Discovering Psychology Series

Principles of Behavior Analysis and Modification

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Preface

Do you want to study more effectively, establish an exercise routine, drink more water, eliminate maladaptive ways of thinking about the world, quit smoking, or read more for pleasure? If so, you will find the content of this textbook useful and possibly life changing. It's not often an author can make that statement and mean it, but you will quickly come to see the utility of this information. Also, you may find quite a few of the strategies familiar. Some have been used on you while you have used some on other people in your life. Because of this, you will learn some of the material fairly quickly and easily. Other material will be new but I have presented it in ways that will hopefully expedite your mastery. I have also chosen to use examples that could be encountered in any person's life. It is my belief that by doing this, you can better relate to the material which will also aid in your learning.

The book is divided up into 14 modules falling under five major parts. In Part I, we set the stage by discussing the basics of behavior modification. From that we move into a discussion of the scientific method and how the study of psychology and application of behavior analysis and modification is based on sound scientific research. Part II begins the process of developing a behavior modification plan. Before you can change any behavior you have to want to change. This may seem like such an obvious step, and we might expect that anyone engaging in behavioral change arrived at that point through their free will, but you will find that is not always the case. Some people are forced into change by friends, family, or even the society they live in and when that occurs their commitment to see the change through is quite low. We next discuss the important task of defining the behavior we want to change and setting goals to see its

completion through. Next we discuss how to determine what causes our behavior and what maintains it, via a functional assessment and good record keeping.

Part III continues our task of developing a plan and concerns strategies to change the behavior. We will discuss basic principles and procedures used in operant conditioning, and then proceed to tackle more advanced procedures that are antecedent, behavior, and consequence focused. Finally, we will discuss procedures that fall under the jurisdiction of respondent conditioning and observational learning. Though having a course in the principles of learning will be helpful, it is not a pre-requisite. I have presented the information in this textbook as if it is the first time you have seen it. This elementary approach will benefit the novice student of learning theory and help advanced students bring together seemingly disconnected topics.

As a final set of steps before implementing your plan we move to Part IV and selecting strategies from a master list of at least 30. No plan runs smoothly but careful planning can lead to greater success if we can anticipate temptations and mistakes that we might make/encounter. Having clear rules for our plan should aid with its success and writing a behavioral contract will more formally commit us to making the change.

With our plan underway, we need to determine how well it is doing and this is where Part V comes in. We will discuss ways to “see” how successful your plan is and then how to implement adjustments. Once the plan has achieved success we move into maintenance of this new/changed behavior and guard against relapse.

I believe that one shortcoming of many classes you will take over your academic career is that information is presented in isolation when it is really part of a much larger picture. In this book, we discuss many strategies and you will be told ‘how’ to use them, but the ‘when’ is almost more important. Most students truly understand what the strategy is but when faced with

real life situations, are not sure which ones to draw off of. The same is true of statistics classes. Students understand what the *t*-test, ANOVA, correlation, *z*-score, regression, etc. are, but when given a data set and asked to choose an analysis to either describe the data or draw inferences from it, they cannot. If they were told from the start that they had to use one specific test, most would be fine, but the step before, or deciding which test to use on your own, is a skill many classes fall short on equipping students with. I hope that the activities presented in each module will help you understand *how* to use the strategies and *when* to use the strategies. Both skills are necessary.

As you navigate through the textbook you will find that each module begins with a brief overview, outline, and then learning outcomes. After this, each section has its own learning objectives. The module learning outcomes are high level expectations for what you will learn in that module, or skills that you will acquire. The section learning objectives are specific content that you should learn and can serve as a study guide for quizzes or exams.

And finally, I invite you to provide me, the author, with feedback about the book. Since this is an Open Education Resource (OER) textbook meaning it was selected by your instructor for use in this class at little to no cost to you, and since any changes are directly under my control, I can literally make them for future semesters on the fly. There is no formal publisher update or production schedule to follow. Changes do not necessitate new editions making older ones obsolete or printing massive numbers of new copies in which the cost is passed off to you in many cases. All it requires is that I make the change and then upload the new version at whatever website this book is housed at. I will also update the edition/version information on the cover. Minor changes will result in renumbering the decimal portion of the edition number indicating the version (1.01, 1.02, 1.03, etc.) while major changes, if needed, will result in a new edition all

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I wish you the best as you work through this book and hope you find it useful.

Lee W. Daffin Jr.

Record of Changes

Edition	As of Date	Changes Made
1.0	August 2017	Initial writing; feedback pending
2.0	January 2018	Added references to Module 3.1; Expanded the description of pros and cons and self-efficacy in Module 3.3.; added revised exercises in Modules 7-9; Added additional clarification to counting behaviors in Module 4 and made this a new section; Moved all Self-modification documents to an appendix; Created baseline ABC charts for each day; Created treatment ABC charts with journals for each day; Developed the index, glossary, and final remarks end matter; Many changes in all modules, necessitating a new edition number……..
3.0	January 2020	Proofreading of text; combined Module 10 with 6; added Treatment Phase Summary Table; revamped most of the planning sheets for the project; updated goals, criterion, and behavioral count layout; Extent of changes necessitated a new edition number
4.0	January 2021	Numerous edits to correct grammatical issues, removed references to the project for the class and kept descriptions general to developing a behavior modification plan, moved temptations and mistakes module to Modules 5 and 11, removed proposal, final paper, and final exam modules; some clarification was added in different locations, added Token of Appreciation, updated title page; Added an Instructors Resources page that is password protected so instructors who wish to use the project as I propose it can. This will be added in mid January;

Token of Appreciation

January 13, 2021

I want to offer a special thank you to Mr. Justin Knutson, undergraduate within the online Bachelor of Science in Psychology degree program at WSU, for his edits of the 3rd edition during the spring 2020. His changes, and my own, are integrated into the 4th edition of the book and are a dramatic improvement over the 3rd edition. Thank you, Justin.

To my students over the past 3 years. Thank you for suggestions on how to improve not only this textbook, but the curriculum for the class. Due to this, I have decided to streamline the project this book will help you develop and move it to the Instructor Resources section so that other faculty using the book can choose to keep whatever aspects of the course project they wish or forge their own path. The book being standalone allows for that.

And now to my reader. I hope you enjoy the book and please, if you see any issues whether typographical, factual, or just want to suggest some type of addition to the material or another way to describe a concept, general formatting suggestion, etc. please let me know. The beauty of Open Education Resources (OER) is that I can literally make a minor change immediately and without the need for expensive printings of a new edition. And it's available for everyone right away. If you have suggestions, please email them to myself (Lee Daffin) using the email on the title page.

Enjoy the 4th edition of Principles of Behavior Analysis and Modification.

Lee Daffin

Part I. Setting the Stage

Part I. Setting the Stage

Module 1:

The Basics of Behavior Modification

Module 1: The Basics of Behavior Modification

Module Overview

Hello and welcome to this course on ways to reduce unwanted, problematic, or even dangerous behavior, or to increase a desirable behavior. Before we dive into this most interesting area, it is important to make sure we all are on the same sheet of music. We will revisit what psychology and learning are, and how changing behavior fits into our field. As it is always important to understand where you came from, we will discuss several of the pioneers in the field of learning who are associated with the school of thought called Behaviorism. Behavior will then be defined, its dimensions discussed, and the field of applied behavior analysis will be described to include pertinent information any applied behavior analyst will need to gather. To round out the module, we will discuss how learning is shared with the broader scientific community.

Module Outline

Module Learning Outcomes

- Clarify how behavior modification fits into the larger context of the field of psychology.
- Identify historical figures and events pertinent to learning and behavior modification.
- Define and describe the characteristics of behavior.
- Clarify how the field of applied behavior analysis goes about changing behavior and describe the ABCs of behavior.
- Identify pertinent professional societies and peer-reviewed journals in the area of applied behavior analysis (ABA).

1.1. Defining Terms

Section Learning Objectives

- Define psychology.
- Define learning.
- Clarify the role of memory.
- Contrast self-regulation and self-control.

To start things off, let's take a step back in time. Behavior modification is an area under the field of **psychology**. Think back to when you took your introduction to psychology course. How did the text, and your professor, define psychology? If you cannot remember, how would you define psychology now that you have likely taken several psychology courses? After giving this some thought, look at the official definition.

> **Psychology** is the scientific study of behavior and mental processes.

Let's examine this definition before we go on.

- First, psychology is scientific. Yes, that is correct. Psychology utilizes the *same* scientific process or method used by disciplines such as biology and chemistry. We will discuss this in more detail in Module 2, so please just keep this in the back of your mind for now.
- Second, it is the study of behavior and mental processes. Psychology desires to not only understand why people engage in the behavior that they do, but also how. What is going on in the brain to control the movement of our arms and legs when running downfield to catch the game winning touchdown? What affects the words we choose to say when madly in love? How do we interpret an event as benign or a threat when a loud sound is heard? What makes an individual view another group in less than favorable terms? These are just a few of the questions that we ask.

For the student taking a class in behavior modification, we might say that we seek to study behavior (scientifically of course), but in terms of ways to change it for the betterment of not only the person, but all around him or her. We will spend a lot of time examining behavior in this way but do note that we will touch on cognitive processes because at times, it is not a specific action that we need to change, but the way we think about it. For instance, you might want to reduce procrastination, eliminate unnecessary anxiety, change a maladaptive cognition, or reverse a particularly bothersome habit. More on this later in the book.

So our discussion focuses on the scientific study of behavior and specifically the cognitive process of learning. What is **learning** then?

> **Learning** is any relatively permanent change in behavior due to experience and practice.

Learning is key to any study of behavior modification. In fact, as you will see shortly, it is based on the model of learning developed by B.F. Skinner about 90 years ago and going back over 100 years if you consider the work of John B. Watson. If we make an undesirable behavior, we continue doing so because it in some way produces favorable consequences for us. We have learned to associate the behavior with a reinforcer. Let's say we wake up in the morning and instead of going to the gym, we get on our phone. Of course, getting exercise is beneficial in many ways, but we choose to surf the internet, play a game, respond on Facebook, or make a tweet instead. Why? We enjoy doing so and love it when people like our posts. The undesirable behavior is using our phone and the consequences are the enjoyment we feel and our contributions being liked or shared by others. These consequences reinforce the undesirable behavior.

Fortunately, learning is only a *relatively* permanent change in behavior. Nothing is set in stone and what is learned can be unlearned. Consider a fear for instance. Maybe a young baby enjoys playing with a rat, but each time the rat is present a loud sound occurs. The sound is frightening for the child and after several instances of the sound and rat being paired, the child comes to expect a loud sound at the sight of the rat, and cries. This is because an association has been realized, stored in long term memory, and retrieved to working memory when a rat is in view. **Memory** plays an important role in the learning process and is defined as the ability to retain and retrieve information. The memory of the loud sound has been retained and retrieved in the future when the rat is present. But memories change. With time, and new learning, the child can come to see rats in a positive light and replace the existing scary memory with a pleasant one. This will affect future interactions with rats.

In some cases, we adjust our behavior based on feedback we receive from others. Joking around with our significant other after they had a long and hard day at work will be perceived differently than a day in which they received an exemplary performance evaluation and a raise. Or the feedback may come from ourselves, such that we stop working out because we notice our heartrate has reached dangerous levels or we turn off the television because we are distracted. Our ability to carefully consider our actions and the effect they have on others or ourselves, and to make such adjustments, is called **self-regulation.** We self-regulate or self-direct more than just our actions. We can also control our thoughts, feelings, attitudes, and impulses. You might think of self-regulation as a form of behavior modification but in the short term. It could be long term too. To lose weight, we need to exercise on a regular basis, watch what we eat, manage our stress, and get enough sleep. A few days of doing this will not produce the results we seek. We need to stay committed for many months or even years.

This leads to the topic of **self-control** and avoiding temptations. It takes a great deal of willpower to not sleep in, get fast food for dinner, stay up late watching Netflix, or let demands in our environment overwhelm us. This is sometimes called *brute* self-control (Cervone, Mor, Orom, Shadel, & Scott, 2011) and if it goes on for too long it can leave us in a weakened state and cause us to give in to our desires (McGonigal, 2011). More on this later.

1.2. The Historical Context of Behaviorism

Section Learning Objectives

- List the three stages of behaviorism.
- Describe the work of Pavlov and Thorndike.
- Describe the work of Watson.
- Clarify how Watson changed the way psychologists studied human beings.
- Describe the work of Skinner and Tolman.
- Describe the work of Bandura.

Psychology's past has included several major **schools of thought**, or a group of people who share the same general theoretical underpinning, use similar research methods, and address most of the same questions. Historically, these schools have included structuralism, functionalism, psychoanalysis, Gestalt psychology, humanistic psychology, positive psychology, cognitive psychology, and evolutionary psychology. Behaviorism, as the ninth, is the school of thought that was dominant from 1913 to 1990 before being absorbed into mainstream psychology. Behaviorism focused on the prediction and control of behavior. It went through three major stages – behaviorism proper under Watson, lasting from 1913-1930; neobehaviorism under Skinner, lasting from 1930-1960; and sociobehaviorism under Bandura and Rotter, lasting from 1960-1990. Before we dive into these stages let's briefly discuss two influential figures who affected the earliest stages of behaviorism. Then we will discuss each stage and its key figures who have contributed to behavior modification as it exists today.

1.2.1. Antecedent Influences

Ivan P. Pavlov (1849-1936). In 1904, Pavlov received the Nobel Prize for his research on digestion, but for the field of psychology, he is noteworthy for his discovery of **conditioned reflexes** (Pavlov, 1927), or reflexes that are dependent on the formation of an association between stimulus and response. Of course, you likely know of Pavlov's dogs and how he stumbled upon this discovery haphazardly. He noticed that the dogs would begin salivating before the food was placed in their mouth. They did so at the sound of a bell ringing, sight of the food, or upon hearing footsteps in the hallway. They made a connection between these neutral stimuli and getting food, which led to the salivation response. More on this in Module 6.

Edward Lee Thorndike (1874-1949). Influential on the development of Skinner's operant conditioning, Thorndike proposed the **law of effect** (Thorndike, 1905) or the idea that if our behavior produces a favorable consequence, in the future when the same stimulus is present, we will be more likely to make the response again, expecting the same favorable consequence. Likewise, if our action leads to dissatisfaction, then we will not repeat the same behavior in the future. He developed the law of effect thanks to his work with the Puzzle Box. Cats were food deprived the night before the experimental procedure was to occur. The next morning, they were placed in the puzzle box and a small amount of food was placed outside the box. The cat could smell the food, but not reach it. To get out, a series of switches, buttons, levers, etc. had to be manipulated and once done, the cat could escape the box and eat some of the food. But just some. The cat was then promptly placed back in the box to figure out how to get out again, the food being its reward for doing so. With each subsequent escape and re-insertion into the box, the cat became faster until he/she knew exactly what had to be done to escape. This is called **trial and error learning** or making a response repeatedly if it leads to success. Thorndike also

said that stimulus and responses were connected by the organism which leads to learning. This approach to learning was called **connectionism**.

1.2.2. Stage 1: Behaviorism Proper (1913-1930)

John B. Watson. Behaviorism began as a school of thought in 1913 with the publication of "Psychology as the Behaviorist Views It" in *Psychological Review* (Watson, 1913). It was Watson's belief that the subject matter of psychology was to be observable behavior. He is most famous for his Little Albert experiment in which he and his graduate student, Rosalie Rayner, conditioned Albert to be afraid of a white rat by pairing the sight of the animal with hearing a loud sound. This was described earlier in the discussion of learning being relatively permanent and will be covered in more detail in Module 6 when we discuss respondent conditioning. Watson also described three unlearned emotional response patterns inherent in all people (fear, rage, and love). All other emotions arise from these basic emotions via conditioning and so are called *conditioned emotional responses***.**

What is maybe most fascinating about Watson's influence is that he was able to change how psychologists studied human beings. Instead of a study of behavior and mental processes, Watson shaped psychology to be simply a study of behavior, and its prediction and control. This shift began in 1913 and would remain this way for almost five decades. This is not to say that all psychologists renounced cognitive studies. The Gestalt psychologists kept the flame of cognitive processes at least somewhat going; a flicker at best. It is beyond the scope of this class, but if you take a class in the history of psychology you will quickly discover that why Watson was able to do this was not rooted in psychology or even science, but within the discipline of philosophy and the worldview of mechanism.

1.2.3. Stage 2: Neobehaviorism (1930-1960)

B.F. Skinner (1904-1990). Skinner developed operant conditioning, discussed schedules of reinforcement, and the process of shaping by successive approximations (Skinner, 1953). His work was the foundation for behavior modification (Skinner, 1938) and will be covered in detail throughout this textbook.

Edward Chance Tolman (1886-1959). Tolman proposed the idea of **purposive behaviorism** or goal-directed behavior (Tolman, 1932) such as a rat navigating a maze with the intent to make it to the goal box where water is at, or a cat trying to escape Thorndike's puzzle box to obtain nourishment. He also proposed the idea of cognitive maps, proposed a cognitive explanation for behavior, described intervening variables or unobserved factors that are the actual cause of behavior, and rejected Thorndike's law of effect. These accomplishments make him a forerunner of contemporary cognitive psychology.

1.2.4. Stage 3: Sociobehaviorism (1960-1990)

The timing of the development of sociobehaviorism is rather interesting. Coming almost 50 years after the start of behaviorism, it rose and flourished during the cognitive revolution in psychology. Lead by Julian Rotter, famous for the concept of locus of control, and Albert Bandura, discussed below, the sociobehaviorists rejected Skinner's dismissal of cognitive processes and proposed a social learning theory. The third stage of behaviorism occurred at the same time that humanistic and cognitive psychology reshaped how psychologists studied people and brought back the study of the mind.

Albert Bandura (1925-). Bandura is most well-known for his Bobo Doll experiment and the social cognitive theory. He criticized Skinner for not using human beings in his experiments

and for focusing on single subjects and mostly rats and pigeons. Since people do not live in social isolation, we must not ignore these social interactions. His approach allowed for the modification of behaviors society saw as abnormal. His brand of behavior modification focused on the fact that people model or learn by observing others. As we learn undesirable behaviors in this way, we can unlearn them as well. More on this in Module 6. He also proposed the concept of self-efficacy which we will discuss in Module 3 (Bandura, 1982) and **vicarious reinforcement**, or the idea that we can learn by observing others and seeing what the consequences of their actions are.

1.2.5. Final Thoughts

We will discuss respondent conditioning (Pavlov and Watson), operant conditioning (Skinner and Tolman), and social learning theory/observational learning (Bandura and Rotter) throughout this course, and how the various procedures each learning model has developed can be used to modify human behavior. For now, simply recognize that these models are all related and built off of each other.

1.3. Understanding Behavior

Section Learning Objectives

- Define and exemplify behavior.
- List and define the four dimensions of behavior.
- Differentiate overt and covert behavior.
- Describe how behavior impacts the environment.

The focus of psychology is the scientific study of behavior and what causes it (mental or cognitive processes), while the focus of applied behavior analysis is changing behavior. So what forms does behavior take? Take a look at Table 1.1 for some examples.

Table 1.1. Types of Behavior People Engage In

Overt		Covert
What we DO	**What we SAY**	**What we THINK/FEEL**
Swing the bat and hit the ball when thrown by the pitcher	Thank the coach for the great tip	Have a sense of accomplishment and are encouraged to keep trying
Engage in self-injurious behavior	Tell our family we are not hurting anyone but ourselves	Are embarrassed by the act
Sit around and mope	Call ourselves stupid and say we are a loser	Feel worthless
Procrastinate finishing a project for our behavior modification class	I can get it done later this semester. I have time.	We are engaging in the emotion focused coping strategy of distancing
Go to the gym and workout.	I did a great job and am proud of myself.	Feel elation and that our goal setting strategy is working
Use corporal punishment with our child.	Berate the child verbally (You are a bad child).	I am maintaining order.
Play a game when we wake up instead of going to the gym.	I can always go to the gym later.	Shame for not going to the gym.
Cry over the loss of a loved one due to suicide.	I should have been there. I should have seen the signs.	Engage in self-blame for no good reason.

From the table above, you can see that **behavior** is what people do, say, or think/feel. Behavior has several dimensions that are important to mention. They include:

- *Frequency* – This is how often the behavior occurs.
- *Duration* – This is how long the behavior lasts.
- *Intensity* – This is how strongly the behavior occurs.
- *Latency* –This is the time from when a stimulus presents itself to when a behavior follows.

For any behavior we engage in, some number of these dimensions are important. For instance, if we see ourselves as worthless (often a sign of depression), we need to figure out how long the feelings have gone on for and how intense they have become. If the thoughts (and related symptoms) occur for a short duration but are intense, this is characteristic of Major Depressive Disorder. If they last a long time (long duration) but are not very intense, this is characteristic of dysthymia or mild depression. What about running? We need to know how often we run each week, how long we run, and at what speed – the dimensions of frequency, duration, and intensity respectively. Finally, consider a father asking his son to take the trash out (as I often do with my son.) If it takes him 15 minutes to do so then this is the latency.

Behavior can be overt or covet. **Overt** is behavior that is observable while **covert** behavior cannot be observed. We might even call covert behavior private events. When a behavior is observable, it can be described, recorded, and measured. This will be important later when we talk about conducting a functional assessment in Module 5.

Behavior also impacts the environment or serves a function. If we go to the bathroom and turn on the water, we are then able to brush our teeth. If we scream at our daughter for walking into the street without looking, we could create fear in her or raise her awareness of proper street crossing procedure. In either situation, we have impacted the environment either physically as in the example of the faucet or socially as with the street incident. Here's one more example you might relate to – your professor enters the classroom and says, "Put away your books for a pop quiz."

1.4. The Field of Applied Behavior Analysis

Section Learning Objectives

- Contrast pure and applied science.
- Describe the ABCs of behavior.
- Identify a few of the keys to bringing about behavior modification.
- Define self-management or self-modification.

Science has two forms – basic (or pure) and applied. **Basic science** is concerned with the acquisition of knowledge for the sake of the knowledge and nothing else while **applied science** desires to find solutions to real-world problems. In terms of the study of learning, the pure/basic science approach is covered under the *experimental analysis of behavior*, while the applied science approach is represented by *applied behavior analysis* (ABA). This course represents the latter while a course on the principles of learning would represent the former. We will discuss applied behavior analysis and behavior modification in the rest of this book.

So what is applied behavior analysis all about? Simply, we have to first undergo an analysis of the behavior in question to understand a few key pieces of information. We call these the ABCs of behavior and they include:

- **Antecedents** – These are the environmental events or stimuli that trigger a behavior. If your significant other does something nice for you and you say, 'Thank you,' the kind act is the antecedent.
- **Behaviors** – Again, this is what the person does, says, thinks/feels. In the previous example, you saying, 'Thank you,' is the behavior or what you said. The behavior may be

something we want to increase, and so is classified as a **behavioral deficit**, or something we need to decrease and is a **behavioral excess**. As we will discuss later, we will have desirable and undesirable behaviors we engage in. The undesirable behaviors serve as temptations and distract us from our end goal.

- **Consequence** – You might say a consequence is the outcome of a behavior that either encourages it to be made again in the future or discourages its future occurrence. If we always engage in a particular behavior when a specific stimulus is present, then there must be some favorable outcome that follows the behavior, thereby reinforcing its occurrence and making it highly likely that the behavior will occur the next time the antecedent is present. Hence why we say that the antecedent is a trigger for the behavior.

Let's say that whenever Steve's friend, John, is present he misbehaves in class by talking out of turn, getting out of his seat, and failing to complete his work. John laughs along with him and tells stories about how fun Steve is to the other kids in the 6th grade class. John is the Antecedent for the unruly Behavior, and the approval from Steve's peers is the Consequence. Now consider for a minute that Steve is likely getting in trouble at both school and home, also a consequence, but continues making this behavior. We might say that the positive reinforcers delivered by John and his peers are stronger or more motivational for Steve than the punishment delivered by parents and teachers.

In this case, the school and parents will want to change Steve's behavior in class as it is directly impacting his grades but also the orderliness of the classroom for the teacher. In making this plan, all parties involved will want to keep a few basic principles in mind:

- The behavior will need to be measured both before and after any treatment is implemented.
- Whatever treatment is decided upon by the applied behavior analysist, everyday people in the child's life will have to implement it. Why? The therapist cannot be present 24/7 but parents and other caregivers, teachers, administrators, babysitters, etc. will be. In fact, none of these people are present 24/7 and so it will take a coordinated effort of several stakeholders to bring about behavior change. It really does take a village to raise a child, or in this case to help change/establish a behavior.
- The behavior to be changed must be defined precisely. We will cover this in much more detail in Module 4.
- Controlling variables, or the events in Steve's environment that are related to the behavior in a functional way, need to be considered.

If these four principles are addressed, then a sound treatment plan can be developed and implemented to bring about positive change in Steve's behavior.

This is a great example of behavior modification at work to change the behavior of *others* but please note that the same principles and procedures can be implemented by an *individual* to bring about their own change. This is called **self-management** or **self-modification**. The final project in this course will be a self-management project and show you how to apply what you are learning to reducing an unwanted behavior or increasing some desirable one. Self-management, therefore, can be simply described as behavior modification applied to ourselves. More on this throughout the book.

1.5. Coordinating and Communicating in ABA

Section Learning Objectives

- Clarify what it means to communicate findings.
- Identify professional societies in ABA.
- Identify publications in ABA.

One of the functions of science is to *communicate* findings. Testing hypotheses, developing sound methodology, accurately analyzing data, and drawing cogent conclusions are important, but you must tell others what you have done too. This is accomplished via joining professional societies and submitting articles to peer reviewed journals. Below are some of the societies and journals important to applied behavior analysis.

1.5.1. Professional Societies

- **American Psychological Association → Division 25: Behavior Analysis**
  - Website - https://www.apadivisions.org/division-25/
  - Mission Statement – "Division 25: Behavior Analysis promotes basic research, both animal and human, in the experimental analysis of behavior; it encourages the application of the results of such research to human affairs, and cooperates with other disciplines whose interests overlap with those of the division."
  - Publication - Division 25 Recorder, published semi-annual
  - Other Information – "The division participates in the APA annual convention, sponsoring individual speakers, symposia, and special events, such as receptions and an annual dinner. Div. 25 is also an active co-sponsor of social hours and presentations dealing with the field of behavior analysis."

- **Association for Behavior Analysis International (ABAI)**
  - Website - https://www.abainternational.org/journals.aspx
  - Mission Statement – "Since 1974, the Association for Behavior Analysis International (ABAI) has been the primary membership organization for those interested in the philosophy, science, application, and teaching of behavior analysis."
  - Publication – Inside Behavior Analysis – Newsletter publishes articles of interest to members.
  - Other Information – Offers job placement services, "Events that promote dissemination of the science and provide continuing education opportunities for practitioners," affiliated chapters, and special interest groups.

- **Society for the Quantitative Analyses of Behavior**
  - Website – https://www.sqab.org/
  - Mission Statement – "The Society for the Quantitative Analyses of Behavior (SQAB) was founded in 1978 by M. L. Commons and J. A. Nevin to present symposia and publish material which bring a quantitative analysis to bear on the understanding of behavior."
  - Publication – Behavioural Processes
  - Other Information – "The International Society holds its annual meeting in conjunction with the Association for Behavior Analysis International (ABAI). Talks at SQAB focus on the development and use of mathematical formulations to: characterize one or more dimensions of an obtained data set, derive predictions to be compared with data, and generate novel data analyses."

1.5.2. Publications

- **Journal of Applied Behavior Analysis**
  - Website: http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1938-3703/homepage/ProductInformation.html
  - Published by: APA, Division 25
  - Description: "a psychology journal that publishes research about applications of the experimental analysis of behavior to problems of social importance."

- **The Psychological Record**
  - Website: https://www.abainternational.org/journals/tpr.aspx
  - Published by: ABAI
  - Description: "TPR publishes investigations of basic behavioral processes, as well as translational studies that bridge experimental and applied analyses of behavior."

- **Perspectives on Behavior Science**
  - Website: https://www.abainternational.org/journals/pobs.aspx
  - Published by: ABAI
  - Description: " PoBS publishes articles on theoretical, experimental, and applied topics; literature reviews; re-interpretations of published data; and articles on behaviorism as a philosophy."

- **The Analysis of Verbal Behavior**
  - Website: https://www.abainternational.org/journals/avb.aspx
  - Published by: ABAI
  - Description: "TAVB publishes experimental or theoretical papers relevant to a behavioral analysis of verbal behavior."

- **Behavioral Analysis in Practice**
  - Website: https://www.abainternational.org/journals/bap.aspx
  - Published by: ABAI
  - Description: "BAP promotes empirically validated best practices in an accessible format that describes what works and the challenges of implementation in practical settings."

- **Journal of the Experimental Analysis of Behavior**
  - Website: http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1938-3711
  - Published by: Society for the Experimental Analysis of Behavior
  - Description: "…primarily for the original publication of experiments relevant to the behavior of individual organisms."

- **European Journal of Behavior Analysis**
  - Website: http://ejoba.org/
  - Published by: Norwegian Association for Behavior Analysis
  - Description: The European Journal of Behavior Analysis "is primarily for the original publication of experimental reports and theoretical/conceptual papers relevant to the analysis of the behavior of individual organisms."

- **Behavioural Processes**
  - Website: https://www.journals.elsevier.com/behavioural-processes/
  - Published by: Society for the Quantitative Analyses of Behavior
  - Description: "*Behavioural Processes* is dedicated to the publication of high-quality original research on animal behaviour from any theoretical perspective. It welcomes contributions that consider animal behaviour from behavioural analytic, cognitive, ethological, ecological and evolutionary points of view."

Module Recap

Psychology is the scientific study of behavior and mental processes and at times our study needs to focus on how to change behavior for the better. Behavior is anything that we do, say, or think/feel and this behavior could be an excess or deficit. To determine the proper treatment strategy, we need to first figure out what triggers the behavior, or what the antecedents are, and then what maintains the behavior, or what the consequences are. Behavior modification strategies can be applied to others, but we can also apply them directly to ourselves via self-management. Once we have developed a successful treatment plan, it is important to disseminate the information to others via professional societies and peer-reviewed journals.

In the next module, we will tackle the issue of how behavior analysis and modification is scientific.

Part I. Setting the Stage

Module 2:

The Science of Behavior Analysis and Modification

Module 2: The Science of Behavior Analysis and Modification

Module Overview

In Module 1, we learned that psychology was the scientific study of behavior and mental processes and that behavior modification involved changing what people do, say, or think/feel. If we do end up changing the behavior, how do we know that our treatment plan was the actual cause? In Module 2, we will look closer at what makes psychology scientific and how we go about declaring with a great deal of certainty that our treatment plan was the cause of the change.

Module Outline

2.1. Science and Psychology

2.2. Behavioral Assessment

2.3. Establishing a Functional Relationship and Experimental Designs

Module Learning Outcomes

- Clarify what it means for psychology to be scientific by examining the steps of the scientific method, the three cardinal features of science, and the five main research methods that are used.
- Describe methods of measuring behavior.
- Clarify what is needed for a functional relationship to be established and describe designs which aid with hypothesis testing.

2.1. Science and Psychology

Section Learning Objectives

- Define the scientific method.
- Outline and describe all steps of the scientific method. Define key terms in bold.
- Clarify what the three cardinal features of science are and how they relate to behavior modification.
- List and describe the five main research methods used in psychology.

2.1.1. The Scientific Method

In Module 1, we learned that psychology was the "scientific study of behavior and mental processes." We will spend quite a lot of time on the behavior and mental processes part, but before we proceed, it is prudent to elaborate more on what makes psychology scientific. In fact, it is safe to say that most people not within our discipline or a sister science, would be surprised to learn that psychology utilizes the scientific method at all.

As a starting point, we should expand on what the scientific method is.

The **scientific method** is a systematic method for gathering knowledge about the world around us.

The key word here is that it is *systematic* meaning there is a set way to use it. What is that way? Well, depending on what source you look at it can include a varying number of steps. I like to use the following:

Table 2.1: The Steps of the Scientific Method

Step	Name	Description
0	Ask questions and be willing to wonder.	To study the world around us you must wonder about it. This inquisitive nature is the hallmark of **critical thinking,** or our ability to assess claims made by others and make objective judgments that are independent of emotion and anecdote and based on hard evidence and required to be a scientist.
1	Generate a research question or identify a problem to investigate.	Through our wonderment about the world around us and why events occur as they do, we begin to ask questions that require further investigation to arrive at an answer. This investigation usually starts with a **literature review**, or when we conduct a literature search through our university library or a search engine such as Google Scholar to see what questions have been investigated already and what answers have been found, so that we can identify **gaps** or holes in this body of work.
2	Attempt to explain the phenomena we wish to study.	We now attempt to formulate an explanation of why the event occurs as it does. This systematic explanation of a phenomenon is a **theory** and our specific, testable prediction is the **hypothesis.** We will know if our theory is correct because we have formulated a hypothesis which we can now test.
3	Test the hypothesis.	It goes without saying that if we cannot test our hypothesis, then we cannot show whether our prediction is correct or not. Our plan of action of how we will go about testing the hypothesis is called our **research design**. In the planning stage, we will select the appropriate research method to answer our question/test our hypothesis.
4	Interpret the results.	With our research study done, we now examine the data to see if the pattern we predicted exists. We need to see if a cause and effect statement can be made, assuming our method allows for this inference. More on this in Section 2.3. For now, it is important to know that the statistics we use take on two forms. First, there are **descriptive statistics** which provide a means of summarizing or describing data, and presenting the data in a usable form. You likely have heard of the mean or average, median, and mode. Along with standard deviation and variance, these are ways to describe our data. Second, there are **inferential statistics** which allow for the analysis of two or more sets of numerical data to

		determine the **statistical significance** of the results. Significance is an indication of how confident we are that our results are due to our manipulation or design and not chance.
5	Draw conclusions carefully.	We need to accurately interpret our results and not overstate our findings. To do this, we need to be aware of our biases and avoid emotional reasoning so that they do not cloud our judgment. How so? In our effort to stop a child from engaging in self-injurious behavior that could cause substantial harm or even death, we might overstate the success of our treatment method.
6	Communicate our findings to the larger scientific community.	Once we have decided on whether our hypothesis is correct or not, we need to share this information with others so that they might comment critically on our methodology, statistical analyses, and conclusions. Sharing also allows for **replication** or repeating the study to confirm its results. Communication is accomplished via scientific journals, conferences, or newsletters released by many of the organizations mentioned in Section 1.5.

Science has three *cardinal features* that we will see play out time and time again throughout this book. They are:

1. *Observation* – In order to know about the world around us we must be able to see it firsthand. In relation to behavior modification, if we want to reduce a problem behavior such as a child acting out in class, we must be able to see the child fidget in his seat, distract other children as they work, talk out of turn, show hostility on the playground, throw food at lunch, etc. In Module 4, we will talk about the need to clearly define what this "problem behavior" entails so we know what we need to observe and record.
2. *Experimentation* – To be able to make *causal* (defined as cause and effect) statements, we must be able to isolate variables. We have to manipulate one variable and see the effect of doing so on another variable. In order to stop the child from acting out, a teacher

may use a specific strategy such as giving the child points for behaving that he can later cash in for some coveted prize. The points are part of a system that the teacher can manipulate and the problem behavior is what she is trying to affect. In this case, she is trying to reduce the distracting behavior.

3. *Measurement* – How does the teacher know that her strategy has worked? She can measure how often the child misbehaved before the strategy in terms of the various dimensions of behavior you learned about in Module 1.3. Let's say the child used to act out about 6 times an hour (frequency) for a few minutes at a time (duration) and become really difficult during group work compared to individual work (intensity). With her plan in place, she now measures behavior and notices a significant decline in the distracting behavior. Her plan must be working.

Behavior modification will utilize these features. Remember, behavior is what we do, say, or think and feel, and behavior must be overt or observable. This meets the first cardinal feature of science.

2.1.2. Research Designs Used in Psychology

Step 3 called on the scientist to test his or her hypothesis. Psychology as a discipline uses five main research designs. They are:

1. Naturalistic and Laboratory Observation – In **naturalistic observation**, the scientist studies human or animal behavior in its natural environment which could include the home, school, or a forest. The researcher counts, measures, and rates behavior in a systematic way and at times uses multiple judges to ensure accuracy in how the behavior

is being measured. The advantage of this method is that you see behavior as it occurs and it is not tainted by the experimenter. The disadvantage is that it could take a long time for the behavior to occur and if the researcher is detected then this may influence the behavior of those being observed. **Laboratory observation** involves observing people or animals in a laboratory setting. The researcher might want to know more about parent-child interactions and so brings a mother and her child to the lab to engage in preplanned tasks such as playing with toys, eating a meal, or the mother leaving the room for a short period of time. The advantage of this method over the naturalistic method is that the experimenter can use sophisticated equipment and videotape the session to examine it later. The problem is that since the subjects know the experimenter is watching them, their behavior could become artificial.

2. **Case studies** – Psychology can also utilize a detailed description of one person, or a small group, based on careful observation. In fact, much of the work done in applied behavior analysis involves case studies. The advantage of this method is that you have this rich description of the behavior being investigated but the disadvantage is that what you are learning may be unrepresentative of the larger population and so lacks **generalizability**. Again, bear in mind that you are studying one person or a very small group. Can you possibly make conclusions about all people from just one or even five or ten?
3. **Surveys** – This is a questionnaire consisting of at least one scale with some number of questions which assesses a psychological construct of interest such as parenting style, depression, locus of control, or sensation seeking behavior. It may be administered by paper and pencil or computer. Surveys allow for the collection of large amounts of data

quickly, but the actual survey could be tedious for the participant and **social desirability**, when a participant answers questions dishonestly so that they are seen in a more favorable light, could be an issue. For instance, if you are asking high school students about their sexual activity they may not give an honest answer for fear that their parents will find out.

