-called distractions provided the means to do so.

According to the previous piece of information, one potential way to limit procrastination may be to perform CBT exercises to measure and examine the emotions and thoughts that tend to push out the behavior. The same logic CBT uses can be applied to academic procrastinators, allowing one to identify their underlying behavioral, cognitive, and emotional processes. Not only is it possible to identify these components, but it is also possible to identify what behaviors may need changing to complete the goal of eliminating academic procrastination. That is the goal of the usage of CBT in this context.

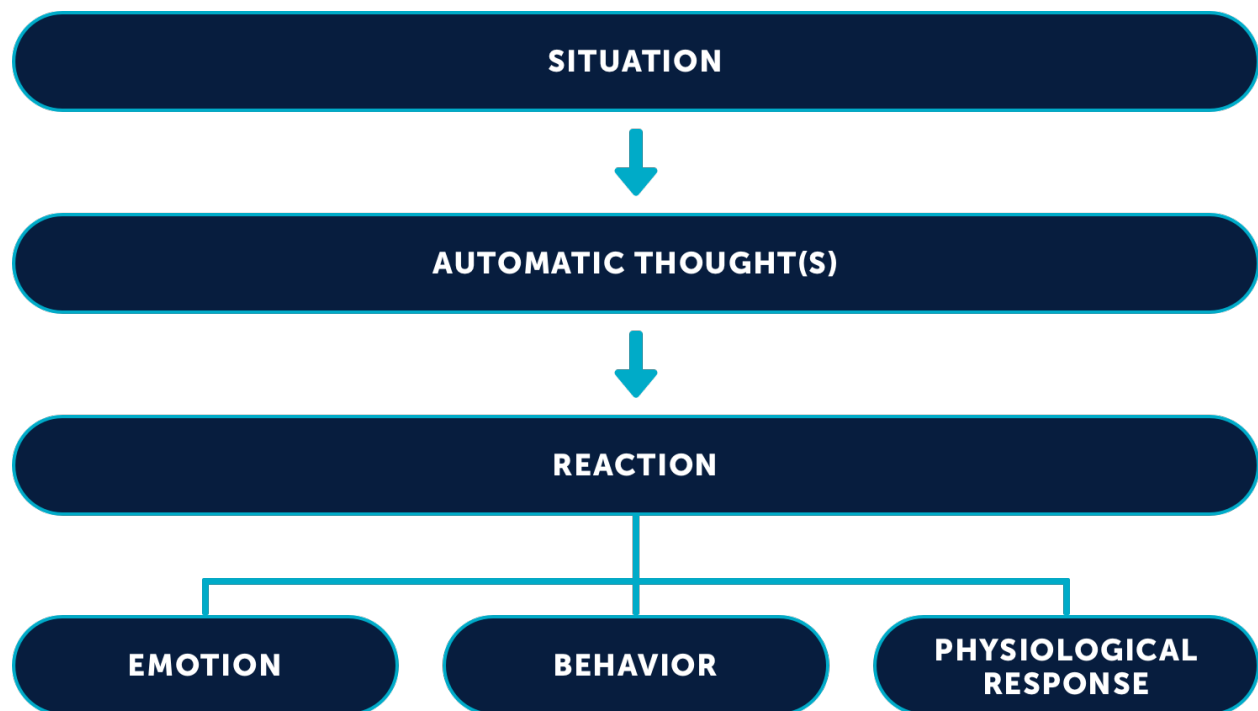


Figure 2. Cognitive Model. (Beck Institute, n.d. -a)

This figure shows a model of how a situation, or stimulus, can lead to 'automatic thoughts' described by Aaron Beck (see p. 4, 5). The stimulus provokes a reaction led by those 'automatic thoughts' and causes three responses: emotions, behavior, and physiological response.

This proposition has been tested once in a small study of ten college student volunteers, five male and five female (Uzun et al., 2013). The students attended a weekly meeting for 90 minutes for 5 weeks on dealing with their procrastination. In between sessions, they were given assignments to implement correcting automatic thoughts and exploring their emotions and behaviors. After a session per week for 5 weeks, the ten students were given a follow-up session 8 weeks subsequent to the final session. The results showed a decrease in the pre-test procrastination scores they took for both academic and general procrastination. This demonstrates that focusing on cognitive bias and automatic thoughts to decrease procrastination has validity.

Psychologists can use CBT to identify the thought process behind academic procrastination. Since CBT follows a similar guide for all problems, the example of John and drinking alcohol (see p. 6) can be replaced with academic procrastination in students. If procrastination is a response, it would need to first have the stimulus before it. Three examples are provided to showcase different forms of distractions: social, auditorial, and visual, respectively (Sirois & Pychyl, 2013, Sirois, 2014).

Student on task + Social Media → “More pleasurable” → Distraction → Procrastination

Student on task + Music → “I become absorbed and focus on the music” → Distraction → Procrastination

Student on task + Game → “More fun and easy to perform” → Distraction → Procrastination

The student is given a project, which is marked as the stimuli of the behavior and thoughts. The outcome of these components is procrastination. Looking at these examples, the root cause is the distractions that create these thoughts. Hence, these thoughts are the focus that will need to be modified. Using reinforcement schedules alongside CBT, such as giving weekly worksheets or reflections on their thought processes, may help with the initial stages of identifying academic procrastination such as these examples (Uzun et al., 2013).

How the Use of Operant Conditioning can reduce Procrastination

It's then imperative to use operant conditioning to either remove distractions or create a reward system encouraging the completion of tasks. When looking at patients undergoing CBT, psychologists often recognize thought patterns that come from the patient. The same is said for students who fall victim to procrastination.

The four techniques outlined as Positive Punishment, Negative Punishment, Positive Reinforcement, and Negative Reinforcement, emphasize that there is more than one way to address the problem (Gordan & Krishanan, 2014). What is imperative is to discuss how. Operant conditioning is a series of reinforcers and punishers to a behavior. In the case of distracting stimuli, one may be confused how modifying behavior might apply to temptations and distractions. Examining closely, if a distraction is a stimulus and the response is procrastination, what needs to change is the response. This response occurs due to an individual's value of short-term relief. In a mentally exhausting situation such as studying, the brain opts to go with responding to pleasurable stimuli. In one example you can use positive reinforcement to give a reward such as candy to encourage a student to continue studying. This way, you replace the relief from the distraction and associate it with studying. One can also use Negative Punishment to remove positive emotions regarding a distraction, which is shown to lessen procrastination (Sirois & Pychyl, 2013). Going back to the subtypes of the different forms of reinforcements (see p. 4) may be helpful to review when deciding how to modify certain distractions. Regardless of the technique used, the goal is to change the original behavior by unlearning the thought process that causes the original behavior. Once the behavior of academic procrastination ceases to be active, the next step would be to use Operant Conditioning to learn a healthier alternative behavior to stimuli.

The aforementioned (see p. 4) reinforcement schedules to choose from are also a factor to consider. Based on the usage of each reinforcement schedule provided by two sources (Bloom, n.d.-b, 9:38-11:06; UC Scout, n.d.), it's recommended to use variable reinforcement schedules to decrease the behavior of procrastination. The reason had

been stated earlier (see p. 4); the partial reinforcement effect. Reinforcing behaviors are most effective when using variable time schedules due to the unpredictability (Bloom, n.d.-b, 9:38-13:15) of the rewards being given out. By choosing the route of reinforcing a behavior that counters academic procrastination, variable reinforcement schedules are considered most useful.

Operant conditioning is not just a tool used in therapy. It is also prevalent in everyday life. Unbeknownst to someone, they may have experienced or may be experiencing the results of operant conditioning now. In the same way the system of punishment and rewards can discourage procrastinating, it may also encourage it. In one example, a student feels stressed due to an assignment. By procrastinating and ignoring the assignment, the object of stress is removed. The student will feel a sense of relief, and they will continue to feel a sense of relief every time they remove the object of stress. This phenomenon is known as negative reinforcement. With this in mind, caution must be taken when using operant conditioning to remove the behavior of procrastination. What has been created is a rough model of the steps to follow when treating procrastination.