4. **Correlational Research –** This research method examines the relationship between two variables or two groups of variables. A numerical measure of the strength of this relationship is derived, and can range from -1.00, a perfect inverse relationship meaning that as one variable goes up the other goes down, to 0 or no relationship at all, to +1.00 or a perfect relationship in which as one variable goes up or down so does the other. In terms of a negative correlation we might say that as a parent becomes more rigid, controlling, and cold, the attachment of the child to parent goes down. In contrast, as a parent becomes warmer, more loving, and provides structure, the child becomes more attached. The advantage of correlational research is that you can correlate anything. The disadvantage is that you can correlate anything. Variables that really do not have any relationship to one another could be viewed as related. Yes. This is both an advantage and a disadvantage. For instance, we might correlate instances of making peanut butter and jelly sandwiches with someone we are attracted to sitting near us at lunch. Are the two related? Not likely, unless you make a really good PB&J but then the person is probably only interested in you for food and not companionship. The main issue here is that correlation ***does not*** allow you to make a causal statement.
5. **Experiments –** This is where the experiment comes in since it is a controlled test of a hypothesis in which a researcher manipulates one variable and measures its effect on

another variable. The variable that is manipulated is called the **independent variable (IV)** and the one that is measured is called the **dependent variable (DV)**. In the example about a misbehaving child above, the strategy the teacher came up with is the IV and the distracting behavior that is measured is the DV. The teacher can make a causal statement about her strategy if the hypothesized decrease in behavior occurs. As such, she might say, "When I offered the student points for behaving correctly that were later cashed in for a prize, the student acted out less in class. Hence, my plan led to a reduction in this behavioral excess as hypothesized." A common feature of experiments is to have a **control group** that does not receive the treatment or is not manipulated and an **experimental group** that does receive the treatment or manipulation. It is possible that the teacher had a second student in one of her other sections of the class that acted out in the same way. To know if her points system really works, she would use it with the first student but not with the second. Once her treatment phase ended, she could then compare the control group (the student not given points) against the experimental group (the student given points) to see how much behavior was occurring. We would expect no change in behavior for the control group but a decrease with the experimental group if the points system was effective, and this is what the teacher found. Again, the control group allows the researcher (or teacher) to make a *comparison* to the experimental group which can lead to a causal statement.

2.2. Behavioral Assessment

Section Learning Objectives

- Define behavioral assessment.
- Define target behavior and the forms it may take.
- Clarify why we need to measure behavior.
- Contrast the three phases of behavioral assessment.

Recall that one of the three cardinal features of science is measurement. Within the realm of behavior modification and applied behavior analysis, we talk about what is called **behavioral assessment** which simply is the measurement of a target behavior. The **target behavior** is whatever behavior we want to change, and from Module 1.4 we know that we can have an excess (it needs to be reduced), or a deficit (it needs to be increased).

Why might we need to measure behavior? Three reasons come to mind. First, we need to determine if a treatment is even needed. Maybe the target behavior is not occurring as frequently as we thought it was and so there is no need to try to reduce it. Or maybe we want to increase the number of times we go to the gym each week but discover we already are going three times most weeks and so strategizing to go more often is not necessary. Of course, we might also discover that we smoke more cigarettes in a day than we believed we did, and so reducing the unwanted or problem behavior is even more important.

Assuming a treatment is needed, our second reason to measure behavior will be to determine what treatment will work best. It may be that we wish to include a specific positive consequence for making the desirable behavior but learn through observation and measurement

of behavior that this is something our client, or ourselves, really will not enjoy and so will not motivate behavior.

Finally, we need to know if the treatment we employed worked. This will involve measuring before any treatment is used and then measuring the behavior while the treatment is in place. We will even want to measure after the treatment ends to make sure the behavior sticks. Our measurement therefore occurs during three phases:

- **Baseline Phase** – Before any strategy or strategies are put into effect. This phase will essentially be used to compare against the treatment phase. We are also trying to find out exactly how much of the target behavior the person is engaging in.
- **Treatment Phase** – When the strategy or strategies are being used. We measure across all treatment weeks to see if the target behavior changes in the predicted manner. In Module 15 we will discuss evaluating our plan and making adjustments as needed. Since we are measuring during the treatment phase, we can see if our strategy or a specific strategy within a group of strategies being used does not work. We can remove it, replace it, or change it to bring about the effect on behavior that we hypothesized.
- **Maintenance Phase** – Once the treatment phase has ended we will want to still measure our behavior to ensure that the strategies we used to bring about meaningful behavioral change withstand the passage of time and the influence of temptations in our environment. Let's say our nutritionist gives us a sound strategy that brings about substantial weight loss. We may then reduce our visits and just check in periodically. Without those regular visits to check in we might fall back into bad habits and see our weight rebound, even if just partially. In a follow-up visit, the nutritionist could recommend a return to the full set of strategies or just a few of them until the desirable

behavior and results have been re-established. Hopefully with time, the person will make a lifestyle change that keeps the weight off. Continued measurement after the treatment phase has ended can ensure the obtained success continues.

2.3. Establishing a Functional Relationship and Experimental Designs

Section Learning Objectives

- Clarify what a functional relationship is.
- Outline four major experimental designs used in behavior modification.

As we have discussed already, scientists seek to make causal statements about what they are studying. In the realm of behavior modification, we call this a **functional relationship** and one occurs when we can say a target behavior (DV) has changed due to the use of a procedure, treatment, or strategy (the IV) and this relationship has been replicated at least one other time.

To make a causal statement, we already know that an experimental procedure is required. Within behavior modification, these procedures take on several different forms. In discussing each, note that we will use the following notations:

A will represent the baseline phase and B will represent the treatment phase.

1. **A-B design** – This is by far the most basic of all designs used in behavior modification and includes just one rotation from baseline to treatment phase and then from that we see if the behavior changed in the predicted manner. The issue with this design is that no functional relationship can be established since there is no replication. It is possible that the change occurred due to an unseen and

unaccounted for factor, called an **extraneous variable**, and not due to the treatment that was used.

2. **A-B-A-B Reversal Design** - In this design, the baseline and treatment phases are implemented twice. After the first treatment phase occurs, the individual(s) are taken back to baseline and then the treatment phase is implemented again. Replication is built into this design, allowing for a causal statement, but it may not be possible or ethical to take the person back to baseline after a treatment has been introduced. What if you developed a successful treatment to reduce self-injurious behavior in children or to increase feelings of self-worth? You would want to know if the decrease in this behavior or increase in the positive thoughts was due to your treatment and not extraneous behaviors, but can you really take the person back to baseline? Is it ethical to remove a treatment for something potentially harmful to the person? Now let's say a teacher developed a new way to teach fractions to a fourth-grade class. Was it the educational paradigm or maybe additional help the child has received from his/her parents or a tutor? Well we need to take the child back to baseline and see if the strategy works again, but can we? How can the child forget what has been learned already? ABAB Reversal Designs work well at establishing functional relationships if you can take the person back to baseline but are problematic if you cannot. An example of them working well includes establishing a system to ensure your son does his chores, having success with it, and then taking it away. If the child stops doing chores and only restarts when the system is put back into place, then your system works.

3. **Multiple-baseline designs** – This design has just what it sounds like, multiple baselines, but for one of three scenarios. In an *across-subjects design* there is a baseline and treatment phase for two or more subjects for the same target behavior. In an *across-behaviors design*, there is a baseline and treatment phase for two or more different behaviors the same participant makes. And finally, the *across-settings design* has a baseline and treatment phase for two or more settings in the same person for which the same behavior is measured.
4. **Changing-Criterion Design** – In this design, the performance criteria changes as the subject achieves specific goals. So the individual may go from having to workout at the gym 2 days a week, to 3 days, then 4 days, and then finally 5 days. Once the goal of 2 days a week is met, the criterion changes to 3 days a week. It has an A-B design and rules out extraneous variables since the person continues meeting the changing criterion/new goals using the same treatment plan. Hence successfully moving from one goal to the next must be due to the strategies that were selected.

You will find that your final project in this class will use a changing-criterion design as you will formulate specific goals to achieve and then develop a plan to reach them.

Module Recap

In Module 2, we dove deeper into what science is and how psychology is scientific in its pursuit of an understanding of behavior and mental processes. Our discussion started general, then worked down to specific details about applied behavior analysis and how behavior is measured, how functional relationships are established, and what experimental designs are used to test the validity of our hypotheses.

In Module 3, we discuss why we must be willing to change.

…… **STOP** ……

Throughout this book we will discuss the process of change. Though other books and authors may use a different framework, essentially, the process is the same. It's similar to the scientific method. The steps can be condensed down or expanded upon, but the overall process is the same.

The process of behavior modification we will discuss throughout Modules 3 to 14 are as follows:

Overall Process for Behavior Modification

Planning for Change

1. Identify Target Behavior – Module 2
2. Pros and Cons Analysis with Self-Efficacy – Module 3
3. State behavioral definition – Module 4
4. Establish goals and criterion – Module 4
5. Determine plan to record data – Module 5
6. Conduct a baseline phase and functional assessment, to include an identification of temptations – Module 5
7. Identify strategies – Modules 6-9 for an overview of the strategies and Module 10 for strategy selection
8. State plan rules, identify potential mistakes, and develop a behavioral contract – Module 11

Implementation and Behavior Change

9. Implement the plan and collect data as you go - Treatment phase – Module 12
10. Re-evaluate the plan and see if it is working. Make adjustments as needed – Module 13
11. Once you have achieved your final goal move to maintenance phase. Engage in relapse prevention – Module 14

Without further ado, let's begin to explore how to bring about positive behavioral change.

Part II. Planning for Change

Part II. Planning for Change

Module 3:

A Willingness to Change

Module 3: A Willingness to Change

Module Overview

You might have a target behavior in mind that you want to change. The success of any treatment plan hinges upon our dedication and strong desire to make the change. Without this, we will either fail at the plan or relapse in the future. To help us figure out how willing we are to make the change we will discuss the pros and cons of changing or staying the same and self-efficacy.

Module Outline

3.1. Thinking About Changing

3.2. Pros and Cons of Making Change

3.3. Self-Efficacy

Module Learning Outcomes

- Clarify stages people go through when deciding to bring about behavior change.
- State the utility of a pros and cons analysis.
- Clarify the role of self-efficacy in behavior change.

3.1. Thinking About Changing

Section Learning Objectives

- Explain Prochaska et al.'s (1995) process of change.

Prochaska, Norcross, and DiClemente (1995), in their book, *Changing for Good*, state that "Change is unavoidable, part of life. Few changes are under our control. But some things we can intentionally change." Knowing when to change is key because if you are not ready, you will inevitably fail. Likewise, if you spend too much time trying to understand your problem you might put off change indefinitely. Change unfolds through a series of six stages and successful self-changers follow the same road for each problem they desire to modify. These stages include: precontemplation, contemplation, preparation, action, maintenance, and termination. Let's look closely at each.

3.1.1. Precontemplation Stage

This is when the person is not considering making a change and even resists the idea. Control of the problem is shifted to outside the person and they do not want to be nagged about the problem from family and friends. The individual even denies responsibility for the problem and justifies the behavior.

Prochaska, Norcross, and DiClemente (1995) suggest the individual answer the following questions to help them see the difference between problem behaviors and lifestyle choices:

- Do you discuss your behavior pattern?
- Are you well informed about your behavior?

- Are you willing to take responsibility for the consequence of your behavior?

Individuals move out of the precontemplative stage when they realize that their environment no longer supports their unhealthy lifestyle, when there is social pressure to make the change, or they receive direct requests from others such as employers.

3.1.2. Contemplation Stage

This is when change is seriously considered, but within a vague timeframe of the next six months. Many people stay stuck in this stage for a long period of time due to a fear of failure and so they postpone and procrastinate. We have made the decision to change, but only "when the time is right." (Of course, we all know there is no such time.) We also engage in wishful thinking and desire to live as we always have but with different consequences such as eating what we want and not gaining any additional weight.

The authors state that you know you are ready to move on when your focus is on the solution and not the problem. We need to engage in consciousness-raising by asking the right questions such as understanding how many calories we really need to consume each day or what the effects of smoking are on the body and how long it will take to recover from them, if we can at all. We might also set goals, collect data, and do a functional assessment. In any case, it is critical to engage in this task during the contemplation stage as it helps us to be more aware of our problem behavior, understand how our thoughts and feelings maintain it, and start to really believe in the importance of changing it (Prochaska, Norcross, and DiClemente, 1995).

You can even engage in a process of self-reevaluation, which if successful, will show that your fundamental values are in conflict with the problem behavior. We might assess how unhappy we are with the habit or behavior in the present, and then engage in an appraisal of our

happier, healthier changed selves in the future. We could also think before we act especially with problems involving overeating, smoking, or drinking; create a new image of a changed you; and evaluate the pros and cons of changing, which we will discuss in Section 3.2.

3.1.3. Preparation Stage

This is when the person gets ready to change within the next month. Make your intention to change public and develop a firm, detailed plan for action. In terms of the plan, be specific about what steps you will take to solve the problem. Commitment involves a willingness to act and a "belief/faith in your ability to change" which we will discuss in Section 3.3. Engage in social support also at this time, even if you decide not to make your plan for change public.

3.1.4. Action Stage

Now fully committed to change, we enter the action stage. This requires a great deal of time, energy, and sacrifice; and we must be aware that the action stage is "not the first or last stop in the cycle of change." The action stage lasts for months and involves being aware of potential pitfalls we may encounter. We discuss this in Module 11 in relation to temptations and mistakes.

It is during this stage we engage in the process of change called *countering*, or substituting a problem behavior with a healthy behavior. Of course, all we may do is substitute one problem behavior for another but to minimize that possibility, we could engage in active diversion by keeping busy or refocusing energy into an enjoyable, healthy, and incompatible activity. We might exercise, relax, counterthink by replacing troubling thoughts with more positive ones, or be assertive if others in your life are triggering the problem behavior. Though

resisting temptation is an accomplishment, it is not reward enough, and so we need to be rewarded when we counter, exercise, relax, counterthink, or be assertive. Helping relationships are also important to make our success more likely. We will cover many strategies in Modules 6-9 so keep this discussion in the back of your mind until then.

3.1.5. Maintenance Stage

This is when change continues after the first goals have been achieved. To be successful, your change must last more than just a few days or months. It should last a lifetime. To be successful at maintenance Prochaska, Norcross, and DiClemente (1995) state that you should have long-term effort and a revised lifestyle. Relapse is a possibility if you are not strongly committed to your change.

How do you maintain your positive gains? Stay away from situations or environments that are tempting. Our former problems will still be attractive to us, especially in the case of addictive behaviors. What threatens us most are "social pressures, internal challenges, and special situations." In terms of internal challenges, the authors state that these include overconfidence, daily temptation, and self-blame. Creating a new lifestyle is key too. If we are under a great deal of stress, exercise or practice relaxation techniques instead of engaging in our former behavior of comfort eating or drinking alcohol.

3.1.6. Termination Stage

This is when the ultimate goal has been achieved but relapse is still possible. Actually, Prochaska, Norcross, and DiClemente (1995) note that, "Recycle is probably a more accurate and compassionate term than relapses. Recycling gives us opportunities to learn." How so? They

note that people pass through the stages not in a linear fashion but more in a spiral. It may seem like we are not making progress, but the spiral is ever pushing upward. Also, few changers ever terminate the first time around unless they have professional help or a clear understanding of the process of change. The authors have several other key recommendations for avoiding relapse/recovery which we will cover in detail in Module 16.

See also: McConnaughy, DiClemente, Prochaska, and Velicer (1989) and Prochaska and DiClemente (1992)

So how do you know which stage you are in? Take a look at the following list and find the first statement that is true for you. This indicates which stage you are currently in.

1. I solved my problem more than six months ago. (Maintenance stage)
2. I have taken action on my problem within the past six months. (Action stage)
3. I am intending to take action in the next month. (Preparation stage)
4. I am intending to take action in the next six months. (Contemplation stage)
5. I am not intending to take action in the next six months. (Precontemplation stage)

(Statements adapted from questions created by Prochaska, Norcross, and DiClemente (1995))

What were your results? Is this surprising to you?

Now let's discuss the stages of change Prochaska, Norcross, and DiClemente (1995) refer to on a deeper level. Of course, a slightly different framework will be used in this book, but as

you will come to see, it largely reflects the process of change model these authors proposed over two decades ago.

3.2. Pros and Cons of Making Change

Section Learning Objectives

- Clarify the importance of weighing the pros and cons against one another.
- Apply pros and cons to your own attempt at behavior modification.

Thinking may come with the best of intentions but doing is what really counts. We know this as the cliché, “Actions speak louder than words." So how might you get to the action period? One technique is to weigh the pros and cons of any decisions involving the target behavior.

First, start by discussing the pros and cons of **not changing** the behavior. If we continue doing things exactly as we have so far, what would happen? If our goal is to reduce a problem behavior, consider that we have engaged in the behavior (i.e. smoking, playing video games instead of studying, acting out) because it gives us some benefit. We will learn in Module 6 that these are called reinforcers and they continue the behavior. For our purposes now, they are the pros of not changing. But because they are a problem, they cause bad things to happen too. These are the cons. What if our goal is to increase a desirable behavior instead of decreasing a problem one? We do not engage in the desirable behavior because some other behavior is more attractive or we just have not motivated ourselves enough to do so. There are also cons for leaving the behavior as is and pros of changing it.

Once we have dealt with not changing the behavior, we need to move to the pros and cons of changing the behavior. This discussion should be addressed in a short-term, long-term fashion. In either case, good things (pros) will come from making the change but there are negatives ramifications as well (cons). Some of these will happen right away or in a very short term while others may take years to occur.

Use the following table when addressing your pros and cons. Notice that there are three spots under each category to list the pros or cons. You could conceivably list far more than three for some, but also less than three for others. It all depends on your target behavior. Do research. There is nothing wrong with finding reasons you might not be aware of for changing your behavior or the consequences of not changing.

Table 3.1. Pros and Cons of Not Changing and Changing Behavior

Pros of Not Changing Behavior*	**Cons of Not Changing Behavior***
1.	1.
2.	2.
3.	3.
Short -Term Pros of Changing Behavior	**Short -Term Cons of Changing Behavior**
1.	1.
2.	2.
3.	3.
Long -Term Pros of Changing Behavior	**Long -Term Cons of Changing Behavior**
1.	1.
2.	2.
3.	3.

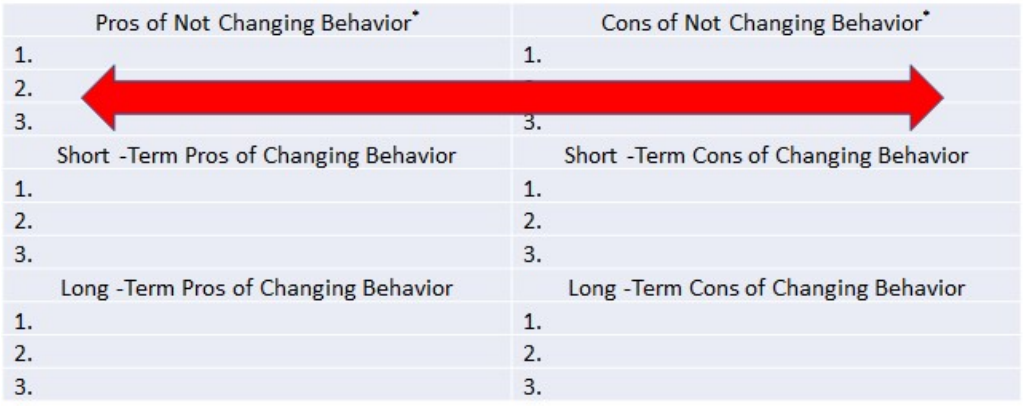
* To be clear, for <u>not</u> changing, you are asking yourself the following:

- Pros - What is good about keeping things as they are now?
- Cons - What is bad about keeping things as they are now?

Changing our behavior benefits us, but likely comes at a cost. The key question is whether the benefits outweigh the costs. So, it is a good idea to not only make your list, but to analyze it too. To do this, use the following three <u>analyses</u>:

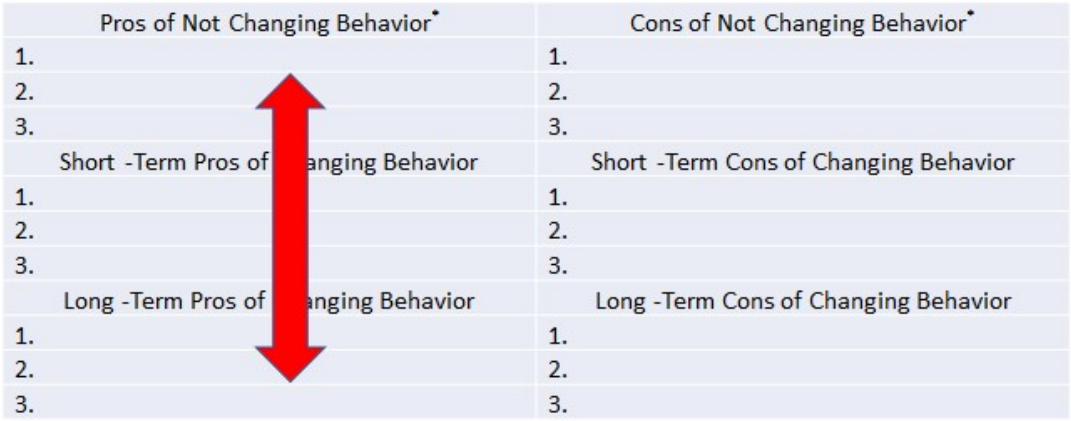
1. **Weigh the pros of not changing against the cons of not changing**. Ideally, the cons outweigh the pros opening the door for change. Be clear that you understand what this means. Consider the target behavior of adding exercise to your daily routine, which means you do not work out now or do so very little. The pros of not changing have you consider what the benefits of *not* working out are for you. The cons consider what is bad about *not* working out for you. The direction of analysis will look like the following:

Figure 3.1. Analysis 1 – Pros of Not Changing vs. the Cons of Not Changing Behavior



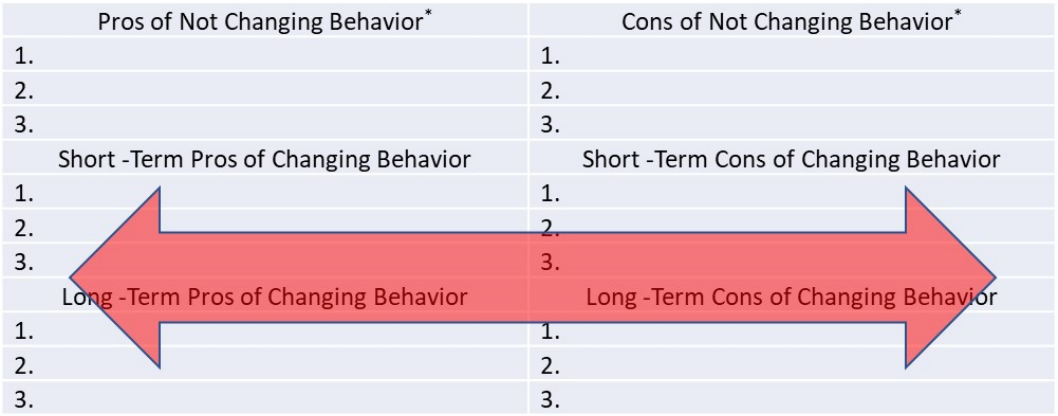
2. **Weigh the pros of not changing against the short and long-term pros of changing the behavior**. Ideally, the pros of change win out. In our example, compare what is good about *not* working out versus what is good about working out. The direction of analysis will look like the following:

Figure 3.2. Analysis 2 – Pros of Not Changing vs. Pros of Changing Behavior



3. **Weigh the short and long-term pros of changing against the cons of changing**. Again, the pros will hopefully win out. With our example, we are concerned about the benefits of working out versus the drawbacks of working out. The direction of analysis will look like the following:

Figure 3.3. Analysis 3 – Pros for Changing vs. Cons of Changing Behavior



When doing the ***total analysis***, one of three outcomes will occur. Use Table 3.2 to help you figure out which outcome is the correct one.

Table 3.2. Determining the Outcome of Your Total Analysis

Analysis #	**Which side won? Put an X on the appropriate line.**	
1	_____ Pros of Not Changing	____ Cons of Not Changing
2	_____ Pros of Not Changing	_____ Pros of Changing
3	_____ Pros of Changing	____ Cons of Changing

1. The cons of changing outweigh the pros of changing (Analysis 3) and/or the pros of not changing are greater than the pros of changing (Analysis 2) – In this case, you will remain in the precontemplative stage and not consider making any change.
2. The pros and cons are even (for both not changing and changing; Analyses 1 and 3). In this case, you will likely stay in the precontemplative or contemplative stages. You might even flirt with the preparation stage.

3. The pros of changing outweigh the cons of changing (Analysis 3) or the pros of not changing (Analysis 2) – In this case you might move to the action stage, and later maintenance and termination.

NOTE: It is important that you understand that this is not a mere numbers game. Having three items under pros and three under cons does not mean that the outcome of a particular analysis yields what is described in #2 above. Also, having 10 cons and 2 pros does not mean that cons win out. You should do the analyses and then interpret them so that you can weigh each of the pros and cons you come up with. It may be that the cons, though greater in number, are really minor points, and the smaller number of pros have much more merit and weight. As such, pros win out and cons lose (or cons win out over pros for the not changing analysis).

If this is still confusing for you, the following examples should help.

Example 1: Target Behavior – Running (Behavioral Deficit)

Exercise and its benefits seem obvious. Right? Exercise helps us with weight management, boosts energy, combats some diseases such as Alzheimer's disease, builds our self-esteem, improves body image, makes our skin look better, and helps us recover from a major illness. But did you know that it also improves our mood, helps us manage stress, helps us sleep better, lifts depression, may make us age slower, can spark our sex life, and can be fun and help us to socialize with friends? Of course, exercise is not cheap if you choose to go to a gym or athletic club, but you can also exercise for free by just walking outside every day. So let's examine the pros and cons of exercising more closely.

Table 3.3. Pros and Cons of Not Changing and Changing Running Behavior

Pros of Not Changing Behavior*	**Cons of Not Changing Behavior***
1. I do not get sore.	1. I do not improve my cardiovascular fitness.
2. More time to do fun activities or homework.	2. I become a couch potato and could gain weight.
3. I do not have to buy special shoes.	3. I cannot bond with other runners.
Short-Term Pros of Changing Behavior	**Short-Term Cons of Changing Behavior**
1. Get up and get out into nature (if running outside) or get to the gym and around other people (if using the treadmill or an indoor track).	1. Muscle soreness.
2. Spend time with friends or family who run.	2. Will be winded at first and may not be able to run for a long time.
3. My cardiovascular fitness will improve and I could lose weight.	3. Need to buy shoes which can be very expensive.
Long-Term Pros of Changing Behavior	**Long-Term Cons of Changing Behavior**
1. I can run a marathon in the future.	1. Wear and tear on my body.
2. I establish a healthy habit that I enjoy.	2. Could develop an injury.
3. Bonding with other runners or joining a running club.	3. Could develop an exercise addiction.

Analyses:

- 1 - Pros of not changing against the cons of not changing – I can save money on shoes and can stay limber, but of course, I am not getting in shape and losing unnecessary weight.
- 2 – Pros of not changing against the short and long-term pros of changing – Though I am not sore I will never be in shape and cannot take finishing a

marathon off my bucket list. The time I spend running, which does take away from homework (or video games) is well-spent.

- 3 – Short and long-term pros of changing against the cons of changing – Though shoes do cost a lot, they will help me with correct posture and protect my feet and back when running. I also get to spend time with my significant other who loves to run. And my bestie does too. I just need to protect against injury and addictive behavior.
- Total - All-in-all, running is better than not running. How do we know this? Take a look at the table below and compare it to the outcome descriptions above.

Table 3.4. Determining the Outcome of Your Total Analysis - Running Behavior

Analysis #	**Which side won? Put an X on the appropriate line.**	
1	_____ Pros of Not Changing	**X** Cons of Not Changing
2	_____ Pros of Not Changing	**X** Pros of Changing
3	**X** Pros of Changing	____ Cons of Changing

Example 2: Target Behavior – Quitting Smoking (Behavioral Excess)

According to the Centers for Disease Control and Prevention (CDC), in 2011, nearly 7 in 10 adult cigarette smokers wanted to quit smoking and 42.7% made an attempt within the past year. The CDC also points out that in fiscal year 2017, states will collect an astounding $26.6 billion from tobacco taxes and legal settlements. Of this only $491.6 million, or less than 2%, will be spent on prevention and cessation programs. Only Alaska and North Dakota fund these programs at the CDC's recommended level while Oklahoma provides only half the recommended funding. Connecticut and New Jersey provide no funding. They write, "Spending less than 13% (i.e., $3.3 billion) of the $26.6 billion would fund every state tobacco control program at CDC-recommended levels." Each day, an estimated 3,200 minors (under the age of 18) smoke their first cigarette and 2,100 occasional youth and young adult smokers become daily smokers. What's at risk? Smoking leads to cancer, heart disease, emphysema, tuberculosis, rheumatoid arthritis, lung diseases, diabetes, and chronic obstructive pulmonary disease (COPD). (Source: https://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts/). So there is a definite need for smokers to kick the habit. Let's examine the pros and cons more closely.

Table 3.5. Pros and Cons of Not Changing and Changing Smoking Behavior

Pros of Not Changing Behavior*	**Cons of Not Changing Behavior***
1. I get extra breaks at work.	1. I smell really bad.
2. Many of my friends smoke.	2. Cigarettes are expensive.
3. I enjoy the way it makes me feel.	3. Winter – it is really cold and I have to go outside.
Short -Term Pros of Changing Behavior	**Short -Term Cons of Changing Behavior**
1. Immediate health effects such as heart rate dropping, carbon monoxide levels decreasing, risk of coronary artery disease drops, smell and taste improves, etc.	1. Need to find something to do with my hands.
2. Save a lot of money and no cold weather.	2. No social smoking with friends.
3. Smell much better.	3. No extra breaks at work.
Long -Term Pros of Changing Behavior	**Long -Term Cons of Changing Behavior**
1. Save a lot of money, especially the longer I have quit.	1. No extra breaks at work.
2. Exercise is easier to do.	2. No social smoking with friends.
3. Health increases and less at risk of a stroke or lung cancer.	3. No cigarettes to help deal with anxiety or stress.

Analyses:

- 1 - Pros of not changing against the cons of not changing – The extra breaks and support from my friends is good, but my significant other does not like the way I smell and I always have to try and hide the scent with perfumes or body sprays. The cost of cigarettes is really tough since I am a college student.
- 2 – Pros of not changing against the pros of changing – Though I get some social benefits, I prefer to live a full life. And the treadmill kills me.

- 3 –Pros of changing against the cons of changing – Saving money, living longer, and smelling better definitely outweigh the trivial social benefits. And hey, there is always gum and stress balls to keep my mouth and hand busy.
- Total - All in all, quitting smoking is better than continuing to smoke. How do we know this? Take a look at the table below and compare it to the outcome descriptions above.

Table 3.6. Determining the Outcome of Your Total Analysis – Cigarette Smoking Behavior

Analysis #	**Which side won? Put an X on the appropriate line.**	
1	_____ Pros of Not Changing	**X** Cons of Not Changing
2	_____ Pros of Not Changing	**X** Pros of Changing
3	**X** Pros of Changing	____ Cons of Changing

Bear in mind, that even with all the right reasons, a person may still not engage in change. They might stay in the contemplation or preparation periods and not move to the action period. Also, the road to change is long and hard and the person will likely relapse along the way before making lasting change (Prochaska and DiClemente, 1992). This is why patience truly is a virtue and persistence is needed.

Prochaska, Norcross, and DiClemente (1995) state, “Preparation for change lies in the balance between your perception of the pros and cons of changing. In the precontemplation stage, you are likely to perceive the cons of changing as outweighing the pros. You will need to increase your pros of changing twice as much as you need to decrease the cons. The Processes of Change applied in the early stages have the greatest impact on the pros. The Processes of Change applied in the preparation and action stages have the greatest impact on the cons.” Think about

what these last two sentences mean before moving on. Take a look at the information on the six states again if you need to.

3.3. Self-Efficacy

Section Learning Objectives

- Define self-efficacy.
- Contrast those high and low in self-efficacy.
- Clarify how self-efficacy affects the success of a behavior modification plan.

Change is not easy and the more change we have to make, the more difficult or stressful. This is where Albert Bandura's concept of self-efficacy (Bandura, 1982, 1986, 1991a, 1991b) comes in.

> **Self-efficacy** is our sense of self-esteem and competence and feeling like we can deal with life's problems.

Self-efficacy includes our beliefs about our ability to complete a task and affects how we think, feel, and motivate ourselves. When our self-efficacy is high, we feel like we can cope with life events and overcome obstacles. Difficult tasks are seen as challenges and we set challenging goals. In contrast, if it is low, we feel hopeless, helpless, and that we cannot handle what life throws at us. We avoid difficult tasks and throw in the towel quickly when things get tough. These individuals are easily depressed and stressed.

Consider this in relation to how successful we might be with achieving our goal of changing an unwanted behavior or establishing a positive behavior. The pros and cons of changing the behavior, if weighing heavier on the side of making a change, give us the motivation or desire to make a change. But having the desire does not mean that change will occur. We must also have the ability, and possibly more importantly, we must believe we can make the change. The change itself is the obstacle to overcome and is challenging for us. If it was not, we would have made the change already. Those high in self-efficacy will be more likely to move from the action stage to maintenance and termination of the treatment plan compared to those low in self-efficacy.

An example will hopefully help you to understand the relationship between willingness and ability. In terms of losing weight, many people genuinely desire to shed unwanted pounds. So they have engaged in a pros and cons analysis and the pros won out. But many do not understand how to lose weight in terms of making sense of caloric intake, the impact of specific foods they eat, consumption of sugars and protein, the role of sleep and water intake, etc. Armed with this knowledge they can be successful. Their ability would match their desire to make change. But many do not know these important facts and so lose some weight early on but then stagnate and give up. Losing the pounds is motivational or reinforces the weight reduction behaviors being used, leading to continued commitment to the plan. But when weight loss stagnates, we become frustrated and return to the behaviors that caused the problem in the first place.

Module Recap

In Module 3, we discussed a willingness to change from the perspective of DiClimente's process of change and an analysis of the pros and cons of changing or staying the same. We also discussed self-efficacy and how believing in ourselves will make success more likely. Of course, success is never guaranteed, and everyone makes mistakes or gives in to temptation. These lost battles do not mean the war is lost though.

In Module 4, we will continue our discussion of planning for change by taking our target behavior and giving it a precise definition. We will also discuss the importance of goal setting and challenges with doing so.

Part II. Planning for Change

Module 4:

Defining the Behavior and Setting Goals

Module 4: Defining the Behavior and Setting Goals

Module Overview

As we have seen, to change behavior, we must know what the behavior is that we want to change, whether it is going to the gym more often, removing disturbing thoughts, dealing with excessive anxiety, quitting smoking, preventing self-injurious behavior, helping a child to focus more in class, taking our dog for a walk, gaining the courage to talk to other people, etc. We must be willing to make the change, for our own reasons, and listing the pros and cons of changing the behavior can help us out. Now we move to generating a description of the behavior which must be precise and unambiguous. Once we have clearly defined the behavior, we can then set goals to help us make the desired change. The definition and goals work hand-in-hand as we develop our treatment plan.

Module Outline

Module Learning Outcomes

- Clarify what a behavioral definition is and why it is important to applied behavior analysts.
- State the importance of setting clear goals in terms of what behavior you want to change.
- Count behaviors using the behavioral definition and your goals.

4.1. Behavioral Definitions

Section Learning Objectives

- Define and exemplify behavioral definition.
- Practice writing behavioral definitions for some of the behaviors on Planning Sheet 1.
- Write a behavioral definition for your own behavior to be changed.
- Explain how a behavior definition is like an operational definition.

If you are wanting to engage in behavioral change now, you likely already selected a behavior that you would like to either increase or decrease. It is critical to clearly define what the behavior is. In behavior modification, we call this a behavioral definition.

> A **behavioral definition** is a precise, objective, unambiguous description of the target behavior or a competing behavior.

Our behavior may be an *excess* and something we need to decrease or a *deficit* and something we need to increase. No matter what type of behavior we need to change, we must state it with enough precision that anyone can read our behavioral definition and be able to accurately measure the behavior when it occurs. Let's say you want to exercise more. You could define it as follows:

- 1 behavior = going to the gym and using a cardio machine (elliptical, treadmill, or stationary bike) for 20 minutes.

Okay, so if you went to the gym and worked out for 40 minutes, you would have made 2 behaviors. If you went to the gym for 60 minutes, you made 3 behaviors. What if you went to the

gym for 30 minutes? Then you made 1.5 behaviors, correct? No. It does not make sense to count half a behavior.

Here are sample behavioral definitions for some of the pre-approved behaviors from Planning Sheet 1:

- Eating more fruits – 1 behavior = eating a single piece of fruit
- Pleasure reading – 1 behavior = reading 5 pages of a novel
- Using relaxation techniques – 1 behavior = meditating for 10 minutes
- Doing household chores – 1 behavior = cleaning one room in my apartment (kitchen, bathroom, living room, or bedroom)
- Quitting smoking – 1 behavior = smoking 1 cigarette

Keep your behavioral definition simple. Don't make it reflect whatever your end goal will be, discussed in section 3.2. For instance, if your overall goal is to run for 60 minutes, do not make your behavioral definition to be 1 behavior = 60 minutes of running. Since we do not count partial behaviors, you will show no behaviors made until you finally reach 60 minutes of running. How low should you go then? If 60 is too high, do you define it as 1 behavior = 1 minute of running? Likely not. Think about what is the least amount of time you would run. If it is 5 minutes, you could set it at 1 behavior = 5 minutes of running. Then if you run 30 minutes you would have made 6 behaviors. If instead you set it at 1 behavior = 20 minutes of running, you can only count 1 behavior and the other 10 minutes are unaccounted for. Think about what denomination of time is most practical for your situation and where you are starting out at. If you have never run before, a smaller increment of time might be better. If you run 30 minutes a few

days per week and want to simply double your time, then you could use a greater increment such as 10, 15, or 20 minutes.

It is prudent to create behavioral definitions for the target behavior but also any competing behaviors that may occur. If we want to go to the gym more often, we might discover when examining our antecedents that playing games on our phone in the morning or talking to our roommate in the afternoon leaves us with not enough time to work out. We would then define this **competing behavior**, or a behavior which interferes with the successful completion of a target behavior, and then when developing our plan, implement strategies that make the distractor less, well, distracting.

Before we move on to goals, it is important to point out that you likely know the concept of a behavioral definition on some level. In your introductory psychology course, or your research methods class, you should have talked about the *operational definition* which is a precise definition of all variables being studied. What if we were studying depression in our sample of college students? We might define it as how well the person holds down a job, class attendance, what the DSM 5 indicates, their own self-report about depressive thoughts, or physiological measures. The definition we use depends on the research question that is asked, and the group being studied. In any event, a behavioral definition is basically an operational definition applied to behavior modification procedures.

KEY POINT - The target behavior is what you want to change (the DV) and the behavioral definition says how you will measure it (remember, the DV is the variable that is measured). We will also use this definition to count behaviors later, which will help us to graph our results or run statistical analyses.

4.2. Goal Setting

Section Learning Objectives

- Define goal.
- List interesting features of goals.
- Describe properties of goals and how they relate to behavior modification.
- Differentiate proximal and distal goals.
- Exemplify how proximal and distal goals are used in behavior modification.
- Clarify how a criterion is used to move from one goal to the next.

4.2.1. What are Goals?

Once you have an idea of exactly what the behavior is you want to change, the next task is to set goals about the behavior. But what exactly is a goal?

> A **goal** is an objective or result we desire that clearly indicates how our time and physical and psychological energy will be spent.

For you as a student, the goal is to obtain your bachelor's degree. You spend your time and energy studying, going to classes, writing papers, asking questions, and much more. After four years, you will be happy to take your diploma, which is what motivates you. You might even be driven to obtain the highest grades you can get to be competitive when you hit the job market or apply to graduate school.

4.2.2. Features of Goals

Goals have several interesting features. They can be *large in scope*. Obtaining the bachelor's degree is a relatively large goal but if your terminal educational goal is to earn your Ph.D., then this is even larger in scope. Reading for pleasure is likely a small goal but losing 100 pounds is large and will take much more dedication. Goals can be *complex* and take *planning* to achieve. This is definitely the case with behavior modification. Even if you want to do something as simple as read for pleasure, you might have to implement quite a few additional changes in your life to make that happen. Obtaining a degree is complex and requires a great deal of planning and coordination with people like your major professor or adviser. Goals are more likely to be completed when they are linked to *incentives*. If your goal is to lose 100 pounds, reward yourself as you hit various milestones along the way. And finally, you can have *more than one goal at a time*. Maybe your goal is to exercise more and to restrict your calories. Or maybe you want to run both longer and faster (measures of frequency and intensity).

A few other properties of goals are worth mentioning here:

- The more *difficult* the goal, the more rewarding it is when we achieve it.
- Goals can be *ranked* in order of importance and higher-level goals have more value to us when achieved.
- The more *specific* the goal, the better our planning can be, and the more likely that we will achieve the goal.
- Goal *commitment* is key and if you want to make it more likely that you will achieve your goal, publicly announce the goal (Salancik, 1977). Commitment tends to be higher when the goal is more difficult too.

- If you *fail* at a goal, you can either try again, quit and move on, reduce the level of the goal, or revise the goal.

Another option to overcome goal failure might be to consider the use of **subgoals**, or waypoints toward the final goal. This leads to a discussion of distal vs. proximal goals. **Distal goals** are far off in the future whereas **proximal** are nearer in time. Go back to the example of changing our behavior such that we run for 60 minutes at a time 3 days a week (our distal goal). We will likely not start running 60 minutes, especially if we never ran a day in our life (except of course to the bathroom in times of crisis…enough said). We might create three additional goals of running for 15 minutes continuously 2 days a week, then running for 30 minutes continuously 3 days a week, and then running for 45 minutes continuously 3 days a week. Since we had not ran regularly in the past, we are changing duration and frequency in this scenario. Frequency goes from 2 to 3 days but note it may even be prudent to start at one day a week. Then our duration goes from 15 to 30 to 45 to 60 minutes. What is 4 goals in this scenario can expand to as many as we need to achieve our goal. Maybe another goal or two is needed (i.e. more proximal goals or steps along the way), and time will tell. As we achieve each proximal goal we should reward ourselves in some way (an incentive) and then of course we could use a bigger reward after the completion of the distal goal.

4.2.3. Criterion

But how do we know when to advance from one goal to the next? The specific "trigger" for when to advance from Goal 1 to Goal 2 is called the **criterion** and is linked to the changing-criterion design from Module 2.3. Our first goal states that we will run for 15 minutes 2 days a week. Achieved! When do we move to running 30 minutes for 3 days a week? That depends on the behavior we are trying to change. In exercise related projects or plans, it is prudent to make sure you can truly engage in that level of behavior for at least two weeks. Listen to your body, a trainer, or doctor, and then move to the next goal when it is safe to do so. For other projects such as pleasure reading, you could move to the next goal as soon as the current goal has been achieved. There is no need to wait as no serious harm can come from increasing the number of pages you read a night from 5 to 10, other than a few minutes of lost sleep.

This may lead you to wonder what length of time a goal should be maintained for. If I want to run three days a week, and do so Mon to Wed, can I move to my next goal starting Thursday? No. Frame your goals around one week at a time. So if you want to run three days a week, and finish your third day on Friday, then your second week of the current goal or first week of the next goal starts on Monday (if you define weeks as Monday through Sunday as we often do in academia). Otherwise, you could be pushing through goals too fast and not allowing yourself time to adjust. Though you are excited to bring about behavior change, if you do it too fast you might burn out and ultimately fail. On the other hand, moving too slow will create boredom. Find the right number of weeks to maintain each goal that is best for you. And this criterion might vary too. Earlier goals are likely easier to achieve than latter goals and so your criterion could be

shorter for them (say 1 week) and longer for harder goals (say 2 weeks). Consider this when determining your criterion.

4.3. Counting Behaviors

Section Learning Objectives

- Explain how to count behaviors in your goals using the behavioral definition.

Keep in mind that the behavioral definition IS NOT a goal. It simply defines how you will count the target behavior, which is your dependent variable (DV).

4.3.1. Possibility 1: Duration

If your behavioral definition is 1 behavior = reading 5 pages in a book, and you read 15 pages, then you made 3 behaviors that day. If you read 20 the next day you made 4 behaviors, and then if you only read 10 pages the next you made 2 behaviors. If you read 12 pages, you still only made 2 behaviors. There are no partial behaviors (i.e. not 2.4 behaviors).

This links to your goals such that if you ultimately want to read 30 pages a night, 5 nights a week, then you will make 30 behaviors a week by the end of your plan. Where did 30 come from? One behavior = 5 pages of reading. If you read 30 pages a night, you are making 6 behaviors (30/5=6) per night. Since you want to read 30 pages a night for FIVE nights, you are making 30 total behaviors (6 behaviors a night x 5 nights = 30 total behaviors). Your subgoals or proximal goals could be as follows:

- Goal 1 - Read 15 pages a night, for 5 nights (15 behaviors)
- Goal 2 - Read 20 pages a night, for 5 nights (20 behaviors)
- Goal 3 - Read 25 pages a night, for 5 nights (25 behaviors)
- Distal Goal - Read 30 pages a night, for 5 nights (30 behaviors)

In this example, you are not changing the frequency (it is set at 5 nights) but are changing the duration (albeit indirectly). Reading 15 pages does not take as long as reading 20 pages, assuming your reading speed remains the same, and so it is sort of like assessing time.

4.3.2. Possibility 2: Frequency

But what if you can read 30 pages at a time now, and are having trouble reading 5 days a week? So duration is good but frequency is not. In this case, your goals look like:

- Goal 1 - Read 30 pages a night, for 2 nights (12 behaviors)
- Goal 2 - Read 30 pages a night, for 3 nights (18 behaviors)
- Goal 3 - Read 30 pages a night, for 4 nights (24 behaviors)
- Distal Goal - Read 30 pages a night, for 5 nights (30 behaviors)

Keep in mind the basic math that allowed us to arrive at those behavioral counts. For Goal 1, and all goals, you are making 6 behaviors a night. Why? 30/5 = 6. Remember that your behavioral definition was reading 5 pages. Then it is 6 behaviors a night x 2/3/4/5 nights to arrive at 12, 18, 24, and 30 behaviors, respectively.

4.3.3. Possibility 3: Frequency, again

Consider this now: 1 behavior = reading one night for 30 minutes. You might already be reading 30 minutes a night but want to increase the number of days, sort of like in my previous example. Duration is good but frequency is not. So:

- Goal 1 - Read for 30 minutes, 2 nights a week (2 behaviors)
- Goal 2 - Read for 30 minutes, 3 nights a week (3 behaviors)
- Goal 3 - Read for 30 minutes, 4 nights a week (4 behaviors)
- Distal Goal - Read for 30 minutes, 5 nights a week (5 behaviors)

The math - Reading one night for 30 minutes is one behavior and then times either 2/3/4/5 days which equals 2/3/4/5 behaviors, respectively.

4.3.4. Possibility 4: Duration, again

What if you are good about reading throughout the week but want to increase the time you spend reading? Now frequency is fine but duration is not. Your behavioral definition will be one behavior = reading for 10 minutes and your goals will be as follows:

- Goal 1 - Read for 10 minutes, 5 times a week (5 behaviors)
- Goal 2 - Read for 20 minutes, 5 times a week (10 behaviors)
- Distal Goal - Read for 30 minutes, 5 times a week (15 behaviors)

The math - Reading for 10 minutes was the behavioral definition and is one behavior. If you read for 20 minutes you are making 2 behaviors. If you read for 30 minutes you are making 3 behaviors. Multiple these numbers by 5 (number of days) to get the number of behaviors.

4.3.5. Possibility 5: Intensity

Now let's get really crazy. What if duration and frequency are good, but you want to increase your reading speed, which is the behavioral dimension of intensity. How might you go about doing this? Well, the idea is that you can read more pages in a fixed amount of time. Since your progress will be slower than with the other examples, make your behavioral definition: 1 behavior = reading 1 page in a book. As for goals, well, this one is hard to do. Start with a set period of time such as reading for 10 minutes. You will need baseline data on what your reading rate is before implementing any treatment plan or making a conscientious effort to read faster. Say it is one page per minute. In 10 minutes, you will be making 10 behaviors. You want this to go up. If it does, it means you are reading faster. So:

- Goal 1 - Read 12 pages in 10 minutes (12 behaviors)
- Goal 2 - Read 13 pages in 10 minutes (13 behaviors)
- Goal 3 - Read 14 pages in 10 minutes (14 behaviors)
- Distal Goal - Read 15 pages in 10 minutes (15 behaviors)

At baseline you were reading 10 pages per minute and by completion of the distal goal you are reading 15 pages in 10 minutes which is a 50% faster rate. Of course, you could double your reading rate too which would mean making 20 behaviors instead of 10. Reading rate and intensity are tricky as you will want to also demonstrate the same level as comprehension as before. As long as that stays the same, you are effectively increasing your reading rate. The comprehension measure makes this type of project a bit more complicated but is an important piece. In this example, duration is set and intensity is changing. It would work much the same for increasing how fast you run. Frequency is not included in the example as it may not matter to

you. You may just want to read faster when you do read. The duration of 10 minutes is there to standardize your data collection effort.

The above examples show that five students could have the same target behavior (reading for pleasure which is a deficit) but develop five different ways of approaching it based on what they want to get out of the project and what their current level of behavior is. Though the procedures are generally the same in behavior modification, how they are used in a specific plan can vary and do so dramatically.

To be sure you are clear on the different ways that behavioral definitions can appear, see the Table 4.1 below before proceeding:

Table 4.1 Behavioral Deficit Counts Summary by Possibility

#	Dimension Changed	Purpose	How defined? 1 behavior =	Goals
1	Duration	Increase the number of pages read the 5 nights that you read a week	5 pages of reading	Goal 1 - Read 15 pages a night, for 5 nights (15 behaviors) Goal 2 - Read 20 pages a night, for 5 nights (20 behaviors) Goal 3 - Read 25 pages a night, for 5 nights (25 behaviors) Distal Goal - Read 30 pages a night, for 5 nights (30 behaviors)
2	Frequency	Increase the number of nights you read 30 pages	5 pages of reading	Goal 1 - Read 30 pages a night, for 2 nights (12 behaviors) Goal 2 - Read 30 pages a night, for 3 nights (18 behaviors) Goal 3 - Read 30 pages a night, for 4 nights (24 behaviors) Distal Goal - Read 30 pages a night, for 5 nights (30 behaviors)
3	Frequency	Increase the number of nights you read for 30 minutes	Reading one night for 30 minutes	Goal 1 - Read for 30 minutes, 2 nights a week (2 behaviors) Goal 2 - Read for 30 minutes, 3 nights a week (3 behaviors) Goal 3 - Read for 30 minutes, 4 nights a week (4 behaviors) Distal Goal - Read for 30 minutes, 5 nights a week (5 behaviors)
4	Duration	Increase the amount of time you read the 5 nights that you read a week	Reading for 10 minutes	Goal 1 - Read for 10 minutes, 5 times a week (5 behaviors) Goal 2 - Read for 20 minutes, 5 times a week (10 behaviors) Distal Goal - Read for 30 minutes, 5 times a week (15 behaviors)
5	Intensity	Increase the number of pages you read in a 10-minute period of time; i.e. increase reading speed	Reading 1 page in a book	Goal 1 - Read 12 pages in 10 minutes (12 behaviors) Goal 2 - Read 13 pages in 10 minutes (13 behaviors) Goal 3 - Read 14 pages in 10 minutes (14 behaviors) Distal Goal - Read 15 pages in 10 minutes (15 behaviors)

4.3.6 Behavioral Excess and Counting Behaviors

How might this work with a behavioral excess? Consider the example of a person who loves pleasure shopping so much that he or she spends a significant amount of money each week. The person does not want to stop shopping; just reduce it. How might the individual handle this target behavior?

- Behavioral Definition – The target behavior is your dependent variable or the variable you will measure. So how will you measure pleasure shopping? One potential definition is 1 behavior = spending $10 at a store. What if you spend $58 in one location? You made 5 behaviors ($58/$10 = 5 behaviors; we don't count partial behaviors).
- Current Level of Behavior – In our next module, we will discuss the functional assessment and the baseline phase. To set our goals effectively, we will need to know how much money we are spending each month while doing pleasure shopping (do not count grocery shopping). Let's say we have this data now and know it is in excess of $600 which is over $150 per week. In terms of behavioral counts, we are making at least 60 behaviors a month or about 15 per week.
- Acceptable Level of Behavior (The Distal Goal) - We need to determine what level of behavior (shopping) we are okay with, or, how much money are we allowing ourselves to spend per week. Let's say that is $70 per week, which means we reduce our spending from over $600 to a bit under $300, or at least a 50% reduction. Okay. This becomes our distal goal. How do we get there?

- Proximal Goals:
    - Goal 1 – Spend no more than $150 a week (15 behaviors)
    - Goal 2 – Spend no more than $120 a week (12 behaviors)
    - Goal 3 – Spend no more than $100 a week (10 behaviors)
    - Goal 4 – Spend no more than $90 a week (9 behaviors)
    - Goal 5 (Distal) – Spend no more than $70 a week (7 behaviors)
- The Math – Remember that our behavioral definition says one behavior is spending $10 at a store. Take each of the amounts we are allowing ourselves to spend at each goal level and divide it by 10. When you do that you arrive at the number of behaviors, or 15, 12, 10, 9, and 7.

The point of an excess is to decrease the behavior either to 0 (not occurring at all and is extinct) or to a more acceptable level as with this example. You have to determine what is right for you. In the field of wellness, moderation is preached as key. If you want to reduce your caloric intake, you do not have to cut out all junk food. Just reduce it and track it as part of your new total daily allowance of calories. If a bag of chips is 120 calories, then add that into your total for the day (which may be 1200 calories). You do not have to get rid of chips; just don't buy the big bag in which you are likely to keep reaching your hand into. Buy the small bags and just eat one at a time. You are still satisfying your craving and do not have to feel guilty for doing so. <u>All things in moderation</u>. This does not work with all excesses. If you are trying to quit smoking that does mean taking the behavior to 0 and since there are health risks with smoking, moderation is not useful here.

Module Recap

In Module 4, we continued with the process of planning for change. We discussed the need to precisely define our target and competing behaviors and gave examples of behaviors you might have chosen for your project. Once a precise definition is in place, we can formulate goals for how much we wish for the behavior to increase or decrease. We can also set short term or proximal goals to help us achieve the much larger or distal goal. Think about writing a 10-page paper. It is easier to say I am going to write the first section today, the next tomorrow, and then the final section the day after. Then I will revise and edit and print the paper to be submitted. These subgoals make the much larger task more manageable and easier to achieve. As this works with writing a paper, so too it can work with changing behavior.

Looking ahead to Module 5, you will learn how to go about discerning the ABCs of behavior. This will focus on what is called the functional assessment.

Part II. Planning for Change

Module 5:

Determining the ABCs of Behavior via a Functional Assessment

Module 5: Determining the ABCs of Behavior via a Functional Assessment

Module Overview

In Modules 3 and 4, we began our discussion of planning for change by addressing the importance of being willing to change, for our own reasons and not due to the request of others, and clearly defining the behavior to be changed and any other behaviors that could be a threat to our overall plan's success. In this module, we will discuss how to collect data during the baseline phase (and eventual treatment and maintenance phases) and then use this information to better understand the behavior itself and what leads to it.

Module Outline

5.1. Methods in Data Collection

5.2. The Baseline Phase

5.3. The Functional Assessment

5.4. Temptations – What You'd Rather Be Doing

Module Learning Outcomes

- Describe the who, what, when, where, and why of recording and data collection.
- Clarify what is learned through a functional assessment and describe how to conduct one.
- Clarify the importance of the baseline phase.
- Clarify how temptations can cause problems for the best designed behavior modification plan and what to do about them.

5.1. Methods in Data Collection

Section Learning Objectives

- Define self-monitoring.
- Clarify what the observation period is.
- Differentiate between a natural setting and an analogue setting.
- Describe three methods of recording.
- Clarify the use of the ABC chart in data collection.
- Outline a few ways to make recording easier.
- Define reactivity.
- Define interobserver agreement.

Recall from Module 2 that the three hallmarks of science are observation, measurement, and experimentation. The first two will be important to our discussion of data collection methods used in behavior modification. How so? First, remember that behavior is what we do, say, or think/feel and must be overt or observable. Since it is observable, we can use either naturalistic or laboratory observation. We can also figure out what caused it and what maintains the behavior in the future by observing the person in their surroundings. Second, when we say we wish to understand how often, long, or strongly a behavior occurs (i.e. frequency, duration, and intensity, respectively) we are measuring the behavior. The purpose of assessment or measurement, also from Module 2, is to discern if a treatment is necessary, which one, and whether or not it worked.

In the remainder of this section, we are going to more closely examine how measurement is carried out in behavior modification by tackling the following topics:

5.1.1. Who does the recording?
5.1.2. When do we record?
5.1.3. Where do we record?
5.1.4. How do we record?
5.1.5. With what do we record?
5.1.6. How can we make recording easier?
5.1.7. What are some issues with recording?

5.1.1. Who does the recording?

In terms of who does the measuring, this may be a professional or other individual routinely associated with the individual such as a teacher, work supervisor, counselor, school bus driver, caregiver, or sibling. In the case of self-management or self-modification, you are doing the measuring and recording which is called **self-monitoring.**

5.1.2. When do we record?

In terms of when we record, we will have a clearly defined **observation period** and should choose a time when the behavior is likely to occur.

5.1.3. Where do we record?

In terms of where, we can choose a *natural setting* or place where the behavior typically occurs or an *analogue setting* or one that is not part of the person's daily routine. This is the equivalent to naturalistic and laboratory observation, respectively. Finally, we can choose

structured or unstructured events to observe which refers to whether or not there is a specific event or activity to observe and record.

Before moving on……

Consider the following scenario. In the case of the child who acts out in class we may decide to observe him in the classroom (natural setting) during a group reading activity (structured event) from 1:15 to 1:45pm on Monday (observation period). Alternatively, we could choose to observe his behavior on the playground (natural setting) 15 minutes before (observation period) school begins (unstructured event). And finally, a special education teacher could pull the child out of class during the fifth period (observation period) and take him to another room (analogue setting) to talk (unstructured event).

5.1.4. How do we record?

When we record, we need to decide what method we will use. The following are possible:

1. **Continuous Recording**:
    a. What it is – When a client is watched continuously throughout the observation period and all occurrences of the behavior are recorded.
    b. Considerations – This technique allows you to record both frequency and duration. The frequency is reported as a rate, or the number of responses that occur per minute. Duration is the total time the behavior takes from start to finish. You can also record the intensity using a rating scale in which 1 is low intensity and 5 is high intensity. This could be useful if your behavior modification plan involves reducing disturbing thoughts such as suicidal

ideation or feelings of worthlessness. It is possible that early in the plan these distressing thoughts are high in intensity and slowly decrease due to the strategies you use. By the end, they should be low or absent. An intensity measurement can help you see how successful you are. Finally, latency can be recorded by noting how long it took the person to engage in the desirable behavior, or to discontinue a problem behavior, from when the demand was uttered.

c. Other Tidbits – You can use *real-time recording* in which you write down the time when the behavior starts and when it ends, and then do this each time the behavior occurs. You can look at the number of start-stops to get the frequency and then average out the time each start-stop lasted to get the duration. For instance:

Table 5.1. Example of the Real-time Recording Method

Target Behavior – Completing homework without interruption Problem Behavior – Checking the phone while studying		
Behavior Start – 1:06pm	Behavior Stop – 1:07pm	Lasted – 1 minute
Behavior Start – 1:09pm	Behavior Stop – 1:12pm	Lasted – 3 minutes
Behavior Start – 1:15pm	Behavior Stop – 1:18pm	Lasted – 3 minutes
Behavior Start – 1:22pm	Behavior Stop – 1:26pm	Lasted – 4 minutes
Behavior Start – 1:35pm	Behavior Stop – 1:38pm	Lasted – 3 minutes
Behavior Start – 1:45pm	Behavior Stop – 1:49pm	Lasted – 4 minutes
Frequency: 6 6 total start-stops	*Duration*: 3 minutes 18 mins/6 behaviors	

2. Product or Outcome Recording

a. What it is – This technique can be used when there is a tangible outcome you are interested in, such as looking at how well a student has improved his long division skills by examining his homework assignment or a test. Or you might see if your friend's plan to keep a cleaner house is working by inspecting their house randomly once a week.

b. Benefit - This will allow you to know if an experimental teaching technique works. It is an indirect assessment method meaning that the observer does not need to be present. You can also examine many types of behaviors.

c. Limitation – Because the observer is not present, you are not sure if the person did the work themselves. It may be that answers were looked up online, cheating occurred as in the case of a test, or someone else did the homework

for the student such as a sibling, parent, or friend. Also, you have to make sure you are examining the result/outcome of the behavior and not the behavior itself.

3. **Interval Recording**

   a. What it is – When you take the observation period and divide it up into shorter periods of time. The person is observed and the target behavior recorded based on whether it occurs during the entire interval, called *whole* interval recording, or some part of the interval, called *partial* interval recording. With the latter, you are not interested in the dimensions of duration and frequency. We also say the interval recording is *continuous* if each subsequent interval follows immediately after the current one.

   b. Example – Your observation period is the 50 minutes the student is in his home economics class and you divide it up into ten, 5-minute intervals. If using whole, then the behavior must occur during the entire 5-minute interval. If using partial, it only must occur sometime during the 5-minute interval.

   c. Alternative – You can also use what is called *time sample recording* in which you divide the observation period into intervals of time but then observe and record during part of each interval (the sample). There are periods of time in between the observation periods in which no observation and recording occur. As such, the recording is *discontinuous.* This is a useful method since the observer does not have to observe the entire interval and the level of behavior is reported as the percentage of intervals in which the behavior occurred. Also, more than one behavior can be observed.

Check this out…	The first and third methods ask us to examine the behavior while the second method focuses on some result of the behavior. When choosing which recording method to use, you need be sure you are clear on what you are measuring – behavior or result.

5.1.5. With what do we record?

Recording can be done in many ways. You might record instances of the behavior using low tech options such as paper and pencil, moving coins from the left pocket to the right pocket, or tearing a sheet of paper. Alternatively, you can go high tech with a computer, phone, using barcodes, or tablet. Middle of the road alternatives include a pedometer, stopwatch, or golf stroke counter.

No matter which method you use, you will ultimately want to record on what are called *ABC charts* (also called *structured diaries*). These tools record what environmental or internal events led to the occurrence of the behavior or the antecedent, what form the behavior took, and what happened afterwards or the consequences. ABC charts can look like the following:

Figure 5.1. ABC Chart

Date: _____ Time: _____ AM PM

Observer: _____ Location: _____

Antecedents: (Describe any environmental or internal events that led to the occurrence or non-occurrence of the desired behavior)	Description:
Behavior: (Describe the behavior that was made and any relevant dimensions: frequency, duration, intensity)	Description:
Consequences: (Describe the results of the behavior using terminology learned in this course such as PR, NR, PP, and NP)	Description:

In terms of antecedents, which are the stimuli that led to the occurrence of the behavior, it is obvious that these can be events outside of us. Maybe a child acts out in class because he is encouraged to do so by another student. Or a student begins to twirl her hair when giving a presentation (a nervous habit). Or you don't make it to the gym because your phone received a Facebook notification as you woke up for the day. These events all occurred outside the person. But can internal events, or thoughts/feelings cause a behavior too? Most definitely. You start checking your phone for updates because you are bored studying for your Intro to Geology exam. You procrastinate finishing a paper because of feelings of worthlessness and being overwhelmed. Or you made it to the gym out of a sense of dedication to losing weight. Be sure to

record any and all antecedents that have occurred, whether they led to the desired behavior or an alternative behavior. The information you gain from these events is invaluable.

Remember too, the behavior will be something you have done, said, or thought/felt. The done and said aspects of behavior are overt and others may have witnessed them. The thoughts/feelings are internal and covert, and so honesty when recording will be needed. Be sure you record not only when you make the behavior, but also when you do not, even if preplanned. We need to consider our successes almost as much as we need to consider the failures. This is important in the baseline phase so we can figure out if there are specific antecedent manipulations that need to be put in place to ensure we make the desired behavior, and not the problem one.

As for consequences, these may have been delivered by someone else such as a parent, sibling, teacher, stranger, spouse, etc., or you could have delivered them yourself. Be clear as to what the source of the consequence is and talk about how it made you feel. This information is useful to understanding why the same behavior occurs in the future when the same stimulus is present.

Here is an example of what your ABC chart/structured diary may look like:

Figure 5.2. Sample ABC Chart

Date: 6-6-17 Time: 8:03 **AM** PM
Observer: Self Location: Home

Antecedents: (Describe any environmental or internal events that led to the occurrence or non-occurrence of the desired behavior)	Description: I woke up this morning and had my workout clothes by my bed. This allowed me to put them on quicker. After dressing, I went to the bathroom, brushed my teeth, and then proceeded to the kitchen. My protein powder was already in my shaker bottle and all I had to do was add water. My keys and gym bag were by the door. My workout partner texted me a few minutes before I left to say he was on his way to the gym.
Behavior: (Describe the behavior that was made and any relevant dimensions: frequency, duration, intensity)	Description: I did a 15-minute warm up cardio on the Elliptical at a moderate intensity. I lifted weights on all machines but legs. I needed to take off after an intense workout yesterday. I also thought it would be fun to try a new peck machine and enjoyed it. I stretched and cooled down at the end.
Consequences: (Describe the results of the behavior using terminology learned in this course such as PR, NR, PP, and NP)	Description: It felt good, and rewarding, to workout with my friend this morning. PR I was a bit anxious about a test today and it seemed to calm me some. NR I am sore, but not much more than usual. PP

It is also a good idea to summarize your ABC charts. As you can see, the ABC chart is for one day and so you will have several charts throughout the course of a week. You could make a summary table for your exercise plan as follows:

Table 5.2. Sample Exercise Summary Table: Amount of Exercise Per Day (in minutes)

Day	Week 1	Week 2	Week 3
Monday	15	20	45
Tuesday			
Wednesday	22	15	48
Thursday			
Friday	35	36	39
Saturday			42
Sunday		40	43

Your summary table shows that you increased your work out days by one each week and how long you worked out each day. You added a weekend day in Week 2 and then both weekend days in Week 3, and the amount of time you worked out went up from week to week. All three weeks you did not work out on Tuesday or Thursday and a closer review of your ABC charts/structured diary for the week (and the non-workout days) will show that the antecedent leading to not working out these days is a full day of classes. You could get up early in the morning to work out, but that would require waking up by 5am and by early afternoon you might be tired and fall asleep in class. You could wait until after classes end to go to the gym but that is when most students go, and it is incredibly busy. Also, you are usually tired from the day and at times sore, making working out not very appealing. As you move to your end goal of five days

working out during the current semester, you resign yourself with working out all days but Tuesday and Thursday. This is a bit challenging as it requires you to work out four days in a row (Friday to Monday). From the analysis, you can figure out what works and what does not. It is worth examining your ABC charts as you go through your treatment plan so you can see if changes are needed.

5.1.6. How can we make recording easier?

To make recording easier, a few pointers will be useful:

- Make sure you have your recording instruments with you when relevant. If you are trying to increase the frequency of working out, make sure you have something to record your workout with you at the gym. This could be your phone and an app such as Fitbit or a small notebook you take with you. If you are recording water consumption, have your phone (and the Fitbit app) with you all day long so you can record as you drink. Record keeping should become natural and a part of your normal day. Early on, you could hang post it notes or have reminders on your phone to record your data. If you are trying to increase pleasure reading, have your ABC chart by the bed so you can record how many pages or how long you read (based on what your behavioral definition says) as soon as you are finished or when you start and stop (as in the case of real-time recording). If you make it easy to record your data, you are more likely to do it.
- Record right away – Remembering exactly how many water bottles you drank can be hard if you wait until bedtime to record for the day. Don't rely on your memory. Record as the behavior occurs. The information you record about your

antecedents and consequences will be more accurate too. Describe all relevant aspects of the situation – how you felt, who was present, your thoughts, what others were doing, where you were, the time, etc.

- Be honest. If you are trying to lose weight and are doing so by reducing caloric intake, list all foods you ate for the day, and in what portion size you ate them. Do not omit anything to make your numbers look better. You can lie and only you would know, but the success of your plan will be seriously compromised.
- Review your ABC charts and the summary table you make. Look for patterns that lead to your success, but also antecedents, whether external or internal, that thwart your success.

5.1.7. What are some issues with recording?

Measurement is not without issue. First, **reactivity,** or when the process of recording a behavior causes the behavior to change, even before treatment is applied. This may make obtaining baseline data to compare with treatment data difficult. If the nutritionist wants to reduce the consumption of high fat, salty foods in her client to help with weight loss she will need to know what the client eats normally. If the client alters his behavior upon knowing what the focus of the nutritionist is, then comparison data will not be possible. Of course, in the case of self-monitoring, used in self-modification plans, the actual monitoring itself is part of the treatment and so we expect that keeping a food journal or using an app such as Fitbit will alter one's behavior. We will not want to record all the bad food we normally eat and so will refrain from making poor choices so we do not have to record it. Obviously, these poor food choices are

a source of embarrassment for us and we will be less likely to make them when they will be judged by others. This of course assumes the person records his food choices honestly.

A second issue is that of **interobserver agreement**, also called interrater reliability, and is when two people independently observer the same behavior and record that it occurred. Ideally, we will want a high percentage as this indicates a great deal of agreement, most researchers shoot for at least 90%, with 80% being the minimal amount of agreement. If reliability is lower than both observers need to ensure they are using the same precise definition of the target behavior.

5.2. The Baseline Phase

Section Learning Objectives

- Describe the importance of the baseline phase.

As we discussed in Module 2.2., the **baseline phase** is when we collect data but do not attempt to change our behavior. No strategies are in place. We are trying to find out how often, long, or intensely we engage in our target/desirable behavior or a problem behavior. In cases when we are not making the desirable behavior at all, such as going to the gym or using a planner to organize our school work, a baseline phase is still useful for determining why we do not engage in the desired behavior and/or why we make a problem behavior. Typically, we continue with the baseline phase until a clear pattern emerges and this can take a few days at least. The pattern will be apparent as we conduct our functional assessment, the focus of Section 5.3.

After your behavior modification plan has run its course, you will compare the level of your behavior after the strategies were used against the level of the behavior before they were used. As such, the baseline phase serves as a ***comparison*** with the treatment phase.

5.3. The Functional Assessment

Section Learning Objectives

- Define functional assessment.
- Outline what information is gained from a functional assessment.
- Differentiate indirect and direct assessment.
- Describe functional analysis.
- Clarify when each method will be needed.

5.3.1. What is a Functional Assessment?

A **functional assessment** is when we much more closely scrutinize the antecedents and consequences to see what affects the occurrence or nonoccurrence of a desired or problem behavior, all to maximize how effective our plan/strategies will be. This data comes from an analysis of what we recorded on our ABC charts during the baseline phase.

5.3.2. What is Learned from a Functional Assessment?

This scrutiny involves gathering several important types of information which include:

- The Behavior – what makes up the problem behavior or the desired behavior. It may be that in the case of a problem behavior, several sub-behaviors are included. For instance, earlier we described a student being disruptive in class. This is fairly general and could include the sub-behaviors of getting out of his seat without permission, talking without being called on, verbally or physically harassing other students, being uncooperative, ignoring directions

from the teacher, or acting aggressively on the playground or during gym. These behaviors would be recorded on a baseline ABC chart.

- The Antecedents – what stimuli in the environment, or thoughts/feelings in the person, lead to the behavior's occurrence/non-occurrence. These stimuli will actually *predict* the behavior in the future. To develop an effective plan, you must know what cues there are for the behavior but also make sure you go back far enough in time to find the true cause. If a person does not socialize, it could be due to worry about embarrassing himself, as recorded on a baseline phase ABC chart, but examining deeper reveals a parent who told the individual he was worthless and no one would ever like him. This reason would obviously need more work undoing/correcting than simply worry about looking foolish. Either way, if is safe to say, or is predictable, that the individual will not strike up a conversation with another student waiting in line to pay for his textbooks early in the semester if there is concern about being embarrassed or subconsciously, you hear your parent's voice and condescension. You will also want to know if there are certain situations, events, times, etc. that lead to the desired behavior or the problem behavior.
- The Consequences – these are any events that follow the problem or desired behavior and maintain it. Face it. If you don't derive some benefit from making the behavior, there is simply no reason to make it. This goes for problem or desirable behaviors. If you wake up in the morning, play games on your phone, and really enjoy it, you will not be as concerned about getting to the gym to workout. The consequences are particularly motivating for you and

maintain the problem behavior. If during the process of deciding to engage in behavioral change (see Module 3) you decide that being in shape and losing weight is more important, you will encounter stronger reasons for working out then you do for playing games on your phone. You might even realize that while you are on the recumbent bike, you can spend a few minutes on your favorite game, so you are not losing out on this fun activity while you get into shape. In Module 9, we will discuss techniques to increase the motivation to make a target behavior and to decrease the motivating properties of engaging in a problem behavior.. You can look at your baseline phase ABC charts for indicators of motivators to engage in the desired or problem behavior or if anything negative occurred which led you to avoid the target behavior.

- Previous Interventions – It may be this is not your first time attempting to change the behavior. Maybe years ago you changed it, maintained that success for several years, but then relapsed for any number of reasons. You will want your current applied behavior analyst to know what was part of your treatment plan before. Some elements may have worked while others may not have…then. Times change and so do people and you might find that video games were rewarding 10 years ago but not so much today. Analyzing these interventions will help you to figure out what might work again, all while acknowledging a new approach may be needed. This information is not present in the baseline phase ABC charts but embedded in the client's (or your) personal history.

5.3.3. How do we learn this information during a functional assessment?

Functional assessment information is collected via three general strategies. These include informant or indirect methods, direct observation or assessment, and functional analysis. It is important to understand that use of these methods is all about forming a hypothesis about the ABCs of the behavior which can be confirmed and used to develop a plan. Let's examine the three methods.

Indirect assessment or **informant methods** include the use of interviews, checklists, questionnaires, and rating scales to gather information on the target behavior from the person exhibiting the behavior or from knowledgeable others (i.e. people who know the person very well). The information can be gathered easily and does not take much time to do. Bear in mind that it does not occur in real time but is dependent upon the accurate recall of the individual being questioned.

Direct observation or **assessment** is used when the behavior is observed and recorded as it occurs, or in real time. For direct assessment to be accurate, there must be a precise definition of the problem behavior (See Module 4). Unlike indirect assessment, direct takes more time and effort but does not rely on memory. Information can be gathered by writing a *description* of the behavior and each antecedent and consequence for the behavior, or by using a *checklist* with columns for the ABCs of behavior. Possible antecedents which may cause the behavior and possible consequences for the behavior, are listed in each column and then checked off as they appear. Collect direct observation data until a clear pattern is apparent which will take several days to achieve. This can also be achieved through use of ABC charts during the baseline phase, called self-monitoring (or self-observation).

Which type of assessment is more accurate? If you answered direct assessment you are correct. With indirect assessment, a person's memories may be inaccurate, and the observer may not have had a precise definition of the behavior they were to observe and record.

But indirect and direct assessment are *descriptive* in nature. They allow you to develop hypotheses about what causes the behavior (the antecedents) and what maintains it (the consequences) but not to establish a functional relationship (See Module 2.3. for more information on what this entails).

Functional analysis is designed to test stimuli or consequences that are predicted to be related to the occurrence or nonoccurrence of the behavior. The indirect and direct assessment techniques should have generated at least one hypothesis to test. The process involves presenting environmental events and seeing the effect on the person's behavior, and/or manipulating the consequences of the behavior. The advantage of this method is that a functional relationship can be established but functional analysis requires skilled personnel to carry out the procedure, a great deal of time and effort, and possibly approval from an Institutional Review Board (IRB; for more on what an IRB is, please see: https://www.fda.gov/RegulatoryInformation/Guidances/ucm126420.htm).

The complexity of the behavior determines how many of the above methods will be used. As a general practice, you should use the following procedure:

1. Use indirect/informant methods first, such as the behavioral interview. Develop a hypothesis.
2. Now move to direct observation. Once done, confirm your hypothesis or conduct further indirect and direct assessments.
3. In some cases, you might need to conduct a functional analysis.

5.4. Temptations – What You'd Rather Be Doing

Section Learning Objectives

- Define temptation.
- Explain how people and things can be temptations.
- Clarify the significance of situations and places and how they might lead you to engage in the undesired behavior.
- Propose ways to avoid giving in to temptations.

5.4.1. Types of Temptations

Temptations are anything or anyone that might lead you to engage in the undesired or problem behavior and not make the desired or target behavior. What forms do temptations take? First, they can be a *person* such as a friend, who instead of encouraging you to watch your calories, asks you to go on late night Taco Bell run with them a couple times a week. Though you can always refuse to get food, you feel awkward being the only one not eating and make a

purchase too. A *thing* can be an item that reminds you to engage in the problem behavior such as seeing the candy bars in the pantry or on the kitchen counter. The presence of the object (i.e. the candy) tempts you to pick it up and eat it, violating your weight loss plan. *Situations* are the conditions during which a temptation is likely to occur while *places* are the physical locations where temptations most likely will be present. An example of a situation might be sitting around and watching your favorite reality television show. When you do, you tend to pull out the popcorn, chips, ice cream, etc. In terms of places, let's say you always eat fatty foods such as hot dogs, hamburgers, chips, candy, etc. and drink soda when you go to see your favorite football team play. You only do this when you are at the stadium and not when home watching the game. If you eat fatty foods while watching football in any location, then it is no longer a place but a situation.

Let's try another example – drinking soda – using all four types of temptations:

- *Person* – Your best friend always has soda with him throughout the day and offers you one. It does not matter where he is or what time of day it is.
- *Thing* – You want a soda because you see an ad on television or in a magazine you like. It might also be seeing the Freestyle machine at your local restaurant. Or maybe you see a totally random person drinking a Cherry Pepsi and now you want one.
- *Situation* – You drink soda when you go to the movies because you like to have it with your popcorn. You also drink soda at home when you watch a movie and eat popcorn. Soda drinking is linked to watching movies specifically.

- *Places* – You only drink soda when you go to your town's local movie theater. You love movie theater popcorn and need the soda to combat the saltiness of the popcorn, and the fact that you drown the poor popcorn pieces in the bucket in an ocean of butter (P.S. If you are concurrently running a weight loss behavior modification plan, STAY AWAY from the movie theater or at least the butter machine. Thank you. Now back to our regularly scheduled example). Or maybe you hate popcorn but love getting a soda at the movies because they have the Freestyle machine, and you love the seemingly endless options you have at a push of a button. No other establishment in your town has such a machine and so you purchasing a soda is linked to this one location/place.

5.4.2. What to Do About Temptations

Eventually you will give in to temptation if you need to exert self-control long enough. You only have so much and if you must constantly use it, you will run out. So even the "best" among us succumb to temptation at some point. The trick is to figure out ways to delay or manage this as much as possible. How so?

The simplest solution is to ask your friends not to tempt you. As you will see in Module 7, let your friends know about your behavior modification plan and that you need their support. Make them stakeholders in your success so that they do not tempt you, or at least as much, and offer encouragement when you do a good job. But if you do give in, don't blame them completely. You ultimately have the right to say no.

In Module 7, we will discuss self-instructions which are a great way to keep your goal in mind…or to keep your eye on the prize. In the moments when you are tempted, use positive affirmations or other statements about making the desired behavior.

You should also take note of anything you said to yourself when you gave in to the temptation. If you said something like, “just this one time,” then you might find yourself using the same logic on subsequent occasions when you are tempted. Realizing that you have done this in the past, and may do this again in the future, can help you to avoid the pitfall when it occurs.

Of course, the best advice that I can give is to not go to places where you know you will be tempted or enter into situations that you know always lead you to the problem behavior. It is sort of like obtaining a STD – you cannot get one if you practice abstinence. If you have to be in the situation, make it less tempting. If you are trying to lose weight and eating out late at night with friends is undermining your plan, then go out with friends but drink a protein drink before you leave so you are not hungry when you are there. Also, get water to keep your stomach mostly full.

Module Recap

In Module 5, we discussed ways to collect data about the behavior, what causes it, and what maintains it. The baseline phase is when we record occurrences of the behavior before any manipulation/strategies are employed. This information is used when we complete a functional assessment to help us understand what the behavior is, what antecedents lead to its occurrence or non-occurrence, and what consequences maintain desirable or problem behavior. We also examine our personal history for root cause(s) of the behavior (as in the case of a problem behavior) or its non-occurrence (in the case of a desired behavior) and previous interventions that helped or did not, all while remembering we have changed over time. Temptations are a type of antecedent that interfere with our plan's success and need to be addressed/identified as well. The baseline phase can help with this, but we should also take account of any possible stimulus, whether person, thing, place, or situation that can impair our ability to engage in the target behavior and which did not occur during the baseline phase.

With the conclusion of this module, we are now finished with planning for change. In Part III, we will explore strategies to bring about change. In Part IV we will discuss how to narrow down which of the 30 plus strategies to use.

Part III. Identifying Strategies to Bring About Behavior Change

Part III. Identifying Strategies to Bring About Behavior Change

Module 6:

Basic Operant Conditioning Principles/Procedures and Respondent Conditioning and Observational Learning

Module 6: Basic Operant Conditioning Principles/Procedures and Respondent Conditioning and Observational Learning

Module Overview

We have now discussed the basics of behavior modification and how the scientific method applies to both psychology and it. In our second part, we discussed making important, and at times, life-saving changes. Important to this discussion is establishing a precise and objective definition of the target behavior, setting clear distal and proximal goals, changing because you genuinely want to, and then gathering data about the problem/desired behavior. This all leads to a functional assessment in which we can more clearly see the causes of our behavior or non-behavior, what consequences maintain it, and specifically temptations that could throw a wrench in even the best laid plan.

With all this in mind, we now are at the point that we can do something about our issue, whether a deficit or excess. But what do we do? What does our plan include? Modules 7-9 will focus on operant conditioning strategies that can be used to deal with the antecedent, behavior, and/or consequence. Most likely you will use a combination of all three and we will discuss about 30 such strategies across these three modules. Before we get there, we will lay down some basic operant condition principles that you will use throughout the duration of this course and to be candid, life. I do not see this as an exaggeration since you will likely have kids and need to implement some type of reinforcement or punishment. You are almost guaranteed to work, and I bet you will want a paycheck. If so, you will be reinforced for your hard work at a fixed amount of time. And you may find that you or someone you love is making a behavior you will want to get rid of completely, or my favorite word, extinguish. That sounds bad but it really is not. More

on this in a bit. We will also discuss the non-operant procedures of respondent conditioning and observational learning, several of which you will see presented in the next three modules.

My advice: Take it slow. Ask questions whether you are taking this course in the classroom or online. It is easy to get confused with the strategies.

Module Outline

6.1. Operant Conditioning - Overview

6.2. Behavioral Contingencies

6.3. Reinforcement Schedules

6.4. Take a Pause – Exercises

6.5. Extinction and Spontaneous Recovery

6.6. Respondent Conditioning

6.7. Observational Learning

Module Learning Outcomes

- Clarify how operant conditioning tackles the task of learning.
- List and describe behavioral contingencies. Clarify factors on their effectiveness.
- Outline the four reinforcement schedules.
- Solve problems using behavioral contingencies and schedules of reinforcement.
- Clarify the concepts of extinction and spontaneous recovery.
- Discuss the utility of respondent conditioning in changing unwanted behavior.
- Discuss the utility of observational learning in changing unwanted behavior.

6.1. Operant Conditioning - Overview

Section Learning Objectives

- Clarify what happens when we make a behavior (the framework).
- Define operant conditioning.
- Remember whose groundbreaking work operant conditioning is based on.

Before jumping into a lot of terminology, it is important to understand what operant conditioning is or attempts to do. But before we get there, let's take a step back. So what happens when we make a behavior? Consider this framework that will look familiar to you:

Recognize it? Two words are different but it should remind you of Antecedent, Behavior, and Consequence. It looks the same because it is the same. Stimulus is another word for antecedent and is whatever comes before the behavior, usually from the environment, but we know that the source of our behavior could be internal too. Response is a behavior. And of course, consequence is the same word. The definitions for these terms are the same as the ones you were given in Module 1 for the ABCs of behavior. Presenting this framework is important, because operant conditioning as a learning model focuses on the person making some response for which there is a consequence. As we learned from Thorndike's work, if the consequence is favorable or satisfying, we will be more likely to make the response again (when the stimulus occurs). If not favorable or unsatisfying, we will be less likely. In Section 6.7, we will talk about

respondent or classical conditioning which developed thanks to Pavlov's efforts. This type of learning focuses on stimulus and response.

Before moving on let's state a formal definition for operant conditioning:

> **Operant conditioning** is a type of associative learning which focuses on consequences that follow a response or behavior that we make and whether the consequences make a behavior more or less likely to occur.

6.2. Behavioral Contingencies

Section Learning Objectives

- Contrast reinforcement and punishment.
- Clarify what positive and negative mean.
- Outline the four contingencies of behavior.
- Distinguish primary and secondary reinforcers.
- List and describe the five factors on the effectiveness of reinforcers.

6.2.1. Contingencies

As we have seen, the basis of operant conditioning is that you make a response for which there is a consequence. Based on the consequence you are more or less likely to make the response again. This section introduces the term contingency. A **contingency** is when one thing occurs due to another. Think of it as an If-Then statement. If I do X, then Y will happen. For operant conditioning this means that if I make a behavior, then a specific consequence will follow. The events (response and consequence) are linked in time.

What form do these consequences take? There are two main ways they can present themselves.

- **Reinforcement** – Due to the consequences, a behavior/response is more likely to occur in the future. It is strengthened.
- **Punishment** – Due to the consequence, a behavior/response is less likely to occur in the future. It is weakened.

Reinforcement and punishment can occur as two types – positive and negative. These words have no affective connotation to them meaning they do not imply good or bad. *Positive* means that you are giving something – good or bad. *Negative* means that something is being taken away – good or bad. Check out the table below for how these contingencies are arranged.

Figure 6.1. Contingencies in Operant Conditioning

	Something "Bad" (aversive)	Something "Good" (rewarding)
Giving (positive)	Positive Punishment (behavior is weakened)	Positive Reinforcement (behavior is strengthened)
Taking Away (negative)	Negative Reinforcement (behavior is strengthened)	Negative Punishment (behavior is weakened)

Let's go through each:

- **Positive Punishment (PP)** – If something bad or aversive is given or added, then the behavior is less likely to occur in the future. If you talk back to your mother and she slaps your mouth, this is a PP. Your response of talking back led to the consequence of the aversive slap being delivered or given to your face.
- **Positive Reinforcement (PR)** – If something good is given or added, then the behavior is more likely to occur in the future. If you study hard and earn, or are given, an A on your exam, you will be more likely to study hard in the future.
- **Negative Reinforcement (NR)** – This is a tough one for students to comprehend because the terms do not seem to go together and are counterintuitive. But it is really simple, and you experience NR all the time. This is when something bad or aversive is taken away or subtracted due to your actions, making you more likely to make the same behavior in the future when some stimuli presents itself. For instance, what do you do if you have a headache? You likely answered take Tylenol. If you do this and the headache goes away, you will take Tylenol in the future when you have a headache. NR can either result in current escape behavior or future avoidance behavior. *Escape* occurs when we are presently experiencing an aversive event and want it to end. We make a behavior and if the aversive event, like the headache, goes away, we will repeat the taking of Tylenol in the future. This future action is an *avoidance* event. We might start to feel a headache coming on and run to take Tylenol right away. By doing so we have removed the possibility of the aversive event occurring and this behavior demonstrates that learning has occurred.

- **Negative Punishment (NP)** – This is when something good is taken away or subtracted making a behavior less likely in the future. If you are late to class and your professor deducts 5 points from your final grade (the points are something good and the loss is negative), you will hopefully be on time in all subsequent classes.

Before You Move On

Make sure you understand the four contingencies in operant conditioning and specifically how the terms "positive" and "negative" are used in this context. This is foundational knowledge that will be important in this class and others, as well as any future attempts at behavioral change whether for you or someone else.

6.2.2. Primary vs. Secondary (Conditioned)

The type of reinforcer or punisher we use is important. Some are naturally occurring while some need to be learned. We describe these as primary and secondary reinforcers and punishers. *Primary* refers to reinforcers and punishers that have their effect without having to be learned. Food, water, temperature, and sex, for instance, are primary reinforcers while extreme cold or hot or a punch on the arm are inherently punishing. A story will illustrate the latter. When I was about 8 years old, I would walk on the street in my neighborhood saying, "I'm Chicken Little and you can't hurt me." Most ignored me but some gave me the attention I was seeking, a positive reinforcer. So, I kept doing it and doing it until one day, another kid was tired of hearing about my other identity and punched me in the face. The pain was enough that I never walked up and down the street echoing my identity crisis for all to hear. This was a positive punisher and did not have to be learned. That was definitely not one of my finer moments in life.

Secondary or conditioned reinforcers and punishers are not inherently reinforcing or punishing and must be learned. An example was the attention I received for saying I was Chicken Little. Over time I learned that attention was good. Other examples of secondary reinforcers include praise, a smile, getting money for working or earning good grades, stickers on a board, points, getting to go out dancing, and getting out of an exam if you are doing well in a class. Examples of secondary punishers include a ticket for speeding, losing television or video game privileges, being ridiculed, or a fee for paying your rent or credit card bill late. Because secondary reinforcers are learned, almost anything can become reinforcing.

6.2.3. Factors Affecting the Effectiveness of Reinforcers and Punishers

The four contingencies of behavior can be made to be more or less effective by taking a few key steps. These include:

1. It should not be surprising to know that the quicker you deliver a reinforcer or punisher after a response, the more effective it will be. This is called **immediacy**. Don't be confused by the word. If you notice, you can see *immediately* in it. If a person is speeding and you ticket them right away, they will stop speeding. If your daughter does well on her spelling quiz, and you take her out for ice cream after school, she will want to do better.
2. The reinforcer or punisher should be unique to the situation. So, if you do well on your report card, and your parents give you $25 for each A, and you ***only*** get money for school performance, the secondary reinforcer of money will have an even greater effect. This ties back to our discussion of **contingency**.

3. But also, you are more likely to work harder for $25 an A than you are $5 an A. This is called **magnitude.** Premeditated homicide or murder is another example. If the penalty is life in prison and possibly the death penalty, this will have a greater effect on deterring the heinous crime than just giving 10 years in prison with the chance of parole.
4. At times, events make a reinforcer or punisher more or less reinforcing or punishing. We call these *motivating operations* and they can take the form of an establishing or an abolishing operation. First, an **establishing operation** is when an event makes a reinforcer or punisher more potent. Reinforcers become more reinforcing (i.e. more likely to occur) and punishers more punishing (i.e. less likely to occur). Second, an **abolishing operation** is when an event makes a reinforcer or punisher less potent. Reinforcers become less reinforcing (i.e. less likely to occur) and punishers less punishing (i.e. more likely to occur). See Table 6.1 below for examples of establishing and abolishing operations.
5. All people are different. Reinforcers will motivate behavior. That is a universal occurrence and unquestionable. But the same reinforcers will not reinforce all people. This shows diversity and **individual differences**. Before implementing any type of behavior modification plan, whether on yourself or another person, you must make sure you have the right reinforcers and punishers in place. In case of punisher, consider the example in Table 6.1 in the cell for abolishing operations and punishment. Though a fine may deter cheating on taxes for lower- and middle-class people, it may not for the upper-class but a threat of jail time will. In this case, punishers do discourage problem behavior but not in the same way for all people.

Table 6.1. Examples of Establishing and Abolishing Operations

Type of Motivating Operation	As used with Reinforcement	As used with Punishment
Establishing	Your favorite restaurant is Olive Garden. As such, you build into your behavior modification plan the opportunity to go to the restaurant once you have lost your first 20 lbs. This makes it more likely you will engage in the target/desirable behavior of eating less calories so you can eat there (i.e. the reinforcer is more potent). If we go to the store when hungry or in a state of *deprivation*, food becomes even more reinforcing and we are more likely to pick up junk food (i.e. a problem behavior).	You tell a child they will not be able to play video games after dinner if they do not finish their homework before dinner. Since video games are the child's favorite activity the punisher becomes more potent and should discourage problem behavior such as allowing themselves to be distracted. (Do not use punishment if the child has a lot of homework and cannot finish by dinner. They would simply have to continue homework after they eat).
Abolishing	The person looks up the caloric content of fatty foods and understands how eating it will undermine their weight loss plan. The fatty foods (i.e. chips or chocolate) lose their appeal or reinforcing value for the person (i.e. the reinforcer is less potent). If we go to the grocery store full or in a state of *satiation*, junk food would not sound appealing and we would not buy it.	Cheating on your taxes can lead to very high fines from the government. Though this should be an establishing operation for most of us, a wealthy person may be willing to take the fine since they can afford it and so the penalty loses its effectiveness or is less potent. (As a note, threatening jail time instead may deter their problem behavior making it an establishing behavior. The thought of losing their freedom may make cheating not worth the risk.)

In summary, the five factors that can change the effectiveness of reinforcers and punishers are:

1. Immediacy
2. Contingency
3. Magnitude
4. Motivation operations – establishing and abolishing
5. Individual differences

Now that we have established what contingencies are and what affects them, let's move to a discussion of when we reinforce.

6.3. Reinforcement Schedules

Section Learning Objectives

- Contrast continuous and partial/intermittent reinforcement.
- List the four main reinforcement schedules and exemplify each.

In operant conditioning, the rule for determining when and how often we will reinforce a desired behavior is called the **reinforcement schedule.** Reinforcement can either occur *continuously* meaning every time the desired behavior is made the person or animal will receive some reinforcer, or *intermittently/partially* meaning reinforcement does not occur with every behavior. Our focus will be on partial/intermittent reinforcement.

Figure 6.2. Key Components of Reinforcement Schedules

Two Key Components		
When you reinforce	Fixed **or** Variable	Reinforcement occurs at a set rate Rate of reinforcement changes
What you reinforce	Ratio **or** Interval	The number of correct responses Time elapsed between correct responses

Figure 6.2. shows that that are two main components that make up a reinforcement schedule – when you will reinforce and what is being reinforced. In the case of when, it will be either fixed or at a set rate, or variable and at a rate that changes. In terms of what is being reinforced, we will either reinforce responses or time. These two components pair up as follows:

- **Fixed Ratio schedule (FR)** – With this schedule, we reinforce some set number of responses. For instance, every twenty problems (fixed) a student gets correct (ratio), the teacher gives him an extra credit point. A specific behavior is being reinforced – getting problems correct. Note that if we reinforce each occurrence of the behavior, the definition of continuous reinforcement, we could also describe this as a FR1 schedule. The number indicates how many responses have to be made and, in this case, it is one.
- **Variable Ratio schedule (VR)** – We might decide to reinforce some varying number of responses such as if the teacher gives him an extra credit point after finishing between 40 and 50 problems correctly. This is useful after the student is obviously learning the material and does not need regular reinforcement. Also, since the schedule changes, the student will keep responding in the absence of reinforcement.
- **Fixed Interval schedule (FI)** – With a FI schedule, you will reinforce after some set amount of time. Let's say a company wanted to hire someone to sell their products. To attract someone, they could offer to pay them $15 an hour 40 hours a week and give this money every two weeks. Crazy idea but it could work. ☺ Saying the person will be paid *every* indicates fixed, and *two weeks* is time or interval. So, FI.
- **Variable Interval schedule (VI)** – Finally, you could reinforce someone at some changing amount of time. Consider the act of watching a football game. After some varying amount of time you are reinforced for the behavior of watching the game by your team scoring a touch down or at least a field goal. The points earned reinforce your behavior (and time spent watching the game). This could account for why seeing your team lose is so hard. The time invested is not reinforced.

6.4. Take a Pause - Exercises

Section Learning Objectives

- Practice using contingencies of behavior and reinforcement schedules.

Now that we have discussed the main elements of operant conditioning, let's make sure you understand how to identify contingencies and schedules of reinforcement.

6.4.1. A Way to Easily Identify Contingencies

Use the following three steps:

1. Identify if the contingency is positive or negative. If positive, you should see words indicating something was given, earned, or received. If negative, you should see words indicating something was taken away or removed.
2. Identify if a behavior is being reinforced or punished. If reinforced, you will see a clear indication that the behavior increases in the future. If punished, there will be an indication that the behavior decreases in the future.
3. The last step is easy. Just put it all together. Indicate first if it is P or N, and then indicate if there is R or P. So you will have either PR, PP, NR, or NP. Check above for what these acronyms mean if you are confused.

Example:

You study hard for your calculus exam and earn an A. Your parents send you $100. In the future, you study harder hoping to receive another gift for an exemplary grade.

1. P or N – "Your parents send you $100" but also "earn an A" – You are given an A and money so you have two reinforcers that are given which is P
2. R or P – "In the future you study harder…." – behavior increases so R
3. Together – PR

To make your life easier, feel free to underline where you see P or N and R or P. You cannot go wrong if you do.

Exercise 6.1. Contingencies of Behavior Practice

Directions: For each of the following examples identify the type of consequence. Remember, in each case a consequence is something that follows a behavior. Consequences may increase or decrease the likelihood (in the future) of the behavior that they follow. For example:

- PR (positive reinforcement): Something good is presented, which encourages the behavior in the future.
- NR (negative reinforcement): Something bad is removed or avoided, which encourages the behavior.
- PP (positive punishment): Something bad is presented, which discourages the behavior in the future.
- NP (negative punishment): Something good is removed, which discourages the behavior in the future.

Write or type the two-letter abbreviation in the box to the left of the question.

	1. Police stop drivers and give them a prize if their seat belts are buckled; seat belt use increases in town.
	2. A basketball player who commits a flagrant foul is removed from the game; his fouls decrease in later games.
	3. A soccer player rolls her eyes at a teammate who delivered a bad pass; the teammate makes fewer errors after that.
	4. To help decrease muscle aches when you are sore you take a hot bath. Since your aches went away, in the future you take a hot bath when you are sore.
	5. After a good workout in physical therapy, hospital patients are given ice cream sundaes. They work harder in later sessions.
	6. Homeowners who recycle get to deduct 5 percent from their utility bill. Recycling increases after this program begins.
	7. After completing an alcohol education program, the suspension of your driver's license is lifted. More DWI drivers now complete the program.
	8. After Jodi flirted with another guy at a party her boyfriend stopped talking to her. Jodi didn't flirt at the next party.
	9. The employee of the month is rewarded with a reserved parking space. Employees now work harder.

	10. A dog is sent to his doghouse after soiling the living room carpet. The dog has fewer accidents after that.
	11. A professor allows students with A averages in the class to skip the final exam. Students work harder for A's.
	12. You clean up your stuff more regularly now to *avoid* your roommate's (or mother's) nagging.
	13. You wax your skis making them go faster. In the future, you wax them before skiing.
	14. You do not study for your Psycholgy 101 exam and your earn an F. Your parents scold you over the phone.
	15. To deal with hunger pangs, you eat food and feel better. In the future you seek out food when you feel the pangs.
	16. You do not study for your Psychology 101 exam and your sorority or fraternity expels you from the house.
	17. You intentionally do not reply to an e-mail from your boss and are given a reprimand. In the future, you do not ignore her emails.
	18. You are given a kiss by your girlfriend after you surprise her with a rose. In the future, you are more likely to shower her with gifts.
	19. You never surprise your boyfriend with anything nice to show him how much you appreciate him. Therefore, he refrains from talking to or kissing you.
	20. Your computer shuts down after you do not plug it in and allow it to recharge. In the future, you plug it in when the battery indicator flashes red to avoid it shutting down and you losing work
	21. A cat keeps confusing the sofa for the litter box and so its owner removes its feeding dish to discourage this smelly behavior.
	22. The sun is bright on the horizon. You put on your sunglasses and the discomfort is reduced. In the future, you put on sunglasses in the same situation.
	23. You earn an A on your exam. Your professor praises you. In the future you study

	more.
	24. You and your brother are fighting over the PS3. Your parents take it away for one week and fighting decreases in the future.
	25. The annoying child jumps up and down, hand raised, yelling "Me, me, me!" until the teacher calls on her. The child jumps and yells even more in the future. When you answer, consider that there could be two reinforcement schedules going on. What are they? (i.e. In other words, there are two schedules at work)

Please see the answer key at the back of the book under Exercises after you have tried the exercise on your own.

6.4.2. A Way to Easily Identify Reinforcement Schedules

Use the following three steps:

1. When does reinforcement occur? Is it at a set or varying rate? If fixed (F), you will see words such as set, every, and each. If variable (V), you will see words like sometimes or varies.
2. Next, determine what is reinforced – some number of responses or time. If a response (R), you will see a clear indication of a behavior that is made. If interval (I), some indication of a specific or period of time will be given.
3. Put them together. First identify the rate. Write an F or V. Next identify the what and write a R or I. This will give you one of the pairings mentioned above – FI, FR, VI, or VR.

Example:

You girlfriend or boyfriend display affection about every three times you give him/her a compliment or flirt.

1. F or V – "about every three times" which is V.
2. R or I – "give him/her a compliment or flirt" which is a response.
3. Together – VR

To make your life easier, feel free to underline where you see F or V and R or I. You cannot go wrong if you do, as with the contingencies exercise.

Exercise 6.2. Reinforcement Schedules Practice

Write or type the two-letter abbreviation in the box to the left of the question.

	1. You get paid on the 10th and 25th of every month.
	2. A worker is paid $2 for every 150 envelopes stuffed.
	3. Slot machines at casinos pay off after a variable number of times the handle is pulled.
	4. Students are released from class when the bell rings.
	5. A fisherman casts and reels back his line several times before he catches a fish.
	6. You get a nickel for every soda can you take to your local recycling center.
	7. Every time you make a purchase at your local sub shop you earn points for the purchase. With every 75 points earned, you receive a free foot-long sub.
	8. Sometimes the mail is delivered at 1:00, sometimes closer to 2:00.
	9. A used car salesperson is paid commission by the dealership for each sale she makes.
	10. Consider the same salesperson in item #9. Does she get a sale for every car she attempts to sell? What schedule does this represent?
	11. You receive a small increase in your hourly wage once a year.
	12. A teacher programs a buzzer to go off at various times during the period. If students are on task they receive a reward.
	13. Matt gets a hit *about* once every three times he swings the bat.
	14. Every time Matt gets a hit, however, the fans cheer, making him feel good and want to get more hits.
	15. A child receives a star on the board when he is good and makes positive contributions to the class discussions, as determined by his teacher and after some random amount of contributions each day. Every three stars earn him a prize from the prize box. Is there more than one schedule present here? If so, what are they?

Please see the answer key at the back of the book under Exercises after you have tried the exercise on your own.

6.5. Extinction and Spontaneous Recovery

Section Learning Objectives

- Define extinction.
- Clarify which type of reinforcement extinguishes quicker.
- Define extinction burst.
- Define spontaneous recovery.

In this section, we will discuss two properties of operant conditioning – extinction and spontaneous recovery. In Section 6.6.4, we will discuss two others – discrimination and generalization. Keep them on the backburner for now.

6.5.1. Extinction

First, **extinction** is when something that we do, say, think/feel has not been reinforced for some time. As you might expect, the behavior will begin to weaken and eventually stop when this occurs. Does extinction just occur as soon as the anticipated reinforcer is not there? The answer is yes and no, depending on whether we are talking about continuous or partial reinforcement. With which type of reinforcement would you expect a person to stop responding to immediately if reinforcement is not there?

Do you suppose continuous? Or partial?

The answer is continuous. If a person is used to receiving reinforcement every time the correct behavior is made and then suddenly no reinforcer is delivered, they will cease the

response immediately. Obviously then, with partial reinforcement, a response continues being made for a while. Why is this? The person may think the schedule has simply changed. 'Maybe I am not paid weekly now. Maybe it changed to biweekly and I missed the email.' Due to this we say that intermittent or partial reinforcement shows *resistance to extinction*, meaning the behavior does weaken, but gradually.

As you might expect, if reinforcement "mistakenly" occurs after extinction has started, the behavior will re-emerge. Consider your parents for a minute. To stop some undesirable behavior you made in the past surely they took away some privilege. I bet the bad behavior ended too. But did you ever go to your grandparent's house and grandma or grandpa, or worse, BOTH….. took pity on you and let you play your video games for an hour or two (or something equivalent)? I know my grandmother used to. What happened to that bad behavior that had disappeared? Did it start again and your parents could not figure out why? Don't worry. Someday your parents will get you back and do the same thing with your kid(s).

When extinction first occurs, the person or animal is not sure what is going on and begins to make the response more often (frequency), longer (duration), and more intensely. This is called an **extinction burst**. We might even see novel behaviors such as aggression. I mean, who likes having their privileges taken away? That will likely create frustration which can lead to aggression.

One final point about extinction is important. You must know what the reinforcer is and be able to eliminate it. Say your child bullies other kids at school. Since you cannot be there to stop the behavior, and most likely the teacher cannot be either if done on the playground at recess, the behavior will continue. Your child will continue bullying because it makes him or her feel better about themselves (a PR).

With all this in mind, you must have wondered if extinction is the same as punishment. With both, isn't it correct that you are stopping an undesirable behavior? Yes, but that is the only similarity they share. Punishment reduces unwanted behavior by either giving something bad or taking away something good. Extinction is simply when you take away the reinforcer for the behavior. This could be seen as taking away something good, but the *good* in punishment is not usually what is reinforcing the bad behavior. If a child misbehaves (the bad behavior) for attention (the PR), then with extinction you would not give the PR (meaning nothing happens) while with punishment, you might slap their behind (a PP) or taking away TV time (an NP).

6.5.2. Spontaneous Recovery

You might have wondered if the person or animal will try to make the response again in the future even though it stopped being reinforced in the past. The answer is yes, and one of two outcomes is possible. First, the response is made and nothing happens. In this case extinction continues. Second, the response is made and a reinforcer is delivered. The response re-emerges. Consider a rat that has been trained to push a lever to receive a food pellet. If we stop delivering the food pellets, in time, the rat will stop pushing the lever. The rat will push the lever again sometime in the future and if food is delivered, the behavior spontaneously recovers.

6.6. Respondent Conditioning

Section Learning Objectives

- Clarify the importance of Pavlov's work.
- Describe how respondent behaviors work.
- Describe Pavlov's classic experiment, defining any key terms.
- Explain how fears are both learned and unlearned in respondent conditioning.
- Name the four principles discussed in operant conditioning and explain how they relate to respondent conditioning too.

6.6.1. Pavlov and His Dogs

You have likely heard about Pavlov and his dogs but what you may not know is that this was a discovery made accidentally. Ivan Petrovich Pavlov (1906, 1927, 1928), a Russian physiologist, was interested in studying digestive processes in dogs in response to being fed meat powder. What he discovered was the dogs would salivate even *before* the meat powder was presented. They would salivate at the sound of a bell, footsteps in the hall, a tuning fork, or the presence of a lab assistant. Pavlov realized there were some stimuli that automatically elicited responses (such as salivating to meat powder) and those that had to be paired with these automatic associations for the animal or person to respond to it (such as salivating to a bell). Armed with this stunning revelation, Pavlov spent the rest of his career investigating the learning phenomenon.

The important thing to understand is that not all behaviors occur due to reinforcement and punishment as operant conditioning says. In the case of respondent conditioning, antecedent stimuli exert complete and automatic control over some behaviors. We see this in the case of

reflexes. When a doctor strikes your knee with that little hammer it extends out automatically. You do not have to do anything but watch. Babies will root for a food source if the mother's breast is placed near their mouth. If a nipple is placed in their mouth, they will also automatically suck, as per the sucking reflex. Humans have several of these reflexes though not as many as other animals due to our more complicated nervous system.

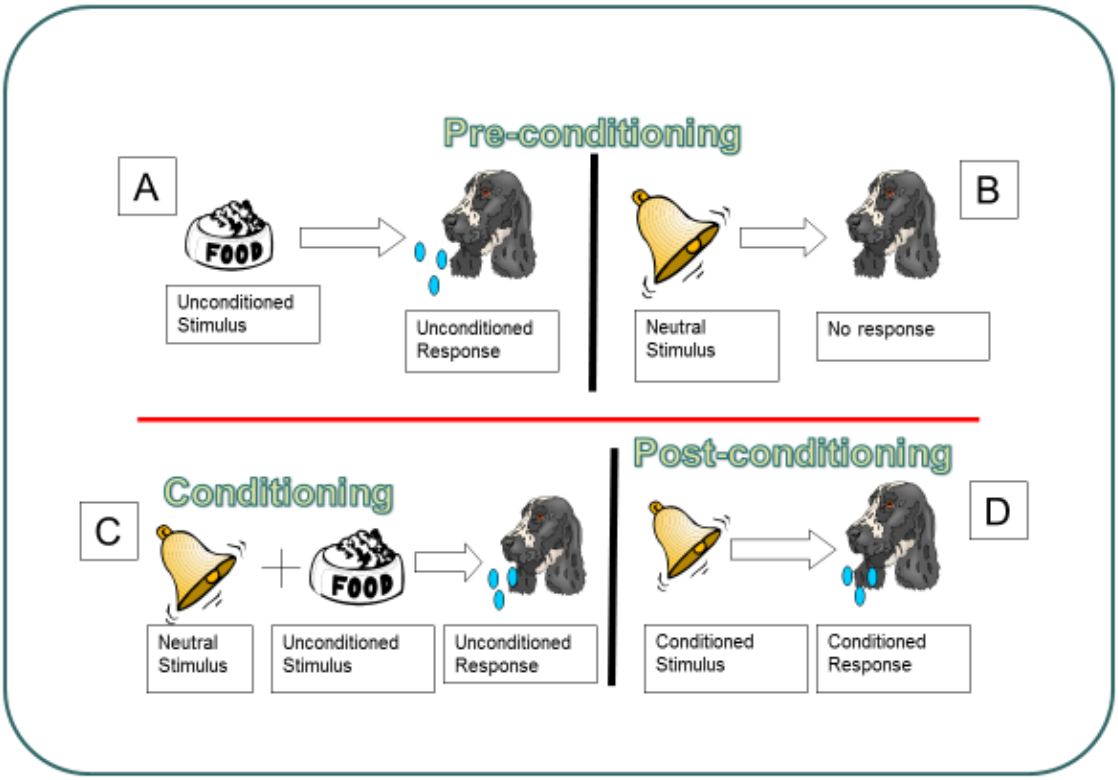
6.6.2. Respondent conditioning

Respondent conditioning occurs when we link a previously neutral stimulus with a stimulus that is unlearned or inborn, called an unconditioned stimulus. In respondent conditioning, learning occurs in three phases: preconditioning, conditioning, and postconditioning. See Figure 6.3 for an overview of Pavlov's classic experiment.

Preconditioning. Notice that preconditioning has both an A and a B panel. Really, all this stage of learning signifies is that some learning is already present. There is no need to learn it again as in the case of primary reinforcers and punishers in operant conditioning. In Panel A, food makes a dog salivate. This does not need to be learned and is the relationship of an unconditioned stimulus (UCS) yielding an unconditioned response (UCR). Unconditioned means unlearned. In Panel B, we see that a neutral stimulus (NS) yields nothing. Dogs do not enter the world knowing to respond to the ringing of a bell (which it hears).

Conditioning. Conditioning is when learning occurs. Through a pairing of neutral stimulus and unconditioned stimulus (bell and food, respectively) the dog will learn that the bell ringing (NS) signals food coming (UCS) and salivate (UCR). The pairing must occur more than once so that needless pairings are not learned such as someone farting right before your food

Figure 6.3. Pavlov's Classic Experiment



comes out and now you salivate whenever someone farts (…at least for a while. Eventually the fact that no food comes would extinguish this reaction but still, it would be weird for a bit).

Postconditioning. Postconditioning, or *after* learning has occurred, establishes a *new* and not naturally occurring relationship of a conditioned stimulus (CS; previously the NS) and conditioned response (CR; the same response). So the dog now reliably salivates at the sound of the bell because he expects that food will follow, and it does.

Comprehension check. A lot of terms were thrown at you in the preceding three paragraphs and so a quick check will make sure you understand. First, we talk about stimuli and responses being unconditioned or conditioned. The term *conditioned* means learned and if it is *unconditioned* then it is unlearned. Next, a *stimulus* (or stimuli) is an event/object in your

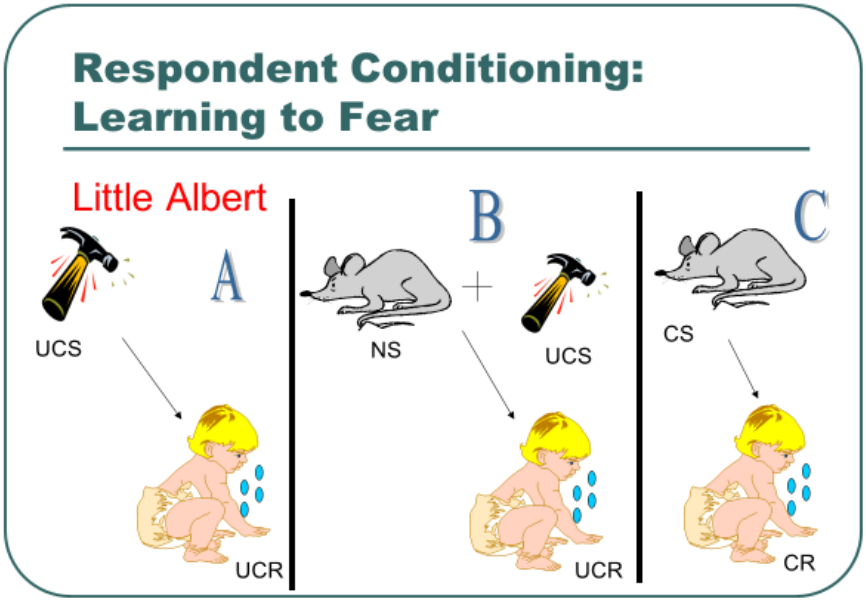
environment that you detect via your five sensory systems – vision, hearing, taste, touch, and smell. A *response* is a behavior that you make due to one of these stimuli. Finally, *pre* means before and *post* means after, so *preconditioning* comes before learning occurs, conditioning is when learning is occurring, and *postconditioning* is what happens after learning has occurred. Be sure to keep these terms straight; this explanation is an easy way to do so.

6.6.3. Learning (and unlearning) Phobias

One of the most famous studies in psychology was conducted by Watson and Rayner (1920). Essentially, they wanted to explore "the possibility of conditioning various types of emotional response(s)." The researchers ran a 9-month-old child, known as Little Albert, through a series of trials in which he was exposed to a white rat to which no response was made outside of curiosity (NS–NR not shown).

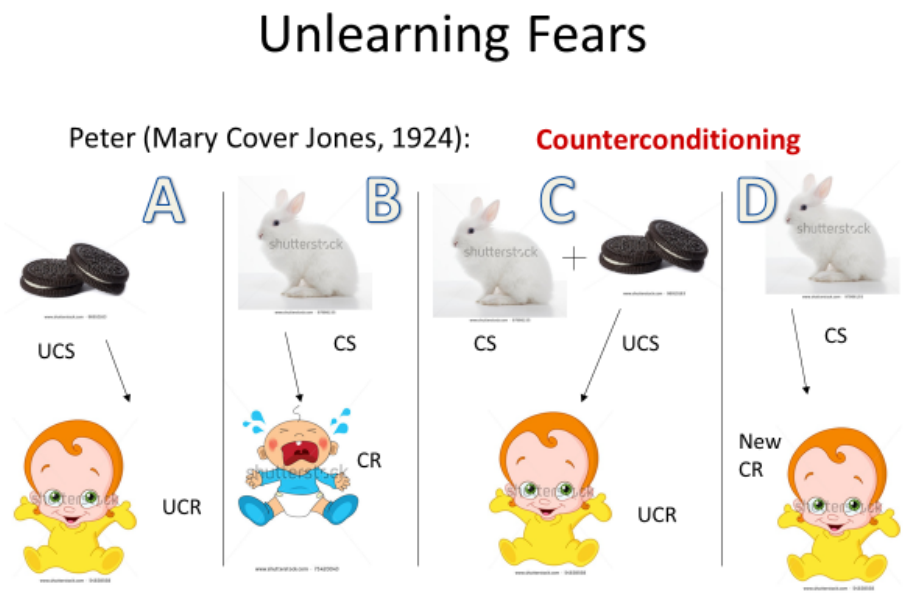
In Panel A of Figure 6.4, we have the naturally occurring response to the stimulus of a loud sound. On later trials, the rat was presented (NS) and followed closely by a loud sound (UCS; Panel B). After several conditioning trials, the child responded with fear to the mere presence of the white rat (Panel C).

Figure 6.4. Learning to Fear



As fears can be learned, so too they can be unlearned. Considered the follow-up to Watson and Rayner (1920), Jones (1924; Figure 6.5) wanted to see if a child who learned to be afraid of white rabbits (Panel B) could be conditioned to become unafraid of them. Simply, she placed the child in one end of a room and then brought in the rabbit. The rabbit was far enough away so as to not cause distress. Then, Jones gave the child some pleasant food (i.e., something sweet such as cookies [Panel C]; remember the response to the food is unlearned, i.e., Panel A). The procedure in Panel C continued with the rabbit being brought in a bit closer each time to eventually the child did not respond with distress to the rabbit (Panel D).

Figure 6.5. Unlearning Fears



This process is called **counterconditioning**, or the reversal of previous learning.

Another respondent conditioning way to unlearn a fear is what is called **flooding** or exposing the person to the maximum level of stimulus and as nothing aversive occurs, the link between CS and UCS producing the CR of fear should break, leaving the person unafraid. That is the idea at least and if you were afraid of clowns, you would be thrown into a room full of clowns. Though you may be nervous and likely terrified at first, when nothing bad happens over time, you will eventually calm down and no longer feel fear (CR) due to the presence of clowns. The association of clowns (CS) and something bad happening (UCS) would have been broken. It should be noted that for this fear to have developed, there was likely an event earlier in life that caused it. The functional assessment should help in identifying this event.

6.6.4. Other Key Concepts

In operant conditioning we talked about generalization, discrimination, extinction, and spontaneous recovery. These terms apply equally as well to respondent conditioning as follows:

- **Respondent Generalization** – When a number of similar CSs or a broad range of CSs elicit the same CR. An example is the sound of a whistle eliciting salivation the same as the sound of a bell, both detected via audition.
- **Respondent Discrimination** – When the CR is elicited by a single CS or a narrow range of CSs. Teaching the dog to not respond to the whistle but only to the bell, and just that type of bell. Other bells would not be followed by food, eventually leading to….
- **Respondent Extinction** – When the CS is no longer paired with the UCS. The sound of a school bell ringing (new CS that was generalized) is not followed by food (UCS), and so eventually the dog stops salivating (the CR).
- **Spontaneous recovery** – When the CS elicits the CR after extinction has occurred. Eventually, the school bell will ring making the dog salivate. If no food comes, the behavior will not continue on. If food comes, the salivation response will be re-established.

So again, all four terms from operant conditioning apply in respondent conditioning too.

6.7. Observational Learning

Section Learning Objectives

- Differentiate observational and enactive learning.
- Describe Bandura's classic experiment.
- Clarify how observational learning can be used in behavior modification.

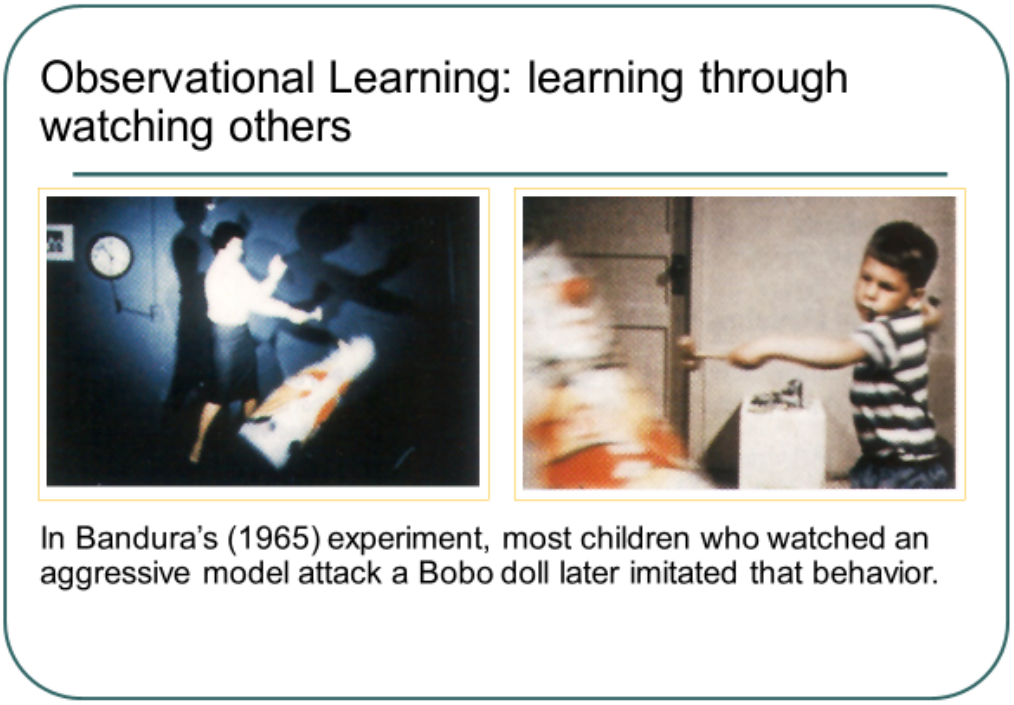
6.7.1. Learning by Watching Others

There are times when we learn by simply watching others. This is called **observational learning** and is contrasted with **enactive learning**, which is learning by doing. There is no firsthand experience by the learner in observational learning. As you can learn desirable behaviors such as watching how your father bags groceries at the grocery store (I did this and still bag the same way today) you can learn undesirable ones too. If your parents resort to alcohol consumption to deal with the stressors life presents, then you too might do the same. What is critical is what happens to the model in all of these cases. If my father seems genuinely happy and pleased with himself after bagging groceries his way, then I will be more likely to adopt this behavior. If my mother or father consumes alcohol to feel better when things are tough, and it works, then I might do the same. On the other hand, if we see a sibling constantly getting in trouble with the law then we may not model this behavior due to the negative consequences.

6.7.2. Bandura's Classic Experiment

Albert Bandura conducted the pivotal research on observational learning and you likely already know all about it. Check out Figure 6.6 to see if you do. In Bandura's experiment, children were first brought into a room to watch a video of an adult playing nicely or aggressively with a Bobo doll. This was a model. Next, the children are placed in a room with a lot of toys in it. In the room is a highly prized toy but they are told they cannot play with it. All other toys are fine and a Bobo doll is in the room. Children who watched the aggressive model behaved aggressively with the Bobo doll while those who saw the nice model, played nice. Both groups were frustrated when deprived of the coveted toy.

Figure 6.6. Bandura's Classic Experiment



6.7.3. Observational Learning and Behavior Modification

Bandura said if all behaviors are learned by observing others and we model our behaviors on theirs, then undesirable behaviors can be altered or relearned in the same way. **Modeling** techniques are used to change behavior by having subjects observe a model in a situation that usually causes them some anxiety. By seeing the model interact nicely with the fear evoking stimulus, their fear should subside. This form of behavior therapy is widely used in clinical, business, and classroom situations. In the classroom, we might use modeling to demonstrate to a student how to do a math problem. In fact, in many college classrooms this is exactly what the instructor does. In the business setting, a model or trainer demonstrates how to use a computer program or run a register for a new employee. At the gym, a trainer will demonstrate how to use a weight machine.

6.7.4. Final Word on Modeling

To end our discussion on modeling I thought it would be important to point out that we do not model everything we see. Why? First, we cannot pay attention to everything going on around us. We are more likely to model behaviors by someone who commands our attention. Second, we must remember what a model does in order to imitate it. If a behavior is not memorable, it will not be imitated. Third, we must try to convert what we see into action. If we are not motivated to perform an observed behavior, we probably will not show what we have learned.

Module Recap

As I noted, we are now to the business of identifying strategies we can use to modify our behavior. To help you understand what you are about to learn, Module 6 presented the four contingencies of behavior, the four schedules of reinforcement, and then explained the concepts of extinction and spontaneous recovery. We also practiced with these concepts to ensure you understand them. Finally, we discussed respondent conditioning and observational learning procedures, to include flooding and modeling, respectively.

Before moving on, let your instructor know if you are still confused. Once ready, take on the topic of antecedent focused strategies in Module 7.

Part III. Identifying Strategies to Bring About Behavior Change

Module 7:

Advanced Operant Conditioning Procedures: Antecedent Focused

Module 7: Advanced Operant Conditioning Procedures: Antecedent Focused

Module Overview

In Module 6, we discussed basic operant conditioning principles, respondent conditioning, and observational learning, upon which the advanced principles to be discussed in Modules 7-9 are built. The way we will tackle strategies is to examine those that can be used on the antecedents, those that affect the behavior, and those that alter the consequences. To start, recall that antecedents are the stimuli that lead to our behavior. We have seen this presented as S → R → C or A → B → C. The frameworks are the same. S and A are stimuli and antecedents and refer to environmental or internal causes of our behavior. R and B are the behavior(s) we are making and can include both the desirable behavior and any problem behavior(s). C is the consequence(s) of our behavior. When coming up with a treatment plan, you will likely use at least one for all three components. Antecedents are especially important because if you have all the right triggers or cues in place, you are more likely to make the desired behavior and avoid making undesirable ones.

To that end, we will engage in a brief discussion of goal setting again and then stimulus control procedures, transfer of stimulus control, self-instructions, and social support. These are umbrella strategies, and most have several under them. Practice makes perfect, and so at the end of the module, we will do just that using each. Take your time going through them and ask questions should you have any.

Module Outline

7.1. Goal Setting Revisited

7.2. Stimulus Control Procedures: Antecedent Manipulations

7.3. Stimulus Control: Discrimination and Generalization

7.4. Transfer of Stimulus Control: Prompting and Fading

7.5. Transfer of Stimulus Control: Programming

7.6. Self-Instructions

7.7. Social Support

7.8. Practice Exercise

Module Learning Outcomes

- Restate the importance of goal setting and clarify its use at the antecedent stage.
- Describe ways to manipulate antecedents and elicit desirable behavior.
- Contrast uses of discrimination and generalization in behavior modification.
- Discuss the utility of prompts and fading.
- Discuss the usefulness of programming.
- Clarify how self-instructions can be used to bring about behavior change.
- Discuss the benefit of social support for behavior modification.
- Choose the correct strategy to use in practice scenarios or perform the indicated action.

7.1. Goal Setting Revisited

Section Learning Objectives

- Clarify how goal setting can be used at the antecedent stage to elicit the desired behavior.

We first introduced the concept of goal motivation in Section 4.2 and discussed proximal and distal goals. The concepts are being brought up again because they can be applied to antecedent manipulations as well. Later in this module we will discuss self-instructions, which you can likely figure out are instructions that we say to ourselves. We will also discuss antecedent manipulations to include having a cue to engage in the good behavior. For both of these strategies, whether telling yourself or leaving a post-it reminder, you can increase the success of your plan if you are ever mindful of your goals. Have you ever seen the Yoplait commercial with the "itsy bitsy teenie weenie yellow polka dot bikini" that the woman (Ali Raymer) wants to fit into for summer? She hangs it up on her wall as a constant reminder of what her final goal is. Of course, she has subgoals along the way, but knowing what you ultimately want to achieve can motivate you in those tough times. Check out the video if you have never seen it:

https://www.youtube.com/watch?v=yeKrb--d5xQ

You can take the same approach no matter what your end/distal goal is. Actually, you can post reminders of your proximal goals too. One great example of how to do this was given in Module 4.2 for running. I would almost propose that some end goals necessitate proximal goals or else, the final goal will seem too much to achieve. What if you want to lose 100 pounds? The bikini on the wall may be a bit too much knowing you have a long way to go. How many sizes will you have to drop along the way to fit into it? In this case, the proximal goals make the distal

goal more manageable. Setting your first goal at losing 10 pounds is doable and will motivate you. Then set your next goal at losing 25 lbs. and so forth. Eventually, all of your subgoals will add up to the total weight loss of 100 lbs. Patience is a virtue, and patience is more practical when the goal is 10 lbs. and not 100. Post reminders of your end goal, current distal goal, and progress to date. Having these reminders/updates in a visible location can remind you to keep engaging in the desirable behavior and in a way, serve as consequences too. If you look up at your board and see that you have lost 25lbs. on the road to 100, you will feel pride (a PR) and friends and family may even compliment you (also PRs). Also, the actual weight loss and movement into smaller sizes for clothes serves as NRs. How so? You are taking away something aversive, i.e. the excess weight, that makes the behavior of working out, eating healthy, getting sleep, etc. more likely to occur in the future. It will help you to deal with temptations as they arise too.

Keep this in mind as you develop your own treatment plan, or if in the future, you are working with others to develop behavior modification plans.

Key Point – Knowing and revisiting your goals (and your progress to date) is a great way to ensure you engage in the desirable behavior and avoid making any problem behaviors.

7.2. Stimulus Control Procedures: Antecedent Manipulations

Section Learning Objectives

- Define discriminative stimuli.
- Clarify how stimuli or antecedents become cues.
- List and describe the 6 antecedent manipulations.

One critical step is to exert control over the cues for the behavior and when these cues bring about a specific behavior, we call them **discriminative stimuli** (also called a S^D). So, what makes an antecedent a cue for a behavior? Simply, the behavior is reinforced in the presence of the specific stimulus and not reinforced when the stimulus or antecedent is not present.

The strategies we will discuss center on two ideas: we can modify an existing antecedent or create a new one. With some abusive behaviors centered on alcohol, drugs, nicotine, or food, the best policy is to never even be tempted by the substance. If you do not smoke the first cigarette, eat the first donut, take the first drink, etc. you do not have to worry about making additional problem behaviors. It appears that abstinence is truly the best policy.

But what if this is not possible or necessary? The following strategies could be attempted:

- **Create a Cue for the Desirable Behavior** – If we want to wake up in the morning to go the gym, leave your gym clothes out and by the bed. You will see them when you wake up and be more likely to go to the gym. If you are trying to drink more water, take a refillable bottle with you to classes. Hiking around a campus all day can be tough and so having your water bottle will help you to stay hydrated.

- **Remove a Cue for the Undesirable or Problem Behavior** – In this case, we are modifying an existing antecedent/cue. Let's say you wake up in the morning, like I do, and get on your phone to check your favorite game. You initially only intend to spend a few minutes doing so but an hour later you have done all the leveling up, resource collecting, candy swiping, structure building, etc. that you can and now, you have taken your time to do a work out. In this case, the phone use is a problem behavior because it interferes or competes with the execution of the desirable behavior of going to the gym. What do you do? There is a simple solution – don't leave your phone by your bed. If it is not in the room, it cannot be a reminder for you to engage in the problem behavior. The phone usage in the morning already exists as a behavior and the phone serves as a cue for playing games. You enjoy playing the games and so it is reinforcing. If the phone is not present then the behavior of playing the game cannot be reinforced and the cue loses its effectiveness. In the case of water, if we do not carry tea with us we cannot drink it, but can only drink our water bottle, thereby meeting our goal.
- **Increasing the Energy Needed to Make a Problem Behavior** – Since the problem behavior already exists and has been reinforced in the past, making its future occurrence likely in the presence of the stimulus, the best bet is to make it really hard to make this unwanted behavior. Back to the gym example. We already know that our phone is what distracts us and so we remove the stimuli. One thing we could do is place the phone in the nightstand. Out of sight. Out of mind, right? Maybe. Maybe not. Since we

know the phone is in the nightstand, we could still pull it out in the morning. If that occurs, our strategy to remove the cue for phone usage fails. We can still remove it, but instead of placing it in the nightstand, place it in the living room and inside our school bag. So now it is out of sight, out of mind, but also far away which will require much more physical energy to go get than if it was in the nightstand beside us. Think about this for a minute. The strategy literally means that we expend more energy to do the bad behavior, than…

- **Decreasing the Energy Needed to Engage in the Desirable Behavior** - …we would for the good behavior. Having our clothes by our bed is both a cue to go to the gym, but also, by having them all arranged in one place, we don't have to spend the extra time and energy running around our bedroom looking for clothes. We might also place our gym bag and keys by the door which saves us energy early in the morning when we are rushing out to the gym. What about for drinking water? Instead of carrying a water bottle with us we could just drink water from the water fountains at school. Okay. But let's say that you are standing in the hallway and the nearest water fountain is all the way up the hallway and near the door to exit the building. You can walk up the hall, bend over, push the button, drink the water, remove your hand from the fountain, walk back down the hall, re-enter the classroom, and then take your seat. Not too bad, right? WRONG. If you had your water bottle in your backpack, you would only need to reach down, pick it up, open the bottle, take a drink, cap the bottle, and sit it back down on the floor or on the desk. You never have to leave your seat which means you are making far

fewer behaviors in the overall behavior of drinking water, and so expending much less energy. Now you can use this energy for other purposes such as taking notes in class and raising your hand to ask a question.

Another way you can look at antecedents is to focus on the consequences. Wait. What? Shouldn't that be under Module 9? Not really. We might focus on the motivating properties of the consequence so that in the future, we want to make the behavior when the same antecedent is present. Notice the emphasis on *want*. Remember, you are enhancing the motivating properties. How do we do this? (Note – We discussed this in Section 6.2.3 and examples were provided in Table 6.1.)

- First, we could use what are called **establishing operations** or when we enhance the reinforcing value of the consequence of a desirable behavior so that the same behavior occurs in the future when the same antecedent is present. Weight loss is really tough for most especially when there are so many yummy temptations out there. One solution is to find a cookbook or at least recipes that you really, really like. This will create excitement when dinner time comes and make it more likely that you stay on your diet…and want to. You have enhanced the reinforcing value of eating healthy and so in the future when your significant other says "What's for dinner?" you can pull out your handy dandy recipe book/box/internet site and cook up something wonderful…and healthy. How about grocery shopping? If you want to eat healthy, don't go to the store hungry or in a state of food deprivation. If you do, you are creating an establishing operation, but this time for the undesirable behavior.

Think about that. If you can enhance the reinforcing value of a desirable behavior you can do so for an undesirable one too. Be careful.

- Second, we could use an **abolishing operation** and reduce the reinforcing value of an undesirable behavior. In the case of buying healthy foods, junk food is less desirable if we go to the grocery store full, or in a state of satiety. Do you really want to avoid eating pizza late night? Look up the nutritional information most every restaurant has available on their website or onsite. It is alarming just how calorie dense and fattening some of our favorites are. Ignorance is not bliss in this case. If you are on a weight loss program, recording your calories via an app like Fitbit or MyFitnessPal is not only a smart strategy, but necessary. Weight loss occurs when we take in less calories then we expend. Knowledge is power…and the power to make better choices.

If you have any further confusion on establishing and abolishing operations, please see Module 6 and Table 6.1.

7.3. Stimulus Control: Discrimination and Generalization

Section Learning Objectives

- Define and exemplify stimulus control.
- Define stimulus discrimination.
- Define and describe discrimination training.
- Define and clarify why stimulus generalization is necessary.
- Describe generalization training and the strategies that can be used.

7.3.1. Stimulus Control

When an antecedent has been consistently linked to a behavior in the past, it has gained **stimulus control** over the behavior. It is now more likely to occur in the presence of this specific stimulus or a *stimulus class*, defined as antecedents that share similar features and have the same effect on behavior. Consider the behavior of hugging someone. Who might you hug? A good answer is your mother. She expects, and appreciates, hugs. Your mother is an antecedent to which hugging typically occurs. Others might include your father, sibling(s), aunts, uncles, cousins, grandparents, spouse, and kids. These additional people fall under the stimulus class and share the similar feature of being loved ones. You could even include your bff. What you would not do is give the cashier at Walmart a hug. That would just be weird.

Do you stop when you get to a red octagonal sign? Probably and the Stop sign has control over your behavior. In fact, you don't even have to think about stopping. You just do so. It has become automatic for you. The problem is that many of the unwanted behaviors we want to change are under stimulus control and happen without us even thinking about them. These will

have to be modified for our desirable behavior to emerge. This is where cues can help, or even self-instructions, discussed later. Adding new antecedents right before the old ones occur is crucial to do. So, before you pick up that bag of chips in the grocery store, remind yourself to look at the back of the bag at how many calories are in each serving. I mean, really, who eats just one serving?

7.3.2. Stimulus Discrimination

We have established that we will cease all movement of our vehicle at a red octagonal stop sign and without thinking. A reasonable question to ask is why don't we do this at a blue octagonal sign (ignoring the fact that none exist). **Stimulus discrimination** is the process of reinforcing a behavior when a specific antecedent is present and only when it is present. We experience negative reinforcement when we stop at the red octagonal sign and not a sign of another color, should a person be funny and put one up. The NR in this case is avoidance of something aversive such as an accident or ticket, making it likely that we will obey this traffic sign in the future. **Discrimination training** involves the reinforcement of a behavior when one stimulus is present but extinguishing the behavior when a different stimulus is present. From the example above, the red stop sign is reinforced but the blue one is not.

So in discrimination training we have two stimuli:

- The S^D or discriminative stimulus whose behavior is reinforced.
- and a S^Δ (*S-delta)* whose behavior is not reinforced and so is extinguished.

When a behavior is more likely to occur in the presence of the S^D and not the S^Δ, we call this a **discriminated behavior**. And this is where stimulus control comes in. The discriminated

behavior should be produced by the S^D only. In terms of learning experiments, we train a pigeon to peck an oval key but if it pecks a rectangular one, no reinforcer is delivered.

7.3.3. Stimulus Generalization

As a stimulus can be discriminated, so too can it be generalized. **Stimulus generalization** is when a behavior occurs in the presence of similar, novel stimuli and these stimuli can fall on a *generalization gradient*. Think of this as an inverted u-shaped curve. The middle of the curve represents the stimulus that we are training the person or animal to respond to. As you move away from this stimulus, to the left or right, the other stimuli become less and less like the original one. So near the top of the inverted U, a red oval or circle will be like a red octagon but not the same. Near the bottom of the curve you have a toothbrush that has almost zero similarity to a stop sign.

In behavior modification, we want to promote generalization meaning that if we teach someone how to make a desirable response in a training situation, we want them to do that in all *relevant* environments where that behavior can occur, whether that be in a classroom, at home at the dinner table or in their bedroom, on the playground at recess, at the park, with the grandparents, etc. This is called **generalization training** and is when we reinforce behavior across situations until generalization occurs for the stimulus class. The desirable behavior should generalize from the time with a therapist or applied behavior analyst and to all other situations that matter. To make this happen you could/should:

- Always reinforce when the desirable behavior is made outside of training. By doing this, the desirable behavior is more likely.

- Teach other people to reinforce the desirable behavior such as teachers and caregivers. The therapist cannot always be with the client and so others must take control and manage the treatment plan. But be sure they are trained, understand what to reinforce, and know what the behavioral definition is.
- Use natural contingencies when possible. Let's say you are trying to teach social skills to a severely introverted client. In training, she does well and you reinforce the desirable behavior. Armed with new tactics for breaking the ice with a fellow student in class, she goes to class the next day and strikes up a conversation about the weather or the upcoming test. The fellow student's response to her, and the continuation of the conversation, serve as reinforcers and occur naturally as a byproduct of her initiating a conversation. Another great example comes from a student of mine who was trying to increase her behavior of eating breakfast before class. She discovered that she felt more alert and energetic when she ate breakfast then when she did not, which are positive reinforcers, and naturally occurring. In fact, she was so happy about this, she jumped four goals and went from her initial goal of eating before class two times a week, to eating breakfast 6-7 times a week. Her behavior generalized beyond simply eating before class to eating breakfast every day when she woke up. It should be noted that her distal goal was 5 days, so in her first week of treatment she had already exceeded this goal. Way to go.
- Practice making the desirable response in other environments during training. You can achieve this by imagining these environments, role playing, or setting up the environments to some extent.

- Related to the previous strategy, use common stimuli that are present in other environments as much as possible. An example could be a stuffed animal that a child has at home. Or have the special education teacher bring the child's desk to the training environment and have them sit in it.
- Encourage the client to use cues to make the desirable response outside of the training environment. These are reminders to engage in the correct behavior and can be any of the antecedent manipulations already discussed or the upcoming discussion of self-instructions.

Notice that right before I defined generalization training, I placed the word 'relevant' in italics. Why is that? We may not need to generalize to every situation or place. Here is an example. Say your behavior modification project is to go to bed earlier so you can feel more rested the next day for class. You do this from late August or early September through early to late May, depending on how your school runs. But from May to August, you are not in school, back at home resting, and really don't have to worry about the early bedtime. Your behavior of going to bed earlier (and not staying up to work all night) does not need to generalize to home or the summertime as well. Keep this in mind.

7.4. Transfer of Stimulus Control: Prompting and Fading

Section Learning Objectives

- Define prompts.
- List, describe, and exemplify the four types.
- Define fading.
- List and describe the two major types of fading and any subtypes.

Another great strategy that can be used is what is called **prompts**, or a stimulus that is added to the situation and increases the likelihood that the desirable response will be made when it is needed. The response is then reinforced. There are four main types of prompts:

- **Verbal** – Telling the person what to do
- **Gestural** – Making gestures with your body to indicate the correct action the person should engage in
- **Modeling** – Demonstrating for the person what to do
- **Physical** – Guiding the person through physical contact to make the correct response

These are all useful and it is a safe bet to say that you have experienced all of them at some point. How so? Let's say you just started a job at McDonald's. You were hired to work the cash register and take orders. On your first day you are assigned a trainer and she walks you through what you need to do. She might give you verbal instructions as to what needs to be done and when, and how, to work the cash register. As you are taking your first order on your own,

you cannot remember which menu the Big Mac meal fell under. She might point in the right area which would be making a gesture. Your trainer might even demonstrate the first few orders before you take over so that you can model or imitate her later. And finally, if you are having problems, she could take your hand and touch the Big Mac meal key, though this may be a bit aversive for most and likely improper. The point is that the trainer could use all these prompts to help you learn how to take orders from customers. Consider that the prompts are in a sort of order from the easiest or least aversive (verbal) to the hardest or most aversive (physical). This will be important in a bit.

It is also prudent to reinforce the person when they engage in the correct behavior. If you told the person what to do, and they do it correctly, offer praise right away. The same goes for them complying with your gesture, imitating you correctly, or subjecting themselves to a physical and quite intrusive or aversive prompt.

Prompts are not a part of everyday life. Yes, you use them when you are in training, but after a few weeks, your boss expects you to take orders without even a verbal prompt. To get rid of prompts, you can either fade or delay the prompts. **Prompt fading** is when the prompt is gradually removed as it is no longer needed. *Fading within a prompt* means that you use just one prompt and once the person has the procedure down, you stop giving them a reminder or nudge. Maybe you are a quick study and the trainer only needs to demonstrate the correct procedure once (modeling). The trainer would simply discontinue use of the prompt. You can also use what is called *fading across prompts*. This is used when two or more prompts are needed. Maybe you are trying to explain an algebraic procedure to your child who is gifted in math. You could start with a verbal prompt and then move to gestural or modeling if they have a bit of an issue. Once the procedure is learned, you would not use any additional prompts. You are fading from least to

most intrusive. But your other child is definitely not math oriented. In this case, modeling would likely be needed first and then you could drop down to gestural and verbal. This type of fading across prompts moves from most to least intrusive.

Finally, **prompt delay** can be used and is when you present the S^D and then wait for the correct response to be made. You delay delivering any prompts to see if the person engages in the desirable behavior. If the person does, then no prompt is needed, but if not, then you use whichever prompt is appropriate at the time. For instance, you might tell your child to do the next problem and then wait to see if they can figure it out on their own. If not, you use the appropriate prompt.

7.5. Transfer of Stimulus Control: Programming

Section Learning Objectives

- Define programming.
- Describe how to use programming.
- Exemplify programming.

Now that we have discussed generalization and prompts, let's put them together. **Programming** is a procedure whereby we use prompts, in a temporary way, to establish a generalization. Recall that we want to generalize across situations and environments. To effectively use programming, do the following:

- Start with the prompt.
- Reinforce the behavior, once started, in the presence of a novel stimulus such as a second environment where the behavior occurs. This might be the playground, and the first location was the classroom.
- Fade the prompt.
- Repeat the process in other, novel stimuli/situations. Note that without the replication, the process is not programming.

Be sure you are clear as to what occurs in fading and programming. Fading is all about making a discrimination between two stimuli while programming concerns the use of prompts to generalize to a stimulus class.

Now to an example that goes beyond situations. Most of us have a cat or dog or at least know of their existence. We also know that these household pets come in all types of shapes, sizes, and colors. My wife and I are particularly fond of miniature Dachshunds but my wife's aunt has a Pitbull Mastiff mix and a shepherd lab retriever mix. Long story short, they are incredibly large dogs. Young kids do not quite understand that dogs come in all different shapes and sizes and so may not call both the mini-Doxie a dog and the Mastiffs dogs. Through programming we can teach these kids to use the word in both cases as they are part of the same stimulus class. It would be good to also have the child come into contact with other dogs…and cats. Why cats? Because children tend to overextend in the realm of language and a discrimination between these stimuli will be necessary. The response in both cases is saying the word dog. In one situation we want it to generalize (with all types of dogs) but in other cases we do not as with the cats.

7.6. Self-Instructions

Section Learning Objectives

- Clarify the use of self-instructions in behavior modification.

Earlier, I indicated that leaving cues for you to make the desired behavior is an effective antecedent manipulation. I have also said that **self-instructions**, or statements you write or say to yourself as positive affirmations and motivational tools, could be used too. These statements should remind yourself of what the desirable behavior is, why you are doing it (linked to your reason for change as discussed in Module 3), and what you hope to gain from it (your final goal).

This may seem like a simple strategy and it is. It is low cost, low stakes, but very important. People use motivational statements all the time and even buy posters with their words printed across and hang them up. This is no different and you can hang these self-instructions of what to do around your house, in your car, have them on your phone, etc. If you are developing a self-modification plan, write them yourself and if you are working with a client on a behavior modification/ intervention plan, have them develop the statements. Then hang them up. Use them to replace self-defeating statements such as saying, "I am fat." Instead, say, "I can lose the weight and be healthy." When you need your statements, say them out loud. If you are having a moment of weakness in the grocery store (i.e. you forgot to go satiated), then use the statements to walk right by the junk food aisle.

An important distinction between self-instructions, prompts, and cues needs to be made. Let's say you want to drink more water. You have decided to use all three strategies in your behavior modification plan. How would they be used in a way that makes each strategy unique?

1. Self-instructions – You might write to read later, or say to yourself motivational statements such as, "Drinking water helps with my skin's complexion," "Drinking water is an important part of my overall health," and "Drinking water makes me feel good, especially when I am thirsty."
2. Prompts – You might ask a friend to verbally remind you to drink water or to point to your water bottle every hour on the hour.
3. Cues – You might carry your water bottle with you at school which involves the use of presenting the cue for the desirable behavior. Also, you might engage in reducing the effort to make the desirable behavior since you don't have to go any further than your book bag to find water.

The fundamental difference is that prompts come from outside you and usually from other people while self-instructions are self-generated and could be something you say to yourself or be a motivational statement you post so you can read it throughout the day. In terms of cues, these are from outside you but don't involve others. These are manipulations of your environment to help you engage in the desired behavior. You might say that self-instructions that are written, such as hanging your motivational statements on your wall, act as antecedent manipulations also (presenting cue for desirable behavior). Your strictly verbal self-instructions do not.

7.7. Social Support

Section Learning Objectives

- Clarify the use of social support in behavior modification.

Social support is a crucial strategy to implement in behavior modification. When executing a self-modification plan, we all will have moments of weakness and need reassurance from those closest to us. Or better yet, maybe we are doing really well and compliments and 'likes' on social media motivate us all the more. Social support has been shown to buffer against the negative effects of stress and when we make a public declaration of our goal, we are more likely to stick with it. In relation to the discussion at the end of Section 7.6, prompts require another person's involvement in our plan and so go hand-in-hand with social support. Cues and self-instructions do not.

Be careful with social support though. It may be that the desired behavior we wish to make is being thwarted by tempting situations and people. In this case, you would likely not want to engage in social support, especially with the person bringing temptation into your plan. Maybe you want to stop eating Taco Bell late at night and do so because your roommate is always hungry late at night. This individual would likely not be a useful player in your behavior modification plan. *Be aware of the effect other people have on your behaviors.*

7.8. Practice Exercise

Section Learning Objectives

- Complete the following exercise using what you have learned in this module.

Okay. We have covered quite a lot here and before tackling exercises, let's lay all the strategies out:

- Goal Setting (revisited) – Restate your long term and short-term goals.
- Antecedent Manipulations – Cues you use to engage in the desirable behavior.
- Discrimination – Making the response in the presence of the S^D only.
- Generalization – Making the response in the presence of stimuli that are like the S^D or within a stimulus class.
- Prompting and Fading – Others using verbal, gestural, modeling, or physical prompts to help the person make the desirable behavior and then removing them once the behavior is established.
- Programming – Using prompts to generalize across a stimulus class.

- Self-Instructions – Writing and later saying, positive statements to help you make the correct behavior.
- Social Support – Getting the help of others to ensure you are successful with your plan.

With this overview in mind, try the following exercise.

Exercise 7.1: Strategies to Use with the Antecedent

Directions: For the following, select the appropriate strategy or use the strategy that is indicated.

1. How might you use goal setting with the following target behaviors? It is a good idea to write a behavioral definition first.

- Quitting smoking (a functional assessment shows that the individual smokes about 20 cigarettes a day)
- Reducing caloric intake, as part of a weight loss program
- Increasing feelings of self-worth
- Overcoming social phobia (tackle this as a deficit, not an excess)
- Eliminating nail biting.
- Weight training (you do it already, but want to increase how much you lift – so increase intensity)
- Reducing late night eating.

2. A child is having behavioral issues in his gym class and his PE teacher has contacted an applied behavioral analyst (that is, you) for help. The child has sessions with you 2 times a week and outside of his normal classroom setting. What would you do to help the student generalize beyond your therapy sessions?

3. How would you teach your child to play baseball and bat?

4. You have decided that you drink too much coffee throughout the day and want to instead increase your water consumption. How might you go about utilizing antecedent manipulations? (There are actually two behaviors here, or you could see it as replacing drinking coffee with water.)

5. How might you utilize an establishing operation with our target behavior of overcoming social phobia?

6. In Question 1, we discussed setting goals to eliminate the habit of nail biting. How might an abolishing operation be useful in our treatment plan?

7. In terms of increasing feelings of self-worth, how might you use the antecedent manipulation of presenting a cue for the desirable behavior, self-instructions, social support, and prompts?

8. A teacher finds that one of her students is very shy and often plays alone at recess. She develops a behavior modification plan that successfully helps the student to be more outgoing and sociable on the playground and even in gym. The problem is that the student becomes too outgoing to the point of being disruptive in regular classroom activities. How might you help the teacher to establish stimulus control over the behavior?

9. You want to teach your child how to set the table for dinner so that in the future, he can set it as part of his allowance. What prompts will you use? You want your child to do this on his own and so you will need to fade the prompts also. What tactic will you use? How might you also test whether or not your child truly knows how to set the table?

10. Your friend is helping you with your behavior modification plan by providing social support in the form of prompts. Your target behavior is being more sociable while at school. Discuss why programming will be a needed strategy in the treatment plan.

Module Recap

In Module 7, we discussed the first set of strategies used to change an unwanted behavior or to establish a new behavior. These focused on the antecedent and included goal setting, antecedent manipulations, discrimination and generalization, prompting and fading, programming, self-instructions, and social support. Be sure you complete the exercise in Section 7.8 and then review the answers with your instructor or class.

In Module 8, we will turn to a discussion of strategies that are useful for the behavior itself. Module 9 focuses on consequences.

As always, let your instructor know if you have questions.

Part III. Identifying Strategies to Bring About Behavior Change

Module 8:

Advanced Operant Conditioning Procedures: Behavior Focused

Module 8: Advanced Operant Conditioning Procedures: Behavior Focused

Module Overview

Now that we have covered procedures to use for controlling or manipulating the antecedent let's move to what can be done about the behavior. This is really a set of unique procedures particular to special situations such as creating a behavior that a person or animal would not normally know to do, reducing fear and anxiety, stopping bad habits, and replacing or removing unproductive thoughts. Many of these strategies will not apply to your own attempts at behavior modification but if you go into applied behavior analysis as a career, you likely will use them.

Module Outline

8.1. Shaping

8.2. Procedures for Fear and Anxiety Behaviors

8.3. Habit Behaviors and Reversal Procedures

8.4. Procedures for Maladaptive Cognitions

8.5. Exercise

Module Learning Outcomes

- Describe how shaping can be used to modify a behavior.
- Describe strategies used to modify fear and anxiety behaviors.
- Describe strategies used to modify habit behaviors.
- Describe strategies used to modify maladaptive cognitions.
- Choose the correct strategy to use in practice scenarios or perform the indicated action.

8.1. Shaping

Section Learning Objectives

- Define and exemplify shaping.
- Outline steps in shaping.

Sometimes there is a *new(ish)* behavior we want a person or animal to make but they will not necessarily know to make it, or how to make it. As such, we need to find a way to mold this behavior into what we want it to be. The following example might sound familiar to you. Let's say you want a friend to turn on the lights in the kitchen. You decide not to tell them this by voice but play a game with them. As they get closer to light switch you say "Hot." If they turn away or do not proceed any further, you say "Cold." Eventually, your statements of "Hot" will lead them to the switch and they will turn it on which will lead to delivery of a great big statement of congratulations. "Hot" and "Thank you" are reinforcers and you had them make approximations of the final, desired behavior of turning on the light. We called this 'hot potato-cold-potato' when we were a kid but in applied behavior analysis this procedure is called **shaping by successive approximations** or **shaping** for short.

To use shaping, do the following:

- Identify what behavior you want the person or animal to make. Be sure you create a precise and unambiguous behavioral definition.
- Determine where you want them to start. This can be difficult but look at your baseline data and functional assessment information. If that does not help, then consider what others have done for the same problem behavior. When all else

fails, start very low and make your steps small. The more frequent reinforcement will help you too.

- Determine clear shaping steps; these are the successive approximations of the final behavior.
- Identify a reinforcer to use and reinforce after reaching the end of each step. This steady delivery of reinforcers, due to successfully moving to the next step, is what strengthens the organism's progression to the final, target behavior.
- Continue at a logical pace. Don't force the new behavior on the person or animal.

For shaping to work, the successive approximations must mimic the target behavior so that they can serve as steps toward this behavior. In the next section of this module we will discuss fear and anxiety procedures and how a fear hierarchy can be used as a shaping strategy.

Skinner used this procedure to teach rats in a Skinner box (operant chamber) to push a lever and receive reinforcement. This was the final behavior he desired them to make and to get there, he had them placed in the box and reinforced as they moved closer and closer to the lever. Once at the lever the rat was only reinforced when the lever was pushed. Along the way, if the rat went back into parts of the chamber already explored, it received no reinforcement. The rat had to move to the next step of the shaping procedure. We use the shaping procedure with humans in cases such as learning how to do math problems or learning a foreign language.

8.2. Procedures for Fear and Anxiety Behaviors

Section Learning Objectives

- Define fear and anxiety according to the DSM 5.
- Clarify how communication occurs in the nervous system.
- Describe the structure of the nervous system.
- Describe the General Adaptation Syndrome and its three phases.
- List, define, and describe strategies to modify fear and anxiety behaviors.

8.2.1. Understanding Fear and Anxiety Behaviors

We all are afraid from time-to-time. One great example is being on an airplane when it hits severe turbulence. Heck, any turbulence scares me. There. I admit it. I realize planes hardly ever crash but the mere thought of being on the next one that does is unnerving for me. I still fly though. I wrote this section of the book from the airport in Salt Lake City as proof. For others though, their fears cripple them and become an impediment to successful living. These fears can include the fear of heights, snakes, spiders, enclosed spaces, and as many of you know, public speaking. I have been lecturing in the classroom for over 10 years now but will not classify myself as an extrovert by any stretch of the imagination. I faced my fear and interestingly, from time-to-time, still get some nervous energy when I am about to go in front of a class. That seems silly this far into my career.

When fear and anxiety become maladaptive and interfere with more than one domain in life, we talk about the person having an anxiety disorder. Anxiety disorders share two common features: excessive fear and anxiety. *DSM-5* states that *fear* is the emotional response to a real or

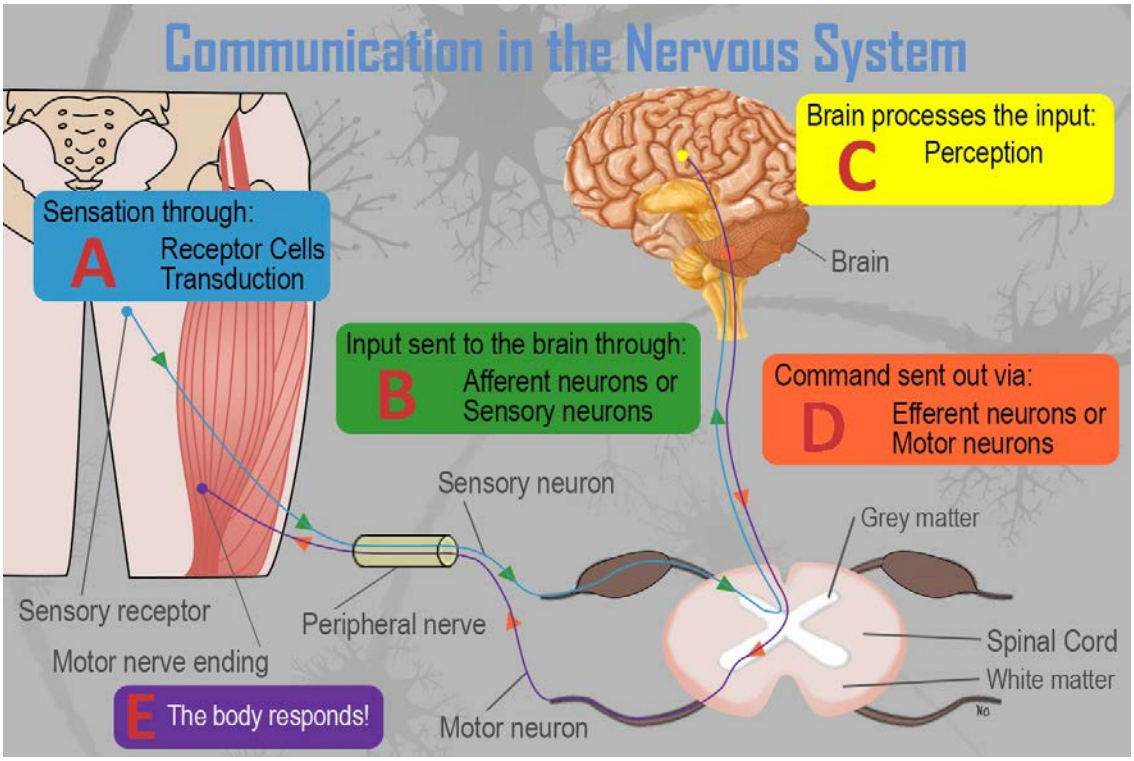
perceived threat while *anxiety* is the anticipation of future threat. Although these states overlap, the distinguishing factor is that fear is associated with autonomic nervous system arousal needed for fight or flight due to an immediate danger whereas anxiety involves preparation for future danger and avoidant behaviors (APA, 2013). The various anxiety disorders differ from one another in terms of the types of object or situations that cause fear, anxiety, or avoidance behavior, and the associated thoughts or beliefs. They include such disorders as panic disorder, agoraphobia, specific phobia, and social phobia.

Knowledge Check:

The *Diagnostic and Statistical Manual of Mental Disorders*, referred to as the *DSM* for short (American Psychiatric Association, 2013), is one classification system for mental disorders and is used in the U.S. by American psychologists. Currently in its fifth edition, the *DSM-5* defines a **mental disorder** as "a syndrome characterized by clinically significant disturbance in an individual's cognition, emotion regulation, or behavior that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning" (p. 20). The *DSM* provides information about diagnostic criteria and features; associated features supporting diagnosis; prevalence; development and course; risk and prognostic factors; culture-related diagnostic issues; suicide risk; functional consequences of the disorder; differential diagnosis; and comorbidity. For each disorder, a set of criteria is given that merely provides guidelines for making a diagnosis; the experience of the clinical practitioner is important in making a final determination.

What exactly is the autonomic nervous system? Before I can explain that we need to go over some basic information about the nervous system (NS).

Figure 8.1. Communication in the Nervous System



How does communication in the nervous system work? Simply:

A. Receptor cells in each of the five sensory systems detect energy.

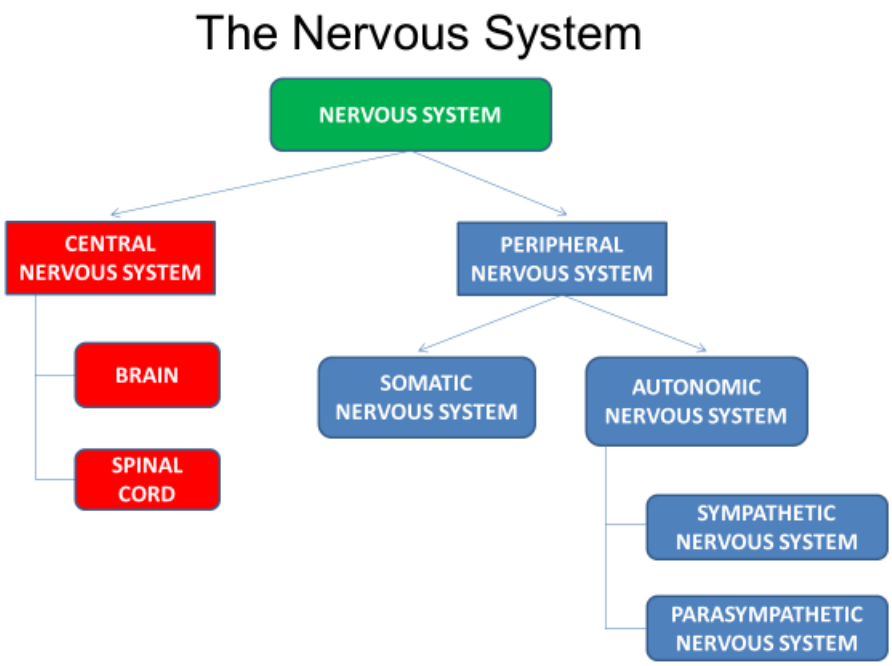
B. This information is passed to the nervous system due to the process of transduction and through sensory or afferent neurons, which are part of the peripheral nervous system.

C. The information is received by brain structures (central nervous system) and perception occurs.

D. Once the information has been interpreted, commands are sent out, telling the body how to respond (Step E), also via the peripheral nervous system.

With this in mind, what are the parts of the nervous system? See Figure 8.2 below.

Figure 8.2. The Structure of the Nervous System



The parts are as follows:

- **Central NS (CNS)** – Control center for the nervous system which receives, processes, interprets, and stores incoming sensory information. Consists of the brain and spinal cord.
- **Peripheral NS** – Consists of everything outside the brain and spinal cord; handles the CNS's input and output; divides into the Somatic and Autonomic NS.
- **Somatic NS** – Allows for voluntary movement by controlling the skeletal muscles and carries sensory information to the CNS.
- **Autonomic NS** - Regulates functioning of blood vessels, glands, and internal organs such as the bladder, stomach, and heart. Consists of Sympathetic and Parasympathetic NS.
- **Sympathetic NS** - Involved when a person is intensely aroused. It provides the strength to fight back or to flee (fight-or-flight instinct).

- **Parasympathetic NS** - Eventually the response brought about by the sympathetic nervous system must end. The parasympathetic nervous system calms the body.

Also, of importance to our discussion of fear and anxiety and the body's response, and why certain treatment strategies are needed, is how our body responds to demands in our environment. Selye (1973) talked about what he called the **General Adaptation Syndrome (GAS),** or a series of three stages the body goes through when a demand is encountered in the world. These stages include:

1. ***Alarm Reaction*** – Begins when the body recognizes that it must fight off some physical or psychological danger. The Sympathetic Nervous System activates and we become more alert and sensitive, our respiration and heartbeat quicken, and we release hormones.
2. ***Resistance*** – At this stage, our body is successfully controlling the stress. We move from a generalized response to more localized one, or where the stressor impacts the body. Our body is more resistant to the original stressor but vulnerable to new stressors. Our **adaptation energy**, or ability to handle change/stress/demands, goes down.
3. ***Exhaustion*** – A person runs out of adaptation energy and the ability to combat stress becomes exhausted. This leads to physical effects of stress such as intensifying medical conditions, delaying recovery, interfering with treatment, and/or psychosomatic symptoms defined as physical symptoms with a psychological cause. Psychological symptoms include depression, anxiety, reduced self-esteem, frustration, anger, and worthlessness. Behavior tendencies

include drug, alcohol, or cigarette use, comfort eating, working out, watching funny movies, hanging out with friends, shutting off from the world, and burnout. Notice that some of the items on this list are problem behaviors that may need behavior modification themselves.

Now that we have a basic understanding of the nervous system and how we respond to stressful events in our environment, let's move on to modifying fear and anxiety behaviors.

8.2.2. Modifying Fear and Anxiety Behaviors

To reduce or eliminate fear and anxiety, a few strategies can be used to include relaxation techniques and systematic and in-vivo desensitization. I will also mention a respondent conditioning technique called flooding and an observational learning strategy called modeling.

Maybe the simplest, and most important technique, is to just relax. Relaxation is designed to decrease ANS arousal that occurs with fear and anxiety. It comes in many forms and you are best to select the one you are most comfortable with. You must be able to use it quickly when fear and anxiety arise. Three common techniques include:

1. **Diaphragmatic breathing** – Also called deep breathing; person breathes in a deep, slow rhythmic fashion. Many students use this technique right before giving an oral presentation.
2. **Progressive Muscle Relaxation** or **tension-release method –** The person systematically tenses and relaxes each of the major muscle groups in the body and so they become more relaxed than in their initial state.

3. **Attention Focused Exercises** – Relaxation occurs when attention is directed to a neutral or pleasant stimulus. This removes attention from the anxiety producing stimulus. It includes meditation, guided imagery, and hypnosis. Before giving that presentation, you might imagine being at home, safe in your room, in your bed, and under your covers. Or you might imagine anywhere else you would rather be such as at the beach or amusement park. Heck, you might even use the common strategy of imagining the audience in their underwear.

These techniques are easy to learn but must be practiced. Once learned, the new behavior, essentially an alternative behavior, will be used to replace the problem behavior of fear/anxiety. It is important to practice using it as often as possible so that the response generalizes across environments and situations. When needed, it will be easily available to you as a coping mechanism to avoid anxiety or fear. Essentially, it can become NR and is used as a type of avoidance behavior (taking away something aversive which is the fear and anxiety which makes the behavior of relaxing more likely in the future when we experience fear and anxiety). It is a good idea to pair relaxation techniques with self-instructions such that the latter serves as a reminder to do the former. But the self-instructions should be positive statements to help undue the ill effects of self-defeating statements. These techniques can be used with more than just fear and anxiety procedures too. You will find yourself selecting them as a strategy for a variety of target behaviors encountered in our exercises.

Relaxation techniques are important for the second major treatment strategy – **desensitization**. It may be classified as *systematic* in which the client imagines fear or anxiety producing scenarios or *in-vivo* in which the client experiences the fear/anxiety producing situations firsthand. To use systematic or in-vivo desensitization, you must learn at least one

relaxation technique mentioned above. Once you do this, develop a fear hierarchy from the least fearful/anxiety producing to the most. Then, the client practices making the relaxation technique while the therapist has him or her imagine the scene from the hierarchy or experiences each situation. To help you remember what the two terms indicate, know that *in-vivo* is Latin for in life. Hence, in vivo is a real-life exposure while systematic is imagined.

Next, **flooding** is a respondent condition technique in which the person is exposed to the feared stimulus at full intensity for a prolonged period. If you have a fear of clowns, you would be thrown into a room of clowns in this method. Of course, initially, your anxiety would be greatly heightened. But over time, and with no negative events occurring, your anxiety would decrease through extinction. More on how this works in Module 10. In fact, this was the same example that was discussed with a better focus on respondent conditioning verbiage.

Finally, another non-operant conditioning procedure is to use what observational learning theorists call **modeling**. To help a person become less fearful or anxious, you could show them a video or live demonstration of a model approaching the feared stimulus or engaging in a fear-producing activity and having nothing bad happen to him or her. Upon seeing this, the client should feel more comfortable making the same behavior.

8.3. Habit Behaviors and Reversal Procedures

Section Learning Objectives

- Define habit.
- Define habit disorder.
- Exemplify some common habit behaviors people display.
- Describe the habit reversal procedure.

8.3.1. Habit Behaviors

Dictionary.com defines **habit** as "an acquired behavior pattern regularly followed until it has become almost involuntary" (http://www.dictionary.com/browse/habit). The habits do not harm anyone, other than possibly the person making them, but can be annoying for others if they increase in frequency, duration, and/or intensity. When this occurs, we are said to have a **habit disorder**. Habit behaviors take three main forms: nervous habits, tics, and stuttering.

Nervous habits, or those occurring when we are in a state of heightened arousal and nervous tension, generally cause no harm though they can be a nuisance. They can include such behaviors as twirling one's hair, cracking one's neck, tapping our leg when sitting, grinding one's teeth, playing with change in our pocket, biting nails or one's lip, gnawing the inside of our mouth, and biting the ends of pens and pencils, to name a few. They are repetitive in nature and manipulate some aspect of our environment. The point of making the nervous habit is to reduce the tension and to provide some degree of self-stimulation.

Habit behaviors can also include *tics* which take a vocal form, or repetitive vocal sounds that do not serve a social function such as clearing one's throat or coughing, or a motor form in

which we display repetitive jerking movements of a specific muscle group such as with eye blinking, nose twitching, shoulder-shrugging, or head jerking. Motor tics can be complex too and include a series of movements performed in the same order each time (http://www.webmd.com/brain/tic-disorders-and_twitches#1). According to the American Academy of Child and Adolescent Psychiatry, "Most tics are mild and hardly noticeable. However, in some cases they are frequent and severe, and can affect many areas of a child's life." Most tics are short-lived, or transient, and occur in response to fatigue and anxiety. Others last for a year or more and are called chronic tics, at times linked to Tourette's disorder. (Please see (http://www.aacap.org/AACAP/Families_and_Youth/Facts_for_Families/FFF-Guide/Tic-Disorders-035.aspx for more information on tics). Tics are not involuntary in nature. They can be suppressed for a period of time but eventually the discomfort from doing this becomes too great and the person experiences relief only by performing the tic. Due to this they are said to be *unvoluntary*. It is estimated that about 25% of all children experience tics. How are tics and twitches distinguished? WebMD says, "Unlike tics, the majority of muscle twitches are isolated occurrences, not repeated actions. Muscle twitches are also known as myoclonic jerks. They are entirely involuntary and cannot be controlled or suppressed."

Finally, is *stuttering*. According to the National Institute on Deafness and Other Communication Disorders (NIDCD, as part of the National Institutes of Health or NIH), stuttering is, "… a speech disorder characterized by repetition of sounds, syllables, or words; prolongation of sounds; and interruptions in speech known as blocks." Approximately 3 million Americans stutter, and the individual knows what they want to say but cannot produce the words in a normal flow of speech. This has a definite impact on the person's quality of life and

interpersonal relationships. (See https://www.nidcd.nih.gov/health/stuttering for more information).

8.3.2. Habit Reversal

So how do we go about ending or reducing habit behaviors? Treatment includes the use of a habit reversal procedure with two main steps or components: awareness training and a competing or incompatible response.

To start, the client must be aware of exactly what the habit is, when it occurs, in what situations, and with whom around. A clear behavioral definition must be stated and explained to the client so that they can identify when the behavior is about to start or is occurring. This stage or step is called **awareness training.**

Next, a **competing response** must be identified that is incompatible with the habit and makes its occurrence nearly impossible or difficult. If you are trying to stop nail biting, you can use a clenched fist, sitting on one's hands, or holding a pencil as a competing response. You could even just groom your nails instead. If you have problems with motor tics, tense the affected body part and keep it still such as with head twitching. Tensing neck muscles and placing your chin against your chest will make head shaking or neck turning difficult to do. If you bite your lips, keep your lips and bottom teeth slight separate. As a child, I stuttered and though today I do not daily, I find that there are certain trigger words that will elicit stuttering. Unfortunately, two of these trigger words are ones I at times use on a regular basis in classes – statistics and organizational (as in I/O psychology). Statistics is the main issue and to stop the stuttering before it starts, I will substitute statistics with stats, a one syllable word and much easier to say, or will pause in between saying the word such as 'Sta' and 'tistics." The pause is

very brief, and I do not make it noticeable. I then continue with my lecture as normal. This competing response allows me to say the word statistics in class and not endure any embarrassment from stuttering the word, which I have done in front of large lecture halls before. In terms of organizational, I usually just say I/O psychology and have the full word, with acronym, on the slide being displayed. This way I can get away with the shorthand and if a student asks what it means, I just point to it on the slide.

The competing response should be made by the same body part involved in the nervous habit or tic and should be **practiced** in imagined situations. Imagine being in the situation that causes the habit, which you would have identified in your functional assessment, and rehearse making the competing response in your mind, called "mental practice." This increases the likelihood of making the competing response when the habit occurs and so leads to generalization.

Now move to **making the competing response in real life**. Social support is key and significant others can offer the encouragement needed to make the competing response through the use of prompts, as well as providing reinforcement once you make it. Keep your reasons for making the behavior change in mind and utilize self-instructions as reminders when your motivation is low. Provide your own reinforcers to encourage making the competing response, and if they are something you really enjoy or are looking forward to, they can serve as establishing operations.

Finally, review how things went with your **therapist**. Remember, they cannot be with you 24/7 and so you need to talk about both your successes and failures, and how they made you feel. If you were not able to make the competing response, did the habit cause you embarrassment as stuttering or a tic might do, or just lead to frustration as any of the three

might? Figure out if there are other antecedent triggers for the habit that might have been missed by the functional assessment. Then you can always practice making the competing response in these situations before doing it in real life.

8.4. Procedures for Maladaptive Cognitions

Section Learning Objectives

- Define cognition.
- Clarify the different forms maladaptive cognitions can take.
- Clarify what Cognitive Behavioral Therapy is.
- List and describe cognitive behavior modification strategies.

8.4.1. Maladaptive Cognitions

The final set of procedures focus specifically on what we think or feel, as part of the definition of behavior. The word **cognition** is used, which is the same as saying a thought. We will discuss several strategies that can be used to change these unwanted, maladaptive cognitions, whether they are present as an *excess* such as with paranoia, suicidal ideation, or feelings of worthlessness; or as a *deficit* such as with self-confidence and self-efficacy. More specifically, cognitive distortions/maladaptive cognitions can take the following forms:

- Overgeneralizing – You see a larger pattern of negatives based on one event.
- Mind Reading – Assuming others know what you are thinking without any evidence.

- What if? – Asking yourself what if? Something happens without being satisfied by any of the answers.
- Blaming – You focus on someone else as the source of your negative feelings and do not take any responsibility for changing yourself.
- Personalizing – Blaming yourself for negative events rather than seeing the role that others play.
- Inability to disconfirm – Ignoring any evidence that may contradict your maladaptive cognition.
- Regret orientation – Focusing on what you could have done better in the past rather than on making an improvement now.
- Dichotomous thinking – Viewing people or events in all-or-nothing terms.

For more on cognitive distortions, check out this website:

http://www.goodtherapy.org/blog/20-cognitive-distortions-and-how-they-affect-your-life-0407154

8.4.2. Cognitive Behavioral Therapy

According to the National Alliance on Mental Illness (NAMI), **cognitive behavioral therapy** (CBT) "focuses on exploring relationships among a person's thoughts, feelings and behaviors. During CBT a therapist will actively work with a person to uncover unhealthy patterns of thought and how they may be causing self-destructive behaviors and beliefs." CBT attempts to identify negative or false beliefs and restructure them. They add, "Oftentimes someone being treated with CBT will have homework in between sessions where they practice

replacing negative thoughts with more realistic thoughts based on prior experiences or record their negative thoughts in a journal." For more on CBT, visit: https://www.nami.org/Learn-More/Treatment/Psychotherapy. Some commonly used strategies include cognitive restructuring, cognitive coping skills training, and acceptance techniques.

First, you can use **cognitive restructuring**, also called rational restructuring, in which maladaptive cognitions are replaced with more adaptive ones. To do this, the client must be aware of the distressing thoughts, when they occur, and their effect on them. Next, help the client stop thinking these thoughts and replace them with more rational ones. It's a simple strategy, but an important one. In fact, the positive affirmation is the same as making an incompatible or competing response discussed under habit behaviors. Psychology Today published a great article on January 21, 2013 which described 4 ways to change your thinking through cognitive restructuring. Briefly, these included:

1. Notice when you are having a maladaptive cognition such as making "negative predictions." They suggest you figure out what is the worst thing that could happen and what other outcomes are possible.
2. Track the accuracy of the thought as if you believe focusing on a problem generates a solution. Write down each time you ruminate and then the result. You can generate a percentage of times you ruminated to the number of successful problem-solving strategies you generated.
3. Behaviorally test your thought by figuring out if you really do not have time to go to the gym. Recording what you do each day and then look at open times of the day. Add them up and see if making some minor, or major, adjustments to your schedule will open up an hour to get in valuable exercise.

4. Examine the evidence both for and against your thought. If you do not believe you do anything right, list evidence of when you did not do something right and then evidence of when you did. Then write a few balanced statements such as the one the article suggests, “I’ve made some mistakes that I feel embarrassed about but a lot of the time, I make good choices.”

The article also suggested a few non-cognitive restructuring techniques to include mindfulness meditation and self-compassion. For more on these, please visit:

https://www.psychologytoday.com/blog/in-practice/201301/cognitive-restructuring

A second major strategy is to use what is called **cognitive coping skills training**. This strategy teaches social skills, communication, and assertiveness through direct instruction, role playing, and modeling. For social skills, identify appropriate social behavior such as making eye contact, saying no to a request, or starting up a conversation with a stranger and whether the client is inhibited from making this behavior due to anxiety. For communication, determine if the problem is with speaking, listening, or both and then develop a plan for use in various interpersonal situations. Finally, assertiveness training helps the client protect their rights and obtain what they want from others. Treatment starts with determining situations in which assertiveness is lacking and coming up with a hierarchy of assertiveness opportunities. Least difficult situations are handled first, followed by more difficult situations, all while rehearsing and mastering all the situations present in the hierarchy. For more on these techniques, visit http://cogbtherapy.com/cognitive-behavioral-therapy-exercises/.

Finally, **acceptance techniques** can be used to reduce a client’s worry and anxiety. Life involves a degree of uncertainty and at times we need to just accept this. Techniques might

include weighing the pros of fighting uncertainty against the cons of doing so. The cons should outweigh the pros and help you to end the struggle and accept what is unknown. Chances are you are already accepting the unknown in some areas of life and identifying these can help you to see why it is helpful in these areas, and how you can also think like this in more difficult areas. Finally, does uncertainty necessarily lead to a negative end? We may think so but review of the evidence for and against this statement will show that it does not and reduce how threatening it seems.

8.5. Exercise

Section Learning Objectives

- Complete the following exercise using what you have learned in this module.

Exercise 8.1: Strategies to Use with the Behavior

Directions: For the following, select the appropriate strategy or use the strategy that is indicated.

1. Give an example of how you might use shaping to modify the following behaviors:

- Reducing hand flapping behavior (e.g. of a child with autism)
- Language development (learning verb conjugations)
- Getting a child to try a new food (be open to new experiences)
- Having a child go from leaving late for school to leaving 5 minutes early
- Increasing the quality of an employee's job performance

2. Your friend has an unusual fear of snow, called Chionophobia. How might you suggest she modify this fear, outside of moving to the deep southwest where it generally never snows?

3. Outside of a fear of snow, a more powerful fear is that of Lygophobia or a fear of darkness. What strategies will you use to aid with overcoming this fear? It is likely that the strategies used with snow will be different with darkness.

4. Habit behaviors are quite common in our society, such as tapping ones foot while standing or sitting. How might you go about reducing or eliminating this behavior?

5. Propose a competing response for the following habit behaviors:

- Grinding your teeth
- Biting your lips
- Nibbling the ends of pencils
- Stuttering the word statistics
- Head tic
- Arm jerking

6. Your son died suddenly a year ago and you have blamed yourself since (note that there was nothing you actually did to cause it). How might you go about changing this maladaptive cognition?

Module Recap

Our focus in Module 8 was on the behavior and ways to modify it. Armed with the strategies of shaping, fear and anxiety procedures, habit reversal, and cognitive behavior modification, we can now turn our attention to modifying the consequences which becomes the topic of Module 9. So far, the following strategies have been discussed:

See Table 8.1 below

Table 8.1. Summary of Behavior Modification Strategies

<table>
<tr><th>Antecedent Focused</th><th>Behavior Focused</th><th>Consequence Focused</th></tr>
<tr><td>Goal Setting</td><td>Shaping</td><td rowspan="8">To be discussed in Module 9</td></tr>
<tr><td>Antecedent Manipulations:
Using Cues
Response Effort
Motivational Strategies – establishing and abolishing operations</td><td>Fear and Anxiety Procedures:
Relaxation Techniques
Desensitization (systematic and in-vivo)
Flooding
Modeling</td></tr>
<tr><td>Discrimination and Generalization</td><td>Habit Reversal</td></tr>
<tr><td>Prompting to include verbal, gestural, modeling, and physical

Fading of prompts
Fading within a prompt
Fading across prompts
Prompt delay</td><td rowspan="4">Cognitive Behavior Modification:
Cognitive Restructuring
Cognitive Coping Skills Training
Acceptance Techniques</td></tr>
<tr><td>Programming</td></tr>
<tr><td>Self-Instructions</td></tr>
<tr><td>Social Support</td></tr>
</table>

Part III. Identifying Strategies to Bring About Behavior Change

Module 9:

Advanced Operant Conditioning Procedures: Consequence Focused

Module 9: Advanced Operant Conditioning Procedures: Consequence Focused

Module Overview

Over the past two modules we have discussed strategies and principles that relate to the antecedent and the behavior itself. In this module, we turn our attention to the last part of the ABCs of behavior, the consequence. Our discussion will cover reinforcers, differential reinforcement, the token economy, self-praise, and punishment. We will also turn our attention back to social support and how it relates to the aforementioned strategies covered in this module.

Module Outline

Module Learning Outcomes

- Clarify how to select reinforcers to use in a treatment plan.
- Clarify how to use differential reinforcement in a treatment plan.
- Describe and exemplify the use of the token economy in a treatment plan.
- Explain the role of self-praise in behavior modification.
- List, describe, and exemplify punishment procedures.
- State the role of social support in reinforcing a desirable behavior or punishing a problem/undesirable behavior.
- Apply what you have learned in this module in Exercise 9.1.

9.1. Reinforcer Selection

Section Learning Objectives

- List and exemplify types of reinforcers.
- Clarify how we might figure out what reinforcer to use for a client.
- Clarify how we might figure out what reinforcer to use in our self-modification plan.
- Describe issues relevant to reinforcer selection.

9.1.1. What Can We Use as a Reinforcer?

All reinforcers are created equal. I mean, who doesn't love video games, right? WRONG. What works for me may not work for you. Remember when we talked about increasing the effectiveness of reinforcers and punishers in Module 6.2.3. One of the five factors that was mentioned was individual differences or diversity/variability. This means that you need to find a reinforcer that will be important to the individual or yourself, and therefore motivate you to want

to make the desirable behavior. With my son, offering to buy him a new book or take him to the movies would not work. He loves racing simulators and so to encourage him to practice better time management, I would offer him some additional time on his game and/or the ability to earn the money to buy the newest version of his favorite NASCAR game.

What is a **reinforcer**? This is anything that makes a behavior more likely to occur in the future. In Module 6, we learned that reinforcers can be positive or negative. A positive reinforcer is giving something good that makes a behavior more likely to occur in the future while a negative reinforcer is when an aversive stimulus is taken away making a behavior more likely in the future. Reinforcers can take the form of:

- Consumables – or anything you can eat or drink such as candy, pizza, tacos, soda, tea, or alcohol
- Activities – engaging in pleasurable tasks such as skiing, bowling, going to the movies, hiking, playing football
- Tangibles – these can be gifts, a star on the board, a grab bag with toys in it, a new book, or a video game
- Privileges – these include TV or video game time, an extended curfew, time to work on a special project, time to drive the car, earning allowance for doing chores, getting out of doing homework

The choices are almost endless, making this seemingly easy task daunting. So how do we narrow it down?

9.1.2. How Do We Figure Out What to Use?

To figure out what reinforcers will work for a *client*, you could simply ask them what they like. If it is extra TV time, a favorite food, going out with friends, new baseball gear, buying a book, going to a party, or spending time on Facebook, then so be it. But maybe asking them is not possible. In this case, you could observe them while conducting the functional assessment, looking to see what they derive pleasure from. You could also use the reinforcer maintaining an undesirable behavior. They already like it and hence why this behavior persists, so use the reinforcer with the desirable behavior instead. If the child acts out to get attention, give them attention when the correct behavior occurs. Another strategy is to simply present several reinforcers to the person and see which ones are liked the most. This is called a **preference assessment**.

If we are selecting reinforcers to use in our *own* treatment plan, you can figure out what to use by asking yourself what your interests and hobbies are, what you do for fun or to relax, what makes you feel good, whether praise works with you and if so what type, how you would spend $100 if you had it, and what you would want as a present should someone give you one right now.

Again, it is imperative that you give this careful thought.

9.1.3. Issues to Consider When Selecting Reinforcers

It is imperative that you find reinforcers that are going to reinforce your desirable behavior. If they have no real value to you, or they are valued but you can get them whenever you want, you need to select again. Remember, that you need to have a *contingency* such that the

reinforcer ***only*** occurs when some amount of your desired behavior occurs, based on your behavioral definition.

Be careful in selecting reinforcers that *involve another person* once received, such as the activity of going bowling with your significant other. If you make the desired behavior as specified and receive the bowling activity, then all is good. But if you don't, you are not the only one affected. The benefit of including another person in your reinforcement is that they can exert pressure on you to make the desired behavior. I guess in this case it is a win-win. You make the desired behavior and you get to go on a date with your special someone.

Feel free to select *more than one reinforcer* too. You can pair secondary reinforcers with primary reinforcers such that you give praise (secondary) and then follow it with ice cream (primary); great for kids who just brought home an excellent report card. Using more than one reinforcer allows you to rotate them too so that the person does not become bored with receiving the same reinforcer over and over again.

Remember the principle of *immediacy* from Module 6.2.3 or reinforcing as soon as the desired behavior occurs. This may not always be practical but with habit or anxiety and fear producing behaviors, immediacy is a necessity. If you are trying to reduce a tic behavior, and the person uses their competing response/incompatible behavior which successfully stops the tic, an immediate reward is in order. They can deliver their own reinforcer too, but support from others is vital here too. If a child is afraid of dogs but uses relaxation techniques and desensitization procedures, and walks up to and pets the neighbor's dog, a reinforcer should be delivered.

Consistency is key. The more consistent parents, teachers, significant others, etc. are in delivering reinforcers, the more consistent the person will be in making the desired/target behavior.

Final point. If a consumable, activity, privilege, or tangible is given and no increase in behavior occurs, then technically this "thing" is not a reinforcer.

9.2. Differential Reinforcement

Section Learning Objectives

- Define and exemplify differential reinforcement.
- List and describe the four differential reinforcement procedures.
- State reasons why differential reinforcement may not be working.

9.2.1. Defining Terms

In Module 6, we discussed the case in which a child is acting out and the parent gives her what she demands. When this occurs, the parent has reinforced a bad behavior (a PR) and the tantrum ending reinforces the parent caving into the demand (NR). Now both parties will respond the same way when in the same situation (child sees a toy which is her antecedent to act out and the screaming child is the stimulus/antecedent for the parent to give the girl the toy). If the same reinforcers occur again, the behavior will persist. Most people near the interaction likely desire a different outcome. Some will want the parent to discipline the girl, but others might handle the situation more like this. These individuals will let the child have her tantrum and just ignore her. After a bit, the child should calm down and once in a more pleasant state of mind, ask the parent for the toy. The parent will praise the child for acting more mature and agree to purchase the toy, so long as the good behavior continues. This is an example of **differential reinforcement** in which we attempt to get rid of undesirable or problem behaviors

by using the positive reinforcement of desirable behaviors. Hence, both reinforcement and extinction are occurring, the former in terms of the desired behavior and the latter in terms of the undesirable or problem behavior. Differential reinforcement does not utilize punishment but is a positive approach to reward people for behaving in the desired manner.

9.2.2. Types of Differential Reinforcement

Differential reinforcement takes on many different forms as described below:

- **DRA or Differential Reinforcement of Alternative Behavior** – This is when we reinforce the desired behavior **and** do not reinforce undesirable behavior. Hence, the desired behavior increases and the undesirable behavior decreases to the point of extinction. The main goal of DRA is to increase a desired behavior and extinguish an undesirable behavior such as a student who frequently talks out of turn. The teacher praises the child in front of the class when he raises his hand and waits to be called on and does not do anything if he talks out of turn. Though this may be a bit disruptive at first, if the functional assessment reveals that the reinforcer for talking out of turn is the attention the teacher gives, not responding to the child will take away his reinforcer. This strategy allows us to use the reinforcer for the problem behavior with the desirable behavior. Eventually, the child will stop talking out of turn making the problem behavior extinct.
- **DRO or Differential Reinforcement of Other Behavior** – What if we instead need to eliminate a problem behavior – i.e. reducing it down to no occurrences? DRO is the strategy when we deliver a reinforcer contingent on the absence of an undesirable behavior for some period. We will need to identify the reinforcer for

the problem behavior and then pick one to use when this behavior does not occur. Determine how long the person must go without making the undesirable behavior and obtain a stopwatch to track the time. Do not reinforce the problem behavior and only reinforce the absence of it using whatever reinforcer was selected, and if it is gone for the full-time interval. If the problem behavior occurs during this time, the countdown resets. Eventually the person will stop making the undesirable behavior and when this occurs, increase the interval length so that the procedure can be removed. If a child squirms in his seat, the teacher might tell him if he sits still for 5 minutes he will receive praise and a star to put on the star chart to be cashed in at a later time (this is a token economy described in the next section). If he moves before the 5 minutes is up, he has to start over, but if he is doing well, then the interval will change to 10 minutes, then 20 minutes, then 30, then 45, and eventually 60 or more. At that point, the child is sitting still on his own and the behavior is not contingent on receiving the reinforcer. What I just described is how to use a DRO procedure and then how to get rid of it which will be critical in the maintenance phase.

- **DRL or Differential Reinforcement of Low Rates of Responding** – There are times when we don't necessarily want to completely stop a behavior, or take it to extinction, but reduce the occurrence of a behavior. Maybe we are the type of person who really enjoys fast food and eat it daily. This is of course not healthy, but we also don't want to go cold turkey on it. We could use DRL and decide on how many times each week we will allow ourselves to visit a fast food chain. Instead of 7 times we decide that 3 is okay. If we use *full session DRL* we might

say we cannot exceed four times going to McDonalds in a week (defined as Mon – Sun). If we eat at McDonalds, Burger King, and/or Wendy's, etc. four times on Monday but do not go again the rest of the week we are fine. Full session simply means you do not exceed the allowable number of behaviors during the specified time period. Eating fast-food four times in a day is definitely not healthy, and to be candid, gross, so a better approach could be to use *spaced DRL*. Now we say that we can go to a fast-food restaurant every other day. We could go on Monday, Wednesday, Friday, and Sunday. This works because we have not exceeded 4 behaviors in the specified time of one week.

- **DRI or Differential Reinforcement of Incompatible Behavior** – There are times when we need to substitute Behavior A with Behavior B such that by making B, we cannot make A. The point of DRI is to substitute a behavior. If a child is made to sit appropriately in his seat they cannot walk around the room. Sitting is incompatible with walking around. DRI delivers a reinforcer when another behavior is used instead of the problem behavior. To say it another way, we reinforce behaviors that make the undesirable or problem behavior impossible to make. DRI is effective with habit behaviors such as thumb sucking. We reinforce the child keeping his hands in his pocket. Or what if a man tends to make disparaging remarks at drivers who cut him off or are driving too slowly (by his standard)? This might be a bad model for his kids and so the man's wife tells him to instead say something nice about the weather or hum a pleasant tune when he becomes frustrated with his fellow commuters. These alternative behaviors are incompatible with cursing and she rewards him with a kiss when he uses them.

It is important to keep in mind the following:

Table 9.1: Expected Outcome and Type of Differential Reinforcement to Use

Expected Outcome	**Type of Behavior Involved**	**Differential Reinforcement Procedure Used**
Increase a desired behavior **AND** eliminate a problem behavior	There are two behaviors involved – one deficit and one excess	DRA
Eliminate a problem behavior	Excess	DRO
Reduce the occurrence of a problem behavior	Excess	DRL
Substitute a problem behavior	The problem behavior is an excess	DRI

9.2.3. Why Differential Reinforcement May Not Be Working

Differential reinforcement may fail for a few different reasons. First, the reinforcers may not be reinforcing because they are not appealing to the individual, the person has to work too hard to obtain them, or the individual has become bored with them. Look at Section 9.1.3. for potential issues related to reinforcement selection. Second, the individual may not be able to make the alternative or desired behavior due to not being developmentally ready or the behavior being too complex. Third, the delivery of reinforcers was inconsistent, and the student felt that the agreement was reneged on. Fourth, generalization beyond the training situation did not occur. As you will see, once a treatment plan is in place, you will look at the data that has been collected and determine how your plan is going. It is at this time that you can make adjustments if any are needed.

9.3. The Token Economy

Section Learning Objectives

- Explain what a token economy is.
- Describe how a token economy is used.
- Develop a token economy for a hypothetical scenario.

9.3.1. Reinforcing Immediately

Recall that one of the factors affecting the effectiveness of reinforcers and punishers is delivering the consequence immediately. This means that if a parent wants to reinforce their child for studying hard and earning an 'A' on a math test, they need to go to the school as soon as the child receives the grade and take him/her out for ice cream, no matter the disruption to the class. Alternatively, the parent can deliver praise to the child if going out is not practical, but that could cause embarrassment, especially if the child is in high school, and may become punishing instead. Anyway, the point is that immediacy is a nice concept, but not often practical. We cannot deliver the reinforcer or punisher right when the behavior occurs in most cases. So what do we do instead?

A solution is to use what is called a **token economy**. The basic premise is that the individual is provided with something that represents desired reinforcers and takes that "something" and cashes it in later for those reinforcers. You do not receive the reinforcer right away, but at a later time, and like shopping at Walmart, you use your tokens (the money) to purchase something you really want (the reinforcer).

9.3.2. Using a Token Economy – General Information and Applied to a Behavioral Deficit

9.3.2.1 Why. The token economy can be used at home by parents trying to get a child to complete chores, take a bath before playing video games, eat breakfast, behave well with siblings, or leave with enough time to get the bus or arrive at school before the bell rings. In the classroom, a teacher can use a token economy to encourage students to study hard, stay in their seat during quiet time, put away class materials, talk with an inside voice, behave on the playground, throw away their trash at lunch time, or to walk and not run through the halls. At work, an employer may wish to reward employees for working safely, going above and beyond by serving on committees, being on time, exceeding performance standards, or positively approach all aspects of their job. In a recovery center, nursing home, or prison setting, tokens may be awarded when patients take their medications or are compliant with the direction of staff members. Be sure you have precisely identified what the target behavior is through your *behavior definition*.

9.3.2.2. How. A token economy is a fun system that allows the person to earn up tokens and then cash them in for some type of reinforcer – whether a consumable, activity, privilege, or tangible. The **tokens** are accrued (and accumulated over time) once the target behavior occurs, as described clearly in the behavioral definition, and by themselves has no meaning. That said, it is fine to praise the person as they receive their tokens (a second PR, the first being the receipt of the tokens). Be clear on how many tokens are earned for engaging in the desired behavior(s).

Tokens gain meaning when they are associated with **backup reinforcers** or the regular reinforcers the person has in their life. This association occurs because the individual learns that they can take some number of tokens and cash them in for some amount of reinforcer. When we go to the store to purchase milk, we read the label and see that the gallon costs $3.29. We pick it up, go to the cashier, and when prompted, hand the cashier our money to complete the purchase.

The token economy operates in the same exact fashion. How many tokens are needed to purchase a backup reinforcer is called the **exchange rate**.

9.3.2.3. Who. Since you are going to complete a self-modification project this term, the person who delivers the tokens can be yourself. Alternatively, you can have someone else deliver them such as a friend, significant other, parent, child, etc., if you feel that you might be too lenient with their awarding. In cases when you are trying to change the behavior of another person, anyone really can deliver the tokens and allow for the purchase of reinforcers. If in a school setting, the teacher likely is running the token economy and you probably have been in a few classrooms over time in which one was used. At home, parents will control the system and at work, your employer or immediate boss may use a token economy.

9.3.2.4. What. What can serve as a *token*? Bingo chips, stars on a chart, points, check marks, or poker chips can all be used, and it must be clear how many tokens are earned for engaging in a certain level of the behavior. Recall that operant conditioning includes the ability to not reward each occurrence of a behavior, but according to some schedule. We might reinforce a fixed or varying number of responses, or a fixed or varying amount of time. This concept can be used in a token economy and for the child in the classroom, we deliver 2 tokens every three times he raises his hand and waits to be called on (FR) or we deliver 3 tokens after some varying amount of time that the student sits calmly in his seat (VI).

9.3.2.5. Tokens table. Take a look at Table 9.2. The top portion shows how many tokens are earned for completing *Behaviors*, according to the behavior definition. If we make one full behavior, defined as completing 10 minutes of cardio, we earn 3 tokens. Also, notice that the table includes a token reward for not completing a full behavior of 10 minutes of cardio. This is useful in case you are unable to complete 30 minutes but do 25 minutes. Instead of awarding yourself 9

tokens for 30 minutes (3 tokens for each 10 minutes; you would have done 3, ten minute behaviors at 3 tokens each behavior for a total of 9 tokens – 3 behaviors x 3 tokens each = 9 tokens), you instead earn 7 tokens (you earned 6 tokens for the two full behaviors of 10 minutes each or a total of 20 minutes and then 1 token for the partial behavior of 5 minutes of cardio, totaling 7 tokens). If you had gone 23 minutes you would have only earned 6 tokens and no partial behavior since it is defined as 5 minutes of cardio.

The next set of rows are for *Extra Points*. Extra points are earned in addition to the points earned from "Behaviors." Our plan calls for increasing how often we go to the gym each week and use a cardio machine. Notice that it is not duration that we are trying to increase, but frequency. Our goals stay fixed at 30 minutes and our number of days per week goes up from 2 to 5. Alternatively, another person may find that they go to the gym regularly, but want to increase how long workouts last (30 to 60 minutes), or how intense they are (low to high intensity). Two people may have the same target behavior but behaviorally define it much differently. Just keep this in mind. In our token economy, we can award extra points for completing each goal, and recall that we know when to move from one goal to the next based on our criterion. See Planning Sheet 3. You could also award a few extra tokens for meeting your daily goal (not a weekly goal) of working out 30 minutes. In our example, this is an additional 2 tokens and so if you worked out a total of 30 minutes in one day, you would earn 9 tokens under Behaviors and another 2 tokens under Extra Points for a total of 11 tokens.

The final set of rows are under the header, *Non-contingent Events* (NCEs). Rewards are given for simply finishing each week of the plan. They are not linked to any specific behaviors being completed. As such, these rewards are delivered according to a fixed interval (FI) schedule and help to maintain focus in the event we have a bad week and do not earn many tokens, or are

accumulating them for some costly back up reinforcer. If you completed your first week of the plan, you would be able to rent a movie. This positive reinforcer and privilege is not linked to, or conditional on, making any number of behaviors for the week (the definition of contingency from Module 6). Hence, why it is called a non-contingent event. It is linked to time and nothing else. You should ideally include one reinforcer for each possible week of your plan. If you have four goals with a 2-week criterion, that would require 8 weeks of non-contingent event reinforcers. Feel free to recycle reinforcers across weeks. Let's say you get 3 that work really well then you could use them a second time, and then two of the three a third time. If you have any plan failures and add a week or more to your plan, use these reinforcers again.

***** STOP *** STOP*** STOP*****

Read this before moving on!

It is incredibly important the reinforcers you choose as NCEs are **not** also listed as backup reinforcers. The items on your backup reinforcer list cost some number of tokens to obtain. You obtain tokens by engaging in the desirable behavior. Hence, the reinforcers found in Table 2 (see Section 9.3.2.7) are indirectly contingent. Here's an example of what I mean. If you engage in 10 minutes of exercise you receive 5 tokens and once you have accrued 50 tokens you can purchase going to the movie (it would require at least 10 behaviors or working out for 100 minutes to do so).

If you can simply wait the passage of time and get them anyway, you have done what is called **short-circuiting the contingency** and reduced the overall effectiveness of your token economy.

*Table 9.2: Sample Behaviors & Token Values for Exercise Behavior (**Deficit**)*

Behaviors	**Points Earned**
5 min. cardio exercise (not a full behavior)	1
10 min. cardio exercise ("1 behavior")	3

Extra Points	**Points Earned**
30 min. cardio exercise in 1 day	2
Sub-goal 1 (Work out for 30 minutes 2 days a week)	6
Sub-goal 2 (Work out for 30 minutes 3 days a week)	9
Sub-goal 3 (Work out for 30 minutes 4 days a week)	12
Final Goal (Work out for 30 minutes 5 days a week)	15
Week 7 Tokens Adjustment *(explained below)*	5

Non-contingent Events	**Reward**
End of first week	Buy a value PS4 game, no more than $20
End of second week	Go to movies
End of third week	Go to dinner
End of fourth week	Purchase a new Blue Ray movie
End of fifth week	Bowling with my significant other
End of sixth week	$50 shopping trip at mall
End of seventh week	Get out of chores at home for one weekend (NR)
End of eighth week	Weekend hiking trip

So before moving on, let's make sure this is clear. You are in Week 4 of your plan and worked out a total of 3 days that week, and 30 minutes each day. All previous weeks have been a success and you already achieved Sub-goal 1 (the first two goals have a two-week criterion). You would earn the following:

- 27 tokens under Behaviors (9 tokens a day x 3 days = 27 tokens)
- 6 tokens under Extra Points for the daily goals (2 tokens for 30 min. of cardio in one day x 3 days)
- 9 tokens under Extra Points for completing Subgoal 2
- Blue Ray – Completing your fourth week
- TOTAL – 42 tokens (27+6+9) and 1 blue ray

9.3.2.6. Calculating max tokens during your plan. Now you will want to figure out what the max tokens are you can earn for each day, week, and the whole treatment phase. Why do you want to know what the max tokens are earned each week, and for the whole entire treatment phase? This will help you set the prices for your back up reinforcers which fall on Table 2 (coming up in a bit). Also, it is a way to make sure the number of tokens earned actually increase across weeks. Otherwise, your graph at the end will look odd, with at least one dip in the line. This usually indicates goal failure but in this case, it is not what is going on.

For our current example, you can earn the following max points. Assume success each week and a two-week criterion. See the discussion of how to calculate each day above if you are unclear how the weekly counts were arrived at. The basic calculations are in parentheses.

- Week 1 - Earn 22 tokens (18 + 4) and PS4 game (NCE 1)
- Week 2 - Earn 28 tokens (18 + 4 + 6) and movies (NCE 2)
- Week 3 - Earn 33 tokens (27 + 6) and dinner (NCE 3)
- Week 4 - Earn 42 tokens (27 + 6 + 9) and Blue Ray (NCE 4)
- Week 5 - Earn 44 tokens (36 + 8) and bowling (NCE 5)
- Week 6 - Earn 56 tokens (36 + 8 + 12) and shopping trip (NCE 6)
- Week 7 - Earn 55 tokens (45 + 10) and chores (NCE 7)
- Week 8 - Earn 70 tokens (45 + 10 + 15) and hiking trip (NCE 8)
- Maintenance Phase
- **TOTAL TOKENS TO BE EARNED** - 350 (assumes just 8 weeks of treatment - no weekly failures resulting in additional weeks at the current goal level)

Notice that from Week 6 to Week 7 your number of tokens drops by 1. This is not a failure, but a product of how the token economy was designed and would require an explanation to others looking at your plan. You could, instead, choose to add 5 additional tokens to the Week 7 count so that it is 60 instead of 55 and shows an upward progression from Week 6. The total of 60 is under the max earned in Week 8 of 70 so it makes sense. You could just call this Week 7 Tokens Adjustment under Extra Points and set it to 5 tokens. Note that your total number earned would go up to 355.

So the adjusted numbers would be:

- Week 1 - Earn 22 tokens (18 + 4) and PS4 game (NCE 1)
- Week 2 - Earn 28 tokens (18 + 4 + 6) and movies (NCE 2)
- Week 3 - Earn 33 tokens (27 + 6) and dinner (NCE 3)
- Week 4 - Earn 42 tokens (27 + 6 + 9) and Blue Ray (NCE 4)
- Week 5 - Earn 44 tokens (36 + 8) and bowling (NCE 5)
- Week 6 - Earn 56 tokens (36 + 8 + 12) and shopping trip (NCE 6)
- Week 7 - Earn 60 tokens (45 + 10 + 5) and chores (NCE 7)
- Week 8 - Earn 70 tokens (45 + 10 + 15) and hiking trip (NCE 8)
- Maintenance Phase
- **TOTAL TOKENS TO BE EARNED** - 355 (assumes just 8 weeks of treatment - no weekly failures resulting in additional weeks at the current goal level)

9.3.2.7. Backup reinforcers table (Table 2). As for *backup reinforcers*, use the strategies mentioned in Module 6 to discover what works for an individual but if in a group setting, use general reinforcers that most will like such as toys and candy in a classroom, gift cards or time off at work, and additional TV time or exercise time at a prison or recovery center. It is good to use multiple backup reinforcers and different costs. Going to the movies is not the same as having 15 extra minutes of Netflix. The former should cost more than the latter. It's also fine that low-cost back up reinforcers can be purchased immediately or without having to accrue for any more than two weeks.

One (or two) expensive and prized backup reinforcer is good to have, such as a person being able to purchase the Nintendo Switch for 1,000 tokens or going on a vacation to Disney Land for 5,000 tokens. This reinforcer encourages them to work harder and accumulate tokens over time and would serve as an *establishing operation* in the behavior modification plan (See Modules 6 and 7 for a discussion of establishing operations).

You should total up the cost of your backup reinforcers and then compare this to the total number of tokens you are predicted to earn during the plan (from Table 3 – Max Tokens), assuming no setbacks. The difference between the two should be positive meaning you earn more tokens than you will pay out. If the difference is negative, you cannot earn enough tokens for all the items in your back up reinforcer list on Table 2. It's like going to Walmart and not having the money needed to buy your groceries. If in the green, you can use the extra tokens to purchase some of those low-cost backup reinforcers more than once. How big of a difference is too big? It depends on the token economy itself. I have had students develop plans in which the difference for one student was +3 tokens and another was +600 and both differences were fine, but then a third student had a difference of +100 and it did not work. Every token economy is different from

every other so the question of how much of a difference is too much should be considered on a case-by-case basis. The only thing that is never permissible is a negative difference.

Table 9.3 shows nine backup reinforcers and their cost. Notice that the reinforcers are listed from least to most expensive. The cost in tokens is proportionate to the actual cost of the backup reinforcer. Hence, going to the movies should not cost less tokens than a song download.

And one more thing. Do not forget that the items in Table 2 **CANNOT** be on Table 1 under Non-contingent Events (NCEs) or you short-circuit the contingency.

*Table 9.3: Sample Back-up Reinforcers & Costs for Exercise Behavior (**Deficit**)*

Reinforcer	**Cost (in Tokens)**
1 song download	5
30 minutes of chipping and putting (golf)	10
1 bucket of golf balls: driving range (golf)	20
1 round of twilight golf	25
60 minutes of chipping and putting (golf)	30
Purchase a book	35
Go to the movies	40
1 round of golf ($25)	50
Purchase a new golf club	100

As stated before, variety is the spice of life. Have a lot of reinforcers to choose from and select ones that you will be excited about earning and partaking in. Do not simply select a reinforcer to have something down on paper. Carefully consider what you will use as backup reinforcers. This is quite possibly the most difficult aspect of the token economy and the behavior modification plan in general. Once you purchase a backup reinforcer deduct the amount from the tokens you have accrued so far and place it in a bank of sorts or at least record the purchase for review later. Some of your backup reinforcers will be one-time deals. You don't need to purchase golf clubs more than once, but you may want to download multiple songs. You may also decide to golf on multiple occasions. Going back to our example, we earned 42 tokens for the week and so could purchase a song download, 30 minutes of chipping and putting, 1 bucket of golf balls at the driving range, or 1 round of twilight golf. We could also purchase a combination of these

reinforcers or elect to purchase none and save up for the new golf club. The choice is ours to make and is the same as saving up the money earned on our paycheck for some item.

9.3.2.8. When and where. Determine a time and place to cash in the tokens. It could be at the end of the day or the end of the week. If at home, the parent might allow a child to cash in tokens on Friday night at 7:00 pm. If at school, the teacher could allow students to cash in tokens at lunch to gain a little extra recess time (a PR) or at the end of the day to get out of some amount of homework (a NR). Make this determination of when and where in advance of starting any token economy. Be advised that the person may decide not to cash in tokens, but to accumulate them, and that is perfectly fine. Give them the opportunity to cash in tokens all the same.

9.3.2.9. Punishers too? It is possible within a token economy to include consequences if the person engages in the undesirable behavior. For instance, in a classroom, if a child gets out of his seat and disrupts the class during individual reading time, the teacher would not obviously award any tokens, but she could also take some away. Likewise, if a child plays video games before taking his shower, tokens can be lost. These punishers are called **response costs.** As tokens are taken, they could be earned back. The lost tokens are negative punishers (taking away something good – the tokens – to make a behavior less likely – the problem behavior), but the system could include a way to earn back all, or some, of the lost tokens, for exceptionally good behavior (called overcorrection in Section 9.5). If this occurs, we are delivering a NR (taking away something bad – the loss of the tokens – making a behavior more likely to occur – the desired behavior).

9.3.2.10. Establishing and ending a token economy. When first implementing a token economy it is prudent to use continuous reinforcement to encourage the person to make the desired behavior often and offer more tokens for the behavior. Set the exchange rate for back up

reinforcers low too. These measures will help you to establish the system and get the person, or group, excited about it. Once the token economy is moving along smoothly, switch to a reinforcement schedule (FR, VR, FI, or VI) and feel free to change the schedule over time. The person should start making the desired behavior with more regularity and eventually it becomes a habit or the behavior he/she routinely makes. When that occurs, increasing the number of responses or time in between reinforcement is needed to fade the token economy out. The person will rely less and less on the token economy to make the desired response and so its use is not as necessary.

9.3.2.11. Advantages. As noted, the token economy is a fun way to get "paid" for doing what is expected. It motivates the individual receiving the tokens to continue earning them, especially if you have some really attractive backup reinforcers that can be purchased at least once, and maybe one incredible reinforcer which serves as an establishing operation. Tokens are easy to give out and for the person to accumulate.

When determining if your treatment plan worked, you can of course count behaviors made across time, but you can also examine how many tokens were earned and graph this as well. In fact, you will use the table below to do this:

Table 9.4. Treatment Phase Token Log

Directions: Record the number of tokens earned each day of your treatment phase and then calculate weekly totals. You have been provided columns for up to 8 weeks on this table but other columns can be added as needed. Remember, for your course project, you are only required to record for three weeks. Feel free to continue your project beyond though.

	Week							
Day	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1								
2								
3								
4								
5								
6								
7								
Extra Points by Week								
Weekly Totals								
Treatment Phase Total - XXX								

If your plan is successful, you should see an increase in tokens each week. Again, this is another way to demonstrate the success of your treatment strategies in making the desired change in behavior.

9.3.2.12. Disadvantages. It takes time and some degree of effort and organization to run the token economy. Good record keeping is a necessity, especially if using the information

gained from it as an additional dependent variable. The backup reinforcers you use may be low or no cost, such as giving additional video game time (privilege) or allowing your child extra time to go throw the football around outside (activity), but others will cost money such as taking your child out for ice cream (a consumable) or giving a video game (a tangible). Be sure you have whatever backup reinforcers you will use ahead of time. When the person cashes in tokens, they should not have to wait for you to run to the store to purchase what they just requested. And some back up reinforcers could be costly, such as taking a trip or purchasing a new video game system or computer software.

9.3.3. Using a Token Economy with a Behavioral Excess

Not every project is a behavioral deficit. Some of you may have chosen a behavioral excess. Here is one way to approach this for the reduction in caloric intake example:

BEHAVIORAL DEFINITION

Eating 100 calories

GOALS

The goals may have been something like eat no more than 2000 calories a day (20 behaviors), 1800 calories (18 behaviors), 1500 calories (15 behaviors), and the distal goal of 1200 calories a day (12 behaviors). Weight loss is the goal and reducing your calories is the vehicle to achieve it. Normally, your token economy will focus on behaviors made but, in this case, a different approach will be appropriate. If you award tokens because you made a behavior, you would technically be awarding tokens for eating more calories which works against your

underlying goal. Does that make sense? Think about it carefully. If you gave 5 tokens for each behavior, you would get 100 tokens when you eat 2000 calories and then go down from there (90, 75, and 60) which is technically punishing and will discourage your behavior. We need tokens to increase across time no matter the behavior (excess or deficit).

So try this in your token economy:

*Table 9.5: Sample Behaviors & Token Values for Caloric Reduction Behavior (**Excess**)*

Behaviors	**Tokens Earned**
Eat no more than 2000 calories a day in one week.	10
Eat no more than 1800 calories a day in one week	20
Eat no more than 1500 calories a day in one week.	30
Eat no more than 1200 calories a day in one week.	40

Extra Points	**Tokens Earned**
Complete Goal 1	20
Complete Goal 2	30
Complete Goal 3	40
Complete Goal 4	50

Non-contingent Events	Reward
End of first week	Buy a value PS4 game, no more than $20
End of second week	Go to movies
End of third week	Go on a day trip
End of fourth week	Purchase a new Blue Ray movie
End of fifth week	Bowling with my significant other
End of sixth week	$50 shopping trip at mall
End of seventh week	Get out of chores at home for one weekend (NR)
End of eighth week	Weekend hiking trip

NOTICE that your tokens earned increase as your excess of calories goes down through the goals. You would also only earn behavior points based on the current subgoal you are working on. If you are at the 1500 calorie goal and achieve it, you only earn 30 tokens, not 30+20+10 (the goals above it).

You could include Extra Points for eating fruits and vegetables or making one positive food substitution at a meal (getting broccoli instead of fries). Beyond the completed goal points, the sky is the limit.

Here are the **maximum tokens you can earn** throughout the treatment phase (assume success each week and a 2 week criterion for each goal) using Table 9.4. This is what your table would look like if 100% successful each week.

Table 9.6. Max Tokens Log for Behavioral Excess Example

	Week							
Day	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	10	10	20	20	30	30	40	40
2	10	10	20	20	30	30	40	40
3	10	10	20	20	30	30	40	40
4	10	10	20	20	30	30	40	40
5	10	10	20	20	30	30	40	40
6	10	10	20	20	30	30	40	40
7	10	10	20	20	30	30	40	40
Extra Points by Week	0	20	0	30	0	40	0	50
Weekly Totals	70	90	140	170	210	250	280	330
Treatment Phase Total -				**1,540**				

And the calculations:

- Week 1 - Earn 70 tokens (Bhv 1 x 7 days) and PS4 game (NCE 1)
- Week 2 - Earn 90 tokens (Bhv 1 x 7 days and EP 1) and movies (NCE 2)
- Week 3 - Earn 140 tokens (Bhv 2 x 7 days) and dinner (NCE 3)
- Week 4 - Earn 170 tokens (Bhv 2 x 7 days and EP 2) and Blue Ray (NCE 4)
- Week 5 - Earn 210 tokens (Bhv 3 x 7 days) and bowling (NCE 5)
- Week 6 - Earn 250 tokens (Bhv 3 x 7 days and EP 3) and shopping trip (NCE 6)
- Week 7 - Earn 280 tokens (Bhv 4 x 7 days) and chores (NCE 7)
- Week 8 - Earn 330 tokens (Bhv 4 x 7 days and EP 4) and hiking trip (NCE 8)
- Maintenance Phase

TOTAL TOKENS TO BE EARNED - 1,540 (assumes just 8 weeks of treatment - no weekly failures resulting in additional weeks at the current goal level)

Your tokens go up over time and with each week. You earn daily tokens (at the end of the day since you have to figure out what your total caloric intake is) and if you fall short one day, you can still earn tokens for the other days. Of course, if you did not meet your weekly goal you will have to stay at the current goal level according to your criterion but at least you did earn a few tokens for your success on the other days.

Now what about your back up reinforcers for the behavioral excess? Let's use the same set of back up reinforcers from our deficit example and the same costs to make a point.

*Table 9.7: Sample Back-up Reinforcers & Costs for Caloric Reduction Behavior (**Excess**)*

Reinforcer	Cost (in Tokens)	Adjusted Costs
1 song download	5	20
30 minutes of chipping and putting (golf)	10	40
1 bucket of golf balls: driving range (golf)	20	80
1 round of twilight golf	25	100
60 minutes of chipping and putting (golf)	30	120
Purchase a book	35	140
Go to the movies	40	160
1 round of golf ($25)	50	200
Purchase a new golf club	100	400
TOTAL COST	315	1260

From our max tokens calculation, we know we can earn up to 1540 tokens. If we use the costs in tokens from the deficit example, which totals 315, we could purchase each back up reinforce in the table almost 5 times for a total cost of 1575. Obviously, our costs are set too low. If we still wanted to retain the same list of back up reinforcers a simple solution would be to multiply the current costs by 4. This brings our new back up reinforcer cost to 1260 if we purchase them all which is 280 under the max tokens we can earn. Hence, this allows us to purchase a few of the reinforcers more than once. Be sure you make a clear comparison between the max tokens to be earned and total costs of your back up reinforcers and look for issues.

NOTE: Be sure to read over the preceding section carefully before moving on to the practice exercise in Section 9.3.4.

9.3.4. Practice Using a Token Economy

Scenario:

You are conducting a remedial reading program with a group of 4 third graders who are reading behind grade level. You are using a standardized reading program in which the students identify words and word sounds, read short passages aloud, and answer comprehension questions. You sit in from of the students as you conduct the lesson, and the students have many opportunities to respond in each group session. The students tend to be distracted and pay attention to things in the room other than the instructional items that are being presented. Answering the questions given below, describe the token economy you will implement with these students. Be specific.

Why – Identify the desirable behaviors you want to strengthen or problem behaviors you want to extinguish (create your **behavioral definitions**).

Who will deliver tokens and "sell" the backup reinforcers? This may not be the same person.

What – What **tokens** will you use?

What – What **backup reinforcers** will you use? Include consumables, activities, tangibles, and privileges. Select more than one and rank them in order of importance/cost.

How – **How many** tokens will you give for engaging in the desired behavior? Be clear and consider your schedule (intermittent or continuous).

How much will the backup reinforcers cost? In other words, what is their price or exchange rate?

It is useful to create tables for your token economy and in your self-management project, you will be required to do so. The two tables you should use are (see above for a detailed description):

- One for the **behaviors** and how many tokens they earn to include any extra points and non-contingent events.
- One for the **backup reinforcers** and how much they cost (exchange rate).

Complete the tables below. Use the space below to work out your thoughts on tokens and back up reinforcers before filling the tables.

Table 1: Behaviors & Token Values

Behaviors	Tokens Earned

Extra Points	Tokens Earned

Non-contingent Events	Reward
End of first week	
End of second week	
End of third week	

NOTE: For the purpose of this exercise, just cover up to three weeks for the non-contingent events as this matches your self-modification plan. But know that you can identify a reward for every week that your treatment plan runs, whether three or ten.

Table 2: Reinforcers & Cost

Reinforcer	Cost (Tokens)
TOTAL	

NOTE: You do not have to use all rows in Table 2 but you must have more than one backup reinforcer. Attempt to come up with 5 at a minimum and be sure they are of differing costs and different quality (low to high).

Table 3: Max Tokens Log Calculation

	Week							
Day	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1								
2								
3								
4								
5								
6								
7								
Extra Points by Week								
Weekly Totals								
Treatment Phase Total -								

When and Where – When and where are the tokens exchanged for the backup reinforcers?

How will you use **response costs**? Be sure to define the problem behavior(s) and the cost of making those behaviors.

How will you **terminate** the token economy with the students?

Once you have finished, share your plan with the class. If in a physical classroom, your instructor will tell you how do this. If online, your instructor may have you share in a discussion board or submit as an assignment. Consult your syllabus for details.

9.4. Self-Praise

Section Learning Objectives

- Explain the importance of self-praise in self-modification.

Though we will not spend a lot of time on self-praise, that does not mean it is not as important as other strategies discussed in the past three modules. In fact, in some ways it is the most important while being the simplest to employ. Self-praise is also called verbal self-reinforcement and is simply when you tell yourself, “Nice job” or “Way to go.” It can be said out loud or covertly and at times is left out of behavior medication plans because it seems silly to do or conceited, neither of which is true. Be sure to pat yourself on the back for a job well done.

9.5. Aversive Control - Punishment

Section Learning Objectives

- Outline the major aversive control procedures and provide an example for each.
- Assess the utility of punishment. Defend your position.

As you well know already there are two types of consequences – reinforcement, which we have spoken about quite a lot already, and punishment, which we have not discussed in much detail. Section 9.5 covers the control of behavior via punishments and several strategies will be discussed.

9.5.1. Time Outs

Probably the most well-known of all punishment procedures is the time out. Simply, a **time out** is when a person is removed from an activity because they are engaging in an undesirable or problem behavior. If effective, the time out should result in a reduction of the problem behavior in the future and so functions as a negative punishment (NP; taking away something good (the fun activity which serves as a reinforcement) making a behavior less likely in the future). The length of time needs to be determined and the person needs to be told how long they are expected to "sit this one out." At the end of the time, if the problem behavior has not occurred, they can be released from the time out. This reinforces the good behavior by serving as a NR. If the behavior is occurring and the person is released, you just reinforced the problem behavior by taking away the aversive time out. Be careful with implementing the time out procedure. Notice that an NR occurs in both cases. The aversive stimulus is the time out and is what is removed. But what behavior are you reinforcing? Proper use of a time out reinforces the desirable behavior while misuse of the procedure reinforces the problem behavior.

Time outs take two forms – exclusionary or non-exclusionary. *Exclusionary time outs* are when the person is removed from the actual location where the problem behavior is occurring. The best example, and the one you might be thinking of, is when a teacher sends a child to the principal's office. Obviously then, a child is not removed from the situation in a *non-exclusionary time out* but cannot partake in the reinforcing activity. Depending on what the activity is, I might say that non-exclusionary is more punishing. Why is that? If a child misbehaves on the playground and the teacher makes him sit on the side, he still can see all the fun the other kids are having but cannot participate. This is worse than being sent inside to sit at a table or talk with the principal, and not being able to see and hear all the fun that is going on.

One major concern with the time out is the function of the problem behavior. Maybe the child is acting out so that they can get out of doing math work. When the teacher sends the child to the principal's office, the punisher is actually not punishing, but reinforcing future acting out. Essentially, the acting out and being removed from the room is a NR – taking away something aversive (the math work) which makes a behavior (the acting out) more likely to occur in the future.

9.5.2. Response Costs

We discussed response costs once already near the end of our section on the token economy. Simply, a **response cost** is a type of negative punisher in which some amount of a reinforcer is removed when a problem/undesirable behavior is engaged in.

In a token economy engaging in the desired behavior earns tokens. Let's say you did not go to the gym. As such, you will not have the chance to earn tokens for going. It might be that you had a major test that day and used the gym time to squeeze in some additional studying. Do not punish this as it is an understandable compromise to make. But if you woke up and instead played on your phone and lost the time to go, then a response cost is appropriate and you might take away 3 tokens. (The loss of tokens should make the behavior of playing on the phone less likely to occur in the future, assuming you care about earning tokens and cashing them in from the start. This is why it is essential to have reinforcers that have meaning to you.)

Outside of a token economy – If you are not using a token economy and engage in the same desired behavior as noted above, you could take away Netflix time later that day as a response cost. In this case, Netflix time is a PR and its loss makes playing on the phone less likely in the future.

Do not punish the "act" of not going to the gym but the undesirable behavior that was engaged in instead. You do not want the gym associated with anything negative (except maybe soreness but that is to be expected, and hey, no pain, no gain).

9.5.3. Overcorrection

Did you ever throw a tantrum and trash your room? Have you become so upset at someone that you yelled at them for a period of time? If so, you engaged in a problem behavior and likely were punished for doing so. If in the context of your childhood home, your parents may have made you clean your room up and make it look better than it did before, or be extra nice to your sibling. These are types of *overcorrection procedures* or when a person is expected to engage in effortful behavior for an extended period after the occurrence of an undesirable behavior. The example of cleaning the room is called **restitution**, or restoring the environment to a condition that is better than it was before the undesirable behavior, and being super nice is called **positive practice**, or engaging in the correct form of behavior over and over again.

9.5.4. Other Forms of Punishment

In the military, it is quite common to have a soldier (and his whole company) who has not followed instructions or engaged in a behavior unbecoming a solider to engage in push-ups, sit-ups, jogging in place, holding a rifle above the head, running extra laps around a track, etc. These forms of **contingent exercise** should decrease the problem behavior in the future (as will the heckling by the rest of the company after the exercise is over and the sergeant is gone).

Sometimes a person is engaging in self-injurious problem behavior and need to be **physically restrained** or held down. The restraint is not pleasant and results in the loss of

voluntary control (taking away something good) which makes the behavior of hitting oneself in the head less likely to occur in the future (the person should remember the discomfort of being restrained and the loss of control).

And finally, I think we all have been in the situation of not listening to our parents and being picked up or walked into our room and shown how to clean it. This form of **guided compliance**, or physically guiding the person through the activity is aversive and in the future he or she should engage in the desire behavior to avoid the discomfort of being guided (avoidance behavior in the future; once you are doing the correct behavior in the present, the guidance compliance ends, which is NR and an escape behavior).

9.5.5 Does Punishment Work?

As with all things in life, the answer is yes…and no. In other words, there are pros and cons. Let's explore them.

Pros of Punishment:

1. Consistency is most important – If you punish each and every time the person engages in the undesirable or problem behavior, they will stop making the behavior (i.e. Speeding).
2. It can be unquestionably effective – Punishment can deter some criminals from repeating their crimes.
3. Avoidance training - Sometimes, after punishment has been administered a few times, it is not needed any more for the mere threat of it is enough to induce the desired behavior.

4. Severity of punishment makes no difference – The mere fact of being punished is enough most times, not all.

Cons of Punishment:

1. It is often administered inappropriately - In a blind rage, people often apply punishment broadly such that it covers all sorts of irrelevant behaviors. At times, parents take out their frustrations at work on their kids and what would not have upset them much one day, angers them immensely another.
2. The recipient of the punishment often responds with anxiety, fear, or rage and these emotional side effects generalize to the entire situation. You can see this in animals when they have been punished for soiling the carpet and are disciplined.
3. The effectiveness of punishment is often temporary, depending on the presence of the punishing person or circumstances. When the punisher is not there, the punished misbehaves again.
4. Most behavior is hard to punish immediately and during the delay behavior may be reinforced several times – i.e. not getting a speeding ticket every time you speed. Of course, in a token economy, the response cost can be delivered immediately as is the case with the reinforcer in the form of the token, but token economies are used in select situations.
5. Punishment conveys little information – Does not tell the person how to act. If you want them to display desirable behavior, they have to know what it is.
6. An action meant to punish may instead be reinforcing as when a child acts out for attention. For them it is a positive reinforcer. What about the case of the child

acting out to get out of math work? In this case the behavior leads to a consequence and specifically negative reinforcement. The functional assessment should help you understand why the problem behavior occurs so this issue can be avoided.

So, what is the final verdict on punishment? The list of cons are much more extensive than the list of pros, and the first pro, consistency, is not practical most times leading to the fourth con. This might make us think that punishment is not useful. It can be if the following is practiced:

1. Do not use physical abuse (takes care of Con 1 and 2).
2. Tell the person how to behave instead (takes care of Con 5).
3. Reinforce the desired behavior when it occurs.

9.6. Social Support … Again

Section Learning Objectives

- Clarify the role of social support in the delivery of consequences for behavior.

And finally, we are back to social support, which was discussed as an antecedent strategy. If our friends and family can provide us reminders to engage in the correct behavior before we make it, they too can deliver reinforcers and punishers as consequences. Keep this in mind as social support works through the entire process of behavior modification.

9.7. Exercises

Section Learning Objectives

- Complete the following exercises using what you have learned in this module.

Exercise 9.1: Strategies to Use with the Consequence

Directions: For the following, select the appropriate strategy or use the strategy that is indicated.

In questions 1-8, classify the following as DRA, DRO, DRL, or DRI. Why did you choose this strategy (i.e. what is the expected outcome)?

1. Johnny squirms in his seat often during math class. His teacher decides to give him a sticker when he goes without fidgeting for 10 minutes.

2. Mrs. Johnson decides to give each student who uses his inside voice in the classroom instead of yelling a sticker that they can use to purchase backup reinforcers at the designated time (a token economy is being used but focus on the type of differential reinforcement).

3. A supervisor has an employee who frequently makes derogatory comments to his coworkers. He continues this because some employees laugh along with him. The supervisor decides to only reinforce the hostile employee when he says something positive and to ignore him when he says something negative.

4. You are meeting with your study group but you have a genuine comedian who provides unending entertainment for all… so much so, you get nothing done. Your group decides to tell the funny member to limit jokes to no more than 5 during the entire session so that work can be finished.

5. You are working with a friend to reduce your nail biting behavior. You replace nail biting with chewing gum and the friend reinforces you with a compliment whenever you chew gum in anxiety producing situations instead of biting your nails.

6. Your child has misbehaved and so you tell him that if he does not act out again in the next 30 minutes, you will allow him to have one piece of candy. He acts out about 22 minutes in and so you reset the clock and make him start over.

7. A student in class has a tendency to surf the internet while lecture is going on. Due to this, she has to ask the professor to repeat what was said so she can take notes. The professor decides to only answer her questions when she is paying attention and to ignore her hand when she is on the internet (assume the professor can see when the student is online).

8. A parent rewards a child for limiting the number of questions that are asked when driving to school from 8 to 4.

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9. A teacher wants to discourage students from procrastinating and so implements a token economy to help out. How might this token economy be set up by the teacher? Include all elements. There is no need to create the two tables as in Module 9.3.3.

10. Your child gets upset about being punished for doing poorly on a math test and destroys his room. What type of punishment procedure might you use to discourage this behavior in the future?

11. Why would a token economy not be the best technique to use in a college classroom to increase student effort on exams? What other strategy would you recommend?

12. Your child hates having to deep clean the living room on the weekend. He acts out and is punished by being sent to his room. Is this punishment effective? Why or why not? What would you propose be done instead by the parents?

Module Recap

Previously, we explored various strategies that can be used at the antecedent and behavior stage of the ABC Method. In Module 9 we completed this discussion by focusing on consequences of behavior. This included guidance on how to select reinforcers to use in your behavior modification plan. Though this seems like a simple enough task, many students struggle with it and just select something for the sake of having it on paper. When plans fail, as they sometimes do, it is at times because their reinforcers were not reinforcing enough. These reinforcers are critical for use in differential reinforcement and the token economy. The former includes such strategies as DRO, DRA, DRL, and DRI. The latter is a system of earning tokens and cashing them in for backup reinforcers. Self-praise is a very easy reinforcer to deliver and is no cost, but often it is overlooked in self-modification plans. Reinforcement does not always work, and we need to turn to punishment procedures such as the time out, response cost, overcorrection, contingent exercise, guided compliance, and physical restraint. There are both pros and cons of punishment, and though I offered a final word on the use of punishment, the verdict really is still out and the answer is up to you. Finally, social support was listed as procedure used both at the antecedent and consequence stage and is critical to the success of any behavior modification plan.

With Part III now complete, we turn our attention to developing a behavior modification plan and in Module 10 will start by figuring out which strategies to use.

Table 9.8. Summary of Behavior Modification Strategies

<table>
<tr><th>Antecedent Focused</th><th>Behavior Focused</th><th>Consequence Focused</th></tr>
<tr><td>Goal Setting</td><td>Shaping</td><td>Token economy</td></tr>
<tr><td>Antecedent Manipulations:
Using Cues
Response Effort
Motivational Strategies – establishing and abolishing operations</td><td>Fear and Anxiety Procedures:
Relaxation Techniques
Desensitization (systematic and in-vivo)
Flooding
Modeling</td><td>Differential Reinforcement:
DRA
DRO
DRL
DRI</td></tr>
<tr><td>Discrimination and Generalization</td><td>Habit Reversal</td><td>Self-Praise</td></tr>
<tr><td>Prompting to include verbal, gestural, modeling, and physical

Fading of prompts
Fading within a prompt
Fading across prompts
Prompt delay</td><td rowspan="4">Cognitive Behavior Modification:
Cognitive Restructuring
Cognitive Coping Skills Training
Acceptance Techniques</td><td>Punishment Procedures:
Time Out: exclusionary and non-exclusionary
Response Cost
Overcorrection: positive practice and restitution
Physical Restraint
Guided Compliance
Contingent Exercise</td></tr>
<tr><td>Programming</td><td>Social Support</td></tr>
<tr><td>Self-Instructions</td><td rowspan="2">General use of reinforcers and punishers</td></tr>
<tr><td>Social Support</td></tr>
</table>

Part IV. Developing a Behavior Modification Plan

Part IV. Developing a Behavior Modification Plan

Module 10:

Selecting Strategies

Module 10: Selecting Strategies

Module Overview

Throughout Modules 6-9 we covered upward of 30 strategies that can be used to bring about behavior change whether for yourself or another person. Do you use them all in a plan? Definitely not. The question is which of these strategies could be used. This module will help you determine this.

Module Outline

Module Learning Outcomes

- Decide how to use the results of your functional assessment to inform strategy selection.
- Choose relevant antecedent-focused strategies.
- Choose relevant behavior-focused strategies.
- Choose relevant consequence-focused strategies.

10.1. Utilizing the Results of Your Functional Assessment

Section Learning Objectives

- Review the results of the functional assessment.

One starting point when determining what strategies to use is to look at the results of the functional assessment undertaken at the end of the baseline phase and through interviews with the individual the plan is being developed for or through careful self-reflection if for yourself. This information is critical for determining what strategies to use for your plan.

For instance, if you are trying to exercise more but you find that you play your favorite game on your phone as soon as you wake up, you will want to select an antecedent manipulation such as removing the stimulus for the undesired behavior to deal with this temptation. It may also be that this game is particularly rewarding for you and so you need to modify the consequences. You could decide to go to the gym with your best friend, spouse, fraternity brother or sorority sister, teammate, child, etc., and having this workout buddy will motivate you to get up and get out the door to the gym. So, by knowing the effect of this one simple antecedent, you can use two strategies to avoid making the undesirable behavior and engaging in the correct or desired response. You might also incorporate avoidance of the game time into your token economy as an extra point.

As another example, say you are trying to lose weight and discover two things in your functional assessment. First, you LOVE pizza and eat it all the time. Fortunately, it is extremely healthy and so no issue, right? Wrong. Second, you discover you eat when out with friends whether you are hungry or not. The extra calories from both of these undesired behaviors are

undermining your weight loss goals and so something needs to be done. In terms of pizza, you could reduce the positive consequences of eating it by finding out how many calories a slice from your favorite pizza place has. This may serve as an abolishing operation or reducing the reinforcing value of the undesired behavior. You could also use self-instructions to remind yourself of how bad the pizza is, social support in the form of prompts from your roommate reminding you to eat healthy, goal setting, and the token economy. That is five different strategies to just deal with the pizza issue!

In terms of your friends and eating out, you could use social support again. I know. Really? Aren't your friends part of the problem? Well, yes, they are, but if they know what your goals are, they can help you to not eat out when you are socializing with them through prompts and once you made the right decision through praise (positive reinforcer). You can also have them engage in differential reinforcement and likely DRO in terms of reinforcing the absence of the problem behavior or eating bad when out, or DRL, and allowing yourself a little bit of food. Maybe just order a half size portion or an appetizer or share a meal with a friend who is also not really hungry and possibly trying to eat healthier too. Use self-praise once you have left the restaurant and once you have engaged in the right behavior. If you did not do well, then you can implement a punishment such as overcorrection the next day or contingent exercise. You can also use a response cost within your token economy. For the second problem behavior you have about six different strategies to use.

Again, knowing what the behavior is, the antecedents causing it, and the consequences maintaining it, will help you to create what should be a highly effective and successful plan.

10.2. Selecting Strategies

Section Learning Objectives

- Choose antecedent-focused strategies to use in your behavior modification plan.
- Choose behavior-focused strategies to use in your behavior modification plan.
- Choose consequence-focused strategies to use in your behavior modification plan.

10.2.1 Antecedent-Focused Strategies

Recall that Module 7 covered the following antecedent-focused strategies:

- Goal Setting (revisited)
- Antecedent Manipulations to include:
  - Creating a Cue for the Desired Behavior
  - Removing a Cue for the Undesirable Behavior
  - Increasing the Energy Needed to Make a Problem Behavior
  - Decreasing the Energy Needed to Engage in the Desirable Behavior
  - Enhancing the Motivating Properties of the Desired Behavior through an Establishing Operation
  - Decreasing the Motivating Properties of the Undesired Behavior through an Abolishing Operation
- Stimulus Discrimination and Generalization
- Prompts to include verbal, gestural, modeling, and physical
- Programming
- Self-Instructions
- Self-Praise
- Social Support

Expect that you will use quite a few of these strategies. How so?

- First, goal setting is already part of your plan as you saw in Planning Sheet 3. Be sure your goals are clearly laid out and your criterion is reasonable. If you are trying to increase exercise and have a reasonable progression of frequency and duration through your goals, but jump from working out two days to three days too quickly due to a faulty criterion, your plan could fall a part or lead to a reduction in your enthusiasm for it, especially if an injury occurs. You also don't want to stay at the current goal level too long as you might then become bored with your plan.
- Antecedent manipulations are basically a sure thing for inclusion in your plan. In fact, you will likely use several of them and can use any strategy more than once. For instance, you might find a few different ways to present the cue for the desirable behavior in your plan. Feel free to use it more than once and each use counts as an additional strategy. Think long and hard about how you can use the two motivational strategies. They will prove to be more useful than you might realize right now if used effectively.
- Generalization – If you are trying to lose weight, you will want to make sure you engage in the desirable behavior when you are at home, out with friends, at home with family, or driving to your spring break destination.
- Prompts – Used in conjunction with social support, these are excellent reminders to make the desired behavior when you are tempted to do otherwise. They are also low cost, easy to implement, and makes your social support network stakeholder(s) in the success of your plan. Think clearly

about what types of prompts these individuals might use. Is a verbal prompt enough, or will they need to physically remove the bad food from in front of you? You will probably want to avoid the latter as a prompt, but your friends could model the good behavior or gesture to you by shaking their head if you are about to make the wrong choice.

- Programming – As part of generalization of the desired response beyond training situations or familiar environments, expect to use programming in conjunction with prompts.
- Self-Instructions – These can be reminders you give yourself when at the store shopping for food or post it reminders you have on the refrigerator. They can be highly useful and should be part of your plan.
- Social Support – Already mentioned and will be part of most plans.

10.2.2 Behavior-Focused Strategies

Recall that Module 8 covered the following behavior-focused strategies:

- Shaping
- Fear and Anxiety Procedures
    - Relaxation Techniques
    - Desensitization
    - Flooding
    - Modeling
- Habit Reversal
- Cognitive Behavior Modification
    - Cognitive Restructuring
    - Cognitive Coping Skills Training
    - Acceptance Techniques

These strategies are obviously focused on the behavior itself, but if you look closer, all but shaping are really specific to a type of behavior such as reducing fear, anxiety, a bad habit, or maladaptive thought. Unless your project concerns one of these types of behavior, you can skip these strategies. You might consider cognitive behavior modification if you are trying to lose weight or get in shape. It may be that an impediment to your success is thinking that you just cannot reach your distal goal due to something wrong with yourself. Maybe you see yourself as fat and instead of motivating you to lose weight, this cognition causes you to stay in and not risk embarrassment at the gym. You would need to change this mindset to something more positive such as thinking about how the other people at the gym would be proud of you for trying and even offer encouragement. That was my experience about 20 years ago when I embarked on a

plan to lose about 75 unwanted pounds. The more encouragement I received, in the form of positive reinforcers and social support, the harder I worked out. You will need to change how you see yourself and remove the fear of embarrassment and fat shaming from your mind.

Outside of a self-modification project, if you are deciding whether to use these strategies with other people, figure out if what you are trying to reduce (cognitive excess) is fear of some person, object, or situation; a bad habit such as pacing; or a maladaptive thought such as a pervasive feeling of worthlessness. If so, then choose the right group of strategies for that issue. You will still use antecedent and consequence-focused strategies as well.

The most diverse range of strategies falls under fear and anxiety procedures. Relaxation techniques are a necessary part of the other procedures so plan to learn at least one way to relax. What you decide to use after that depends. The fear hierarchy of desensitization could be useful in flooding and modeling too. Possibly of these three strategies, modeling is the least aversive since you are only watching someone else, whether through a video or live demonstration, interact with your fear-producing stimulus. The most aversive is flooding since you are thrown into the most fear and anxiety producing situation you possibly could be placed in. Systematic would likely fall in the middle with *in vivo* occurring next. Both strategies use a graduated approach, moving from one fear-invoking stimulus to the next, and from last to most aversive, so the person should not be overwhelmed too fast. Again, the order for the fear and anxiety procedures from least to most aversive is:

1. Modeling (least)
2. Systematic desensitization
3. *In-vivo* desensitization
4. Flooding

With relaxation techniques being used in them all…

For cognitive behavior modification, the functional assessment will reveal the frequency, duration, and intensity of the maladaptive thought and what form it takes (overgeneralizing, mind reading, what if?, etc.). If you can simply replace maladaptive thoughts with adaptive ones, use cognitive restructuring (see Section 8.4.2. for suggestions). If a more hands-on approach or the teaching of specific skills such as social skills, communication, or assertiveness is needed, use cognitive coping skills training. Finally, we may not be able to change the source of the maladaptive cognition and can only accept life as it is.

Some instances of when the three could be used include:

- Feeling that you are fat and ugly – replace this cognition with positive ones such as, "I am beautiful," or "I am moving toward my goal of being healthy" via cognitive restructuring.
- Not knowing how to talk to girls – Learning social skills via cognitive coping skills training.
- Blaming yourself for the loss of a loved one – You will need to accept that there is nothing you could have done to prevent the loss and that the person is really gone, via acceptance techniques.

Finally, if you are trying to reduce an annoying habit, use habit reversal as it is. If you are trying to develop a new behavior, shaping could work.

10.2.3. Consequence-Focused Strategies

Recall that Module 9 covered the following consequence-focused strategies:

- Token economy
- Differential Reinforcement to include:
    - DRA
    - DRO
    - DRL
    - DRI
- Self-Praise
- Punishment procedures to include:
    - Time Out
    - Response Cost
    - Overcorrection:
        - Positive Practice
        - Restitution
    - Physical Restraint
    - Guided Compliance
    - Contingent Exercise
- Social Support (again)

In the grand scheme of things, these strategies are relatively easy to use. They basically orient around reinforcement or punishment procedures, and the token economy can use both. In terms of reinforcement, differential reinforcement is useful especially if others are helping you

with your plan via social support. You need to decide what type of DR procedure you will use and that depends on what the unwanted behavior is and what our end goal is. For instance:

- If you are trying to increase a desired behavior and extinguish a problem behavior at the same time, use DRA. If you are just increasing a desired behavior, you are **not** using DRA and standalone reinforcers will work.
- If you want to eliminate a problem behavior, use DRO.
- If you want to reduce the occurrence of a behavior, not get rid of it, use DRL.
- If you want to substitute a behavior then use DRI.

See Section 9.2.2. for more specific details about differential reinforcement.

Another reinforcement strategy is to offer self-praise. These are positive reinforcers and sort of like a self-administered pat on back. These work whether you have social support for DR or not. But if you do have others helping with your plan, use DR and self-praise in your plan. These are simple strategies than can go a long way to helping you achieve success.

Punishment, or aversive control is the other way consequence-focused strategies work. You are not required to use punishment in your plan, or in the plan you use for others, but if you do, be sure you include some type of reinforcement procedure as well. How do you know which punishment procedure to use? Much like reinforcement, it depends on the unwanted behavior and your end goal as follows:

- Time Out – When we think of time-outs, we think of young children and if you are developing a plan with a child in mind, go ahead and include a time-out, if you are trying to stop something like aggressive behavior. If you are trying to help a child with time-management, a time-out will not likely be effective when they fail to respond in the desired way such as finishing an

assignment early. With adults, time-outs are used but in the form of being sent home from work for poor performance or being sent to jail for antisocial and illegal behavior.

- Response Cost – This is probably the easiest and most universal punishment procedure to use and is often used in the token economy. The response cost could be a loss in a tangible, consumable, activity, or privilege and so can affect all reinforcer classes.
- Overcorrection – This procedure is useful when a person or child acts out or destroys property. You might use it if you miss a workout day but do a longer workout the next day (positive practice) or you lose your temper and destroy your friends old tv, which you now replace with a brand spanking new 4K UHD TV (restitution).
- Physical Restraint – If the behavior the person engages in is self-injurious or destructive to other people or property, this punishment procedure may be necessary. It will not likely make it into your behavior modification plan.
- Guided Compliance – Same here. You will not likely need to be physically guided to complete some desired behavior but if you are developing a plan for a child who does not clean his room, you could added guided compliance and walk the child to the room, start manipulating him to pick up his toys, and then back off and use prompts. Upon completing the chore, give the child praise.
- Contingent Exercise – commonly used in the military, you might assign yourself jumping jacks or going for a short run if you eat something you

should not have and throw off your weight loss plan. If it best that you not actually enjoy the exercise you are engaging in as it could reinforce the bad behavior and not punish it, and also be sure that you, or another person, are physically able to engage in whatever the exercise is.

Finally, I already mentioned that social support and the token economy use a combination of reinforcement and punishment. For the token economy, the system is built to deliver immediate reinforcers (the tokens) that can be cashed in later for something desired (the back-up reinforcers). You can use response costs in this system (a NP) but allow for the person to get at least some of the tokens back for making good behavior (a NR). For social support, your friends, family, roommates, professor, etc. can deliver reinforcers when you do well or deliver punishers such as guided compliance, the time-out, or physical restraint if you do not comply. They can also handle response costs too.

Module Recap

Module 10 begins the process of bringing together all that you have learned in this course. In it, we discussed how to select the strategies discussed in Modules 6-9. Though we covered about 30 strategies throughout these four modules, you will not need them all in each plan. Knowing when to use them is most of the battle. The how to use them is generally straightforward except for the token economy. We covered antecedent, behavior, and consequence-focused strategies and practical guidelines for knowing when to use them was given.

With this in mind, we now to addressing potential mistakes we might make, writing rules, and then the behavioral contract in Module 11. This will give us all we need to formulate our plan in a tangible document called the Plan Proposal.

Part IV. Developing a Behavior Modification Plan

Module 11:

Establishing Rule-Governed Behavior and the Behavioral Contract

Module 11: Establishing Rule-Governed Behavior and the Behavioral Contract

Module Overview

Welcome to Module 11. Before writing a plan proposal, we need to tackle the issue of rule-governed behavior and the behavioral contract. We will also address how to handle mistakes that could be made.

Module Outline

11.1. Rule-Governed Behavior

11.2. Mistakes – Did I Do That?

11.3. If-Then Statements…Again

11.4. The Behavioral Contract

Module Learning Outcomes

- Clarify the importance of explicitly stating rules in your behavior modification plan.
- Clarify how mistakes can cause problems for the best designed behavior modification plan.
- Demonstrate the use of if-then statements as types of rules.
- Explain the use of the behavioral contract in behavior modification.

11.1. Rule-Governed Behavior

Section Learning Objectives

- Explain the function of rules in behavior modification plans.
- Exemplify rules that can be developed.

Though we have already established goals much earlier in this course, we now need to know how we will go about achieving these goals. **Rules** will aid with this by adding order, predictability, and reliability to our plan. Really, this is not new. We are already used to having rules govern all aspects of our life. Young children are given rules as to when they can play video games, need to go to bed, what chores to do to earn allowance, when to go to school, what homework to complete, when they can eat lunch or leave for the day, etc. Adults are governed by rules too. We are told when we can pass through the traffic light, how fast we can drive, when our credit card bill is due and how much, who we pay rent to, what we can take on a plane with us, what time we need to be at work, what time the store opens up, etc. Failure to follow rules often leads to a punisher of some type…for both children and adults. Though you may not be punished in the same way in your behavior modification plan, you likely will face consequences for not following your clearly established rules. This may take the form of not receiving tokens to cash in, being reminded of your goal by your significant other via a prompt, feeling guilt over eating that dessert or not making it to the gym, being thirsty because you forgot your water bottle, etc.

How these rules might look in a behavior modification plan:

- Target Behavior – Drink more water (behavioral deficit currently)
- Behavioral Definition – Drink 8 oz. of water (1 behavior)
- Goals:
  - Drink 8 oz. of water each day (7 behaviors)
  - Drink 16 oz. of water each day (14 behaviors)
  - Drink 32 oz. of water each day (28 behaviors)
  - Drink 48 oz. of water each day (42 behaviors)
  - Final Goal – Drink 64 oz. of water each day (56 behaviors)
- Criterion: Drink the specified amount of water for two weeks, upon which time move to the next goal.
- Possible Strategies:
  - Present Cue for Desired Behavior (DB) – Have a water bottle by your bed when you wake up in the morning.
  - Reducing Effort for making DB – Carry your water bottle with you to school
  - Establishing Operation for DB – Having a water bottle filled with cold water with you when you go to the gym
  - Verbal Prompt – Your best friend reminds you to drink water
  - Self-Instructions – Write yourself motivational statements about the benefits of drinking water, such as having a nice skin complexion. Look at your pros of changing the behavior, both short and long term, from Planning Sheet 2.

- DRO – Provide reinforcement when you do not drink tea or soda.
- Overcorrection – Positive practice – if you do drink tea or soda, make sure you drink more water the next day.
- Self-praise – Congratulate yourself on a job well done.
- Token Economy or General PRs – If you do a great job with your water consumption for the day, give yourself tokens to be traded in later or award yourself extra Netflix time as a standalone reinforcer.
- Social Support – Your friend is helping you and possibly delivering the reinforcers and punishers upon review of your ABC charts and journal.

o Temptations:

- You love soda when you are at a restaurant.
- You also like to drink tea and usually would make it at home and take it with you to school.
- Your boyfriend or girlfriend also loves tea and soda and so you need to be aware of this temptation.

o General Rules:

- I will drink 8 oz. of water from one of my pre-bought water bottles or a Contigo cup. (This way I know I am drinking the correct amount.)
- I will carry a water bottle to school with me each day I have class.
- I will take a drink at the end of each class as I leave (at the minimum; I can drink during class too if I wish).

- I will have my water for the day drank by dinner time so it can run through my system during the day and evening and I am not waking up during the night to use the bathroom.
- I will award myself 10 tokens for each 8 oz. of water I drink (and other rules associated with the token economy).
- I will give myself an additional 2 tokens each time I go for a day at school without drinking water and soda (DRO linked to the token economy).
- If I do drink soda or tea outside of times that I am allowed to (i.e. cashing in tokens) then I will drink an extra 8 oz. the next day to correct for this (linked to positive practice).

Etc. As you can see, your fully developed plan includes these rules as a final step. Though they may already be stated in other places, such as with the token economy, be sure that you list all rules in one place…and together. You should have a clear list made up and not need to search through all aspects of your plan to find them.

Again, it is important that the rules you write not be vague. They should clearly state what you are expected to do. At the same time, do not make them impossible to achieve. If we are trying to drink more water, we might state that we can never drink soda again. This is an extreme and a soda on occasion is okay. It's like the cliché, 'All things in moderation.'

Note on Writing Formal Plan Rules:

When you write your rules, it is a good idea to have a section heading for each major class of rules to add organization such as:

- Behavioral Definition and Goals Rules
- Method of Recording Rules
- Strategies Rules – you will have numerous rules in this section, and several alone for the token economy.
- Temptations and Mistakes Rules
- General Rules – as a separate section or integrated above depending on the plan

Feel free to use other categories if you want, but the rules will be written in bulleted format under each section. If developed for another person (i.e. a child or client) be sure to go over the rules with this person to ensure they understand and consider any input they offer.

11.2. Mistakes – Did I Do That?

Section Learning Objectives

- Identify types of mistakes you might make.
- Propose steps you can take to prevent mistakes.

Mistakes happen. That's part of life. The key is not to beat yourself up when you do and to spend a little time now trying to anticipate mistakes you might make. So, what are some?

- Improperly Using a Strategy – Hopefully you have been given enough information in this textbook and through your instructor that you properly use the 30ish strategies that have been offered to change your behavior. If not, you will have to fix the issue if you are not too far into your plan. Don't attribute your plan's lack of success, if that is occurring, to poorly selected strategies if you are not using at least one correctly. Note the issue and then work to rectify it. But know that if you are using a strategy correctly, and it just is not helping you out, that is not a mistake. It is simply a strategy that you don't need. Some students find that the token economy is not very helpful or motivational. This is not a mistake. There are cases, though, when students do not set it up correctly and so this is a mistake. You might also employ the differential reinforcement procedures incorrectly and if you do, fix them once you realize. You might choose to present a cue for the desirable behavior such as laying your clothes out next to your bed. This is a great strategy, but what if you wake up at o'dark thirty in the morning when your room is pitch black and you don't have light until you make it to the

bathroom (good luck and watch your toes…and furniture). In this case, the idea of seeing your clothes and being reminded to go the gym is good, but where you place your clothes is the problem. Instead of next to your bed place them in the bathroom. The strategy was not mistaken, just the placement of the workout clothes. So be careful how you interpret issues with your strategies.

- Method of Recording – You might choose to use your phone to record desirable behaviors as you make them, such as recording each time you drink 8oz. of water. This is great, but if you don't remember to actually open the app to do so, the recording method is flawed. Maybe you prefer to make hash marks in your school notebook instead. This low-tech method may work better for you. You will ultimately want to record on ABC charts but carrying them around may be cumbersome and bothersome. Hence, having an intermediary recording step is fine, as long as you use it.
- Remembering to Record – What if you have the perfect recording tool but cannot remember to record. You leave your ABC chart by your bed and remember to use it before going to sleep, but you need to remember exactly how many cups of water you drank. Having a log during the day helps and keeps you both honest and accurate. But if you do not use it, then you are operating off memory which can be flawed. If you cannot remember to record, program reminders on your phone as a type of cue. You might even ask a friend or roommate to help you remember to record what you drank for the day. This verbal or gestural prompt goes well with social support.

- Be Mindful of Antecedents and Consequences – Once you do record, be as thorough as you can, recording the antecedent and consequences of making the desired or undesired behavior. Most of the time we want to record what we drank, did, thought, etc. but adding detail beyond the behavior is critical in case your plan is not working. There could be another factor we were not aware would cause us a problem when designing our plan. Thorough recounting of the events before and after the behavior can help.

No matter what you do, if you make a mistake, DO NOT punish yourself for the error. In my experience teaching this subject, many students use contingent exercise or an overcorrection procedure as a solution to the problem. These are not solutions and to really understand the mistake, we need to know why we made it in the first place. Once we know this, we can make changes, so it is not a factor, or as much of a factor, in the future. And by fixing the issue we are also earning reinforcers, thereby making the desired behavior more likely.

Before moving on, I think it is important to point out that though we might give in to a temptation and this is technically a mistake on our part, mistakes and temptations are not intended to be synonyms for one another. How are they different then?

- Mistakes – Are literally errors we might make such as forgetting to record our behavior for the day, using a strategy incorrectly, choosing the wrong recording method, or setting up our token economy wrong. They can lead to our data being skewed and could cause us to redo our entire plan if not caught early enough or if serious enough.
- Temptations – Anything that might cause us to engage in the problem or undesirable behavior. They will not necessarily derail our plan entirely and with some careful

thinking, we can devise a plan to deal with them. They might be people, places, things, or situations that are may temporarily take our eye off the prize but they are short-lived. Though not ideal, they are not mistakes in the sense discussed above.

- Both mistakes and temptations can be planned for. If we anticipate that we might forget to record our data, we can program reminders on our phone as a cue or have a friend remind us via prompting. If we anticipate having problems in certain situations, places, or when with certain people, we can take steps now to avoid or minimize the effects of temptation. But both can arise without warning too. We might later realize that though our token economy was set up correctly we chose the wrong reinforcers. Or we might meet a new friend or significant other during the plan or encounter an extreme stressor such as the loss of a loved one, that completely derails the most perfectly laid out plan.

It is important that we realize what the cause of our failure is, should this occur. Most people committed to a behavior modification plan attribute failure to something wrong with themselves – either not being committed enough, faulty personality traits, low self-control, etc. They overlook the fact that the reason for their plan's failure might not be located in themselves, but in their environment. Hence, they should be making a situational attribution when they are making a dispositional one. This could lead them to completely abandon the plan for good, when all they had to do was remove these situational or external temptations.

Keep this in mind as if your plan does encounter a roadblock, you will be asked to look for these situational factors.

11.3. If-Then Statements…Again

Section Learning Objectives

- Review the use of If-then Statements for temptations and mistakes.
- Describe how to develop if-then statements to use in your plan as a type of rule.

As already noted, we are engaging in rule-governed behavior. When we discussed temptations in Module 5, we also noted the use of if-then statements. Those apply here as well; they are also rules. Unlike rules that specify when we work out, what we drink water in, or foods we can eat, these specify what we will do when faced with certain temptations, or even if we make a mistake. So, as you write your rules list, be sure you keep these in mind too.

We already had some if-then statements in our list in Section 11.1, though they were not written as so. Consider: 'I will award myself 10 tokens for each 8 oz. of water I drink.' You can rephrase this as, 'If I drink 8 oz. of water, then I will award myself 10 tokens.' Other aspects of your token economy, DRO procedure, self-praise, etc. will work the same. These rules as if-then statements tell you what you receive if you engage in the correct behavior.

In terms of temptations and mistakes, you might use if-then statements as follows:

- Temptation - If I am at a restaurant and offered a soda, then I will remind myself of my goal via a self-instruction.
- Temptation - If I am going out with friends later that night, then I will drink a protein drink so that I am not hungry.
- Temptation - If I wake up and play games on my phone and do not make it to the gym, then I will leave my phone in my school bag in the future.

- Mistake – If I forget to drink water, then I will ask my roommate to remind me.
- Mistake – If I forget to record how many water bottles I drank during the day, then I will program reminders on my phone.
- Mistake – If I use the DRO procedure incorrectly, then I will figure out what I did wrong and implement it correctly going forward.

You can use these if-then statements as some of your rules and in conjunction with others such as 'I will drink 8 oz. of water from one of my pre-bought water bottles or a Contigo cup.' This rule cannot be written as an if-then statement but is a rule all the same. All rules described in Section 11.1 and 11.3 add predictability, order, and reliability. There is no guesswork which will hopefully make your plan's success more likely.

11.4. The Behavioral Contract

Section Learning Objectives

- Describe the behavioral contract and its contents.
- Exemplify what a behavioral contract looks like.

And now to the last formal topic before we can write our plan proposal – the **behavioral contract**. This is a written agreement between two people in which at least one of the two have agreed to engage in a specific level of the target behavior. A behavioral contract should at least include the following:

- Statement of the target behavior
- The behavioral definition
- Your goals and timetable for these goals if you have one
- What recording method will be used
- Strategies that will be used
- Anyone who is part of the plan as social support
- The rules related to when the behavior will be made and how it will be reinforced or a problem behavior punished. You might include rules related to how temptations and mistakes will be dealt with, though this can just be left in your plan itself. The rules can be scattered throughout the contract. You will have them grouped together in your plan.
- You also clearly state who will deliver the reinforcers and punishers, or who will serve as the *contract manager*. This person should not gain directly from your

failure, such that if you do not meet your goals they are to receive some coveted baseball card in your possession.

Behavioral contracts may involve just one person changing a behavior, called a *one-party contract*, or two parties. In the case of the latter, there could be an issue between roommates in which Roommate 1 wants Roommate 2 to clean up after themselves while Roommate 2 wants 1 to pay their part of the rent on time so as not incur late fees.

Whether you are dealing with a one-party or two-party contract, it is a form of public commitment and should increase the desired behavior. The consequences for making (or not making) the target behavior are clearly established meaning this is also a form of rule-governed behavior. Interestingly, since the expectations of all involved parties are clearly stated, not meeting the agreed upon terms should create a state of anxiety which is aversive and leads to engaging in the target behavior to escape the anxiety. In the future, the desired behavior will occur to avoid this anxiety. Again, the important word is *should*. Some people don't feel the anxiety for one reason or another.

Behavioral contracts can take different forms, and Figure 11.1 shows an example of one that I used with my nutritionist a few years back. Notice that the rules governing my behavior, the dispensing of reinforcers and punishers, the role of my contract manager, etc. are listed throughout. Also, my goal is restated as well as my behavioral definition and timetable. Some of my strategies are described briefly as well as my recording method. Again, there are different ways to do this and this is one example.

Key features:

- My wife was my contract manager, but it was developed with my nutritionist too.

- End goal and timeframe – “The end goal is to see my weight fall from 270 lbs. to 220 lbs. and I want this to occur by December 31, 2014.”
- Subgoals – “I will lose weight at a rate of about 10 lbs. every two months. As such, to drop 50 lbs every two months will require approximately 10 months as written in my plan. Making the goal only 10 lbs. allows for some mistakes to be made.”
- Recording Method – “I will initially record the behavior on the Fitbit app on my phone. I can back this information up in my Excel spreadsheet each night.”
- Token Economy – “If I complete the pre-defined behaviors, then I will receive tokens.”
- Rule for Tokens – “I will be able to use my tokens (stars on a dry erase board) in exchange for the reinforcers listed in Table 2. I must have the required number of tokens in order to “purchase” a reward.” This is vague in the behavioral contract as the token economy was fairly complex and to list all behaviors and reinforcers would have been far beyond the scope of the contract. References were made to see the appropriate tables.
- Temptation Statement – “In the event I succumb to temptation, I will have a response cost to punish the undesirable behavior.” This is an if-then statement though not written as such.

This plan involved four different behaviors I was trying to change and weight loss was one of them, involving the nutritionist and my wife. The other three behaviors – drinking water, reducing calories, and getting 8 hours sleep – were detailed in the plan itself. I only had the one

contract for this one aspect of my plan. Since your plan will only include one behavior, your contract should cover the plan in full. There is no need to include a tremendous amount of detail as interested parties can look at your proposal, and later your final paper, if questions arise.

Figure 11.1.

Behavioral Contract for Lee Daffin

I, Lee William Daffin Jr., will begin my self-management program the week after it has been approved by my wife and my nutritionist. The end goal is to see my weight fall from 270 lbs. to 220 lbs. and I want this to occur by December 31, 2014. I will lose weight at a rate of about 10 lbs. every two months. As such, to drop 50 lbs. every two months will require approximately 10 months as written in my plan. Since my plan begins in mid-March, I will have approximately 9.5 months to accomplish this. This is reasonable as a safe weight loss per week is 2 lbs., and if I dropped that much weight per week, I would lose 16 lbs. every 2 months. Making the goal only 10 lbs. allows for some mistakes to be made.

To aid in the completion of this program I will accurately and honestly record my behaviors as they are performed. I will initially record the behavior on the Fitbit app on my phone. I can back this information up in my Excel spreadsheet each night.

I will also institute a reinforcement system (token economy). This system will reward the completion of the defined target behaviors. If I complete the pre-defined behaviors, then I will receive tokens. I will be able to use my tokens (stars on a dry erase board) in exchange for the reinforcers listed in Table 2. I must have the required number of tokens in order to "purchase" a reward. No exceptions. I can redeem my tokens when the "store" is open (sometime on Saturday each week). There are bonuses available for completing certain criteria as well as non-contingent events. In the event I succumb to temptation, I will have a response cost to punish