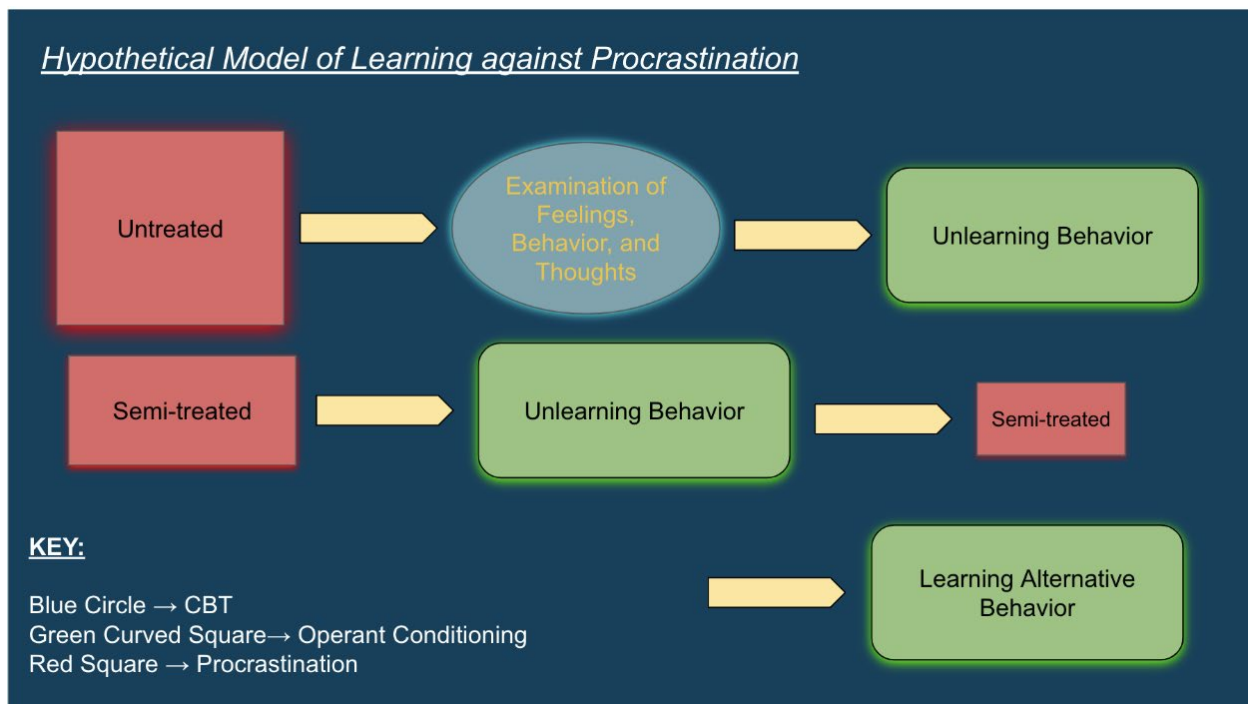


Figure 3. Hypothetical Model of Learning against Procrastination.

This figure demonstrates a rough model of what the process may look like when attempting to weaken the initial behavior of procrastination. The first stage is to identify the reasons why an individual procrastinates with CBT. A thorough examination of the three components (feelings, behavior, thoughts), will be produced to self-understand. Moving on to the next stage is a series of repeated sessions to unlearn the procrastinating behavior, using operant conditioning. Once the behavior is sufficiently removed, an alternative behavior will be reinforced using operant conditioning.

Limitations

It is important to note that this research paper proposes just one possible solution to the vast problem of academic procrastination, targeting a specific source for its occurrence. Academic procrastination is a multifaceted issue with

various underlying factors, each requiring individual attention. Nevertheless, the significance of recognizing how humans learn from their environment through conditioning is emphasized, leading to the development and modification of behavioral patterns. The prevalence of academic procrastination among students, estimated at approximately 60%–70%, highlights the urgency of understanding and addressing this issue. Further research is recommended to design a more intuitive model incorporating more specificity concerning the different sub-reasons of academic procrastination. Additional research on the interaction of operant conditioning and procrastination is deemed necessary to uncover as well.

It should also be acknowledged that there are a few hindrances that may occur in the current and future models that this method may have. For instance, the requirement for constant active participation for operant conditioning is to be initially present as a daily occurrence. Adequate mental strength may be required, which may not be suitable for individuals who already struggle with procrastination. Finding a much more efficient solution is imperative.

Conclusion

It's understood that academic procrastination is a prevalent issue faced by numerous students, impacting their educational pursuits. According to one meta-analytic review of 33 studies with 38,529 participants, Kim & Seo (2015) found a high negative correlation between procrastination and academic performance. External distractions were a major factor in this study's behavioral-cognitive focus on procrastination. The paper explored two behavior techniques, cognitive behavioral therapy (CBT) and operant conditioning. They were synthesized into a single model designed to prevent academic procrastination. Other studies examined the usage of CBT to identify and treat procrastination, and were deemed successful by the research conductors.

The usage of CBT has gained track in the study of academic procrastination. However, what has not been recognized is the use of operant conditioning as an effective treatment process to rectify procrastination behaviors. Operant conditioning has the potential to modify the root of academic procrastination behavior. By removing prior conditioning causing procrastination and replacing it with more productive behaviors through the efforts of reward and punishment, individuals can learn behaviors to avoid academic procrastination.

The research study fills this gap by identifying the particular uses for both CBT and operant conditioning in eliminating academic procrastination. It indicates a possibility of effectively rooting out the behavior of procrastination.

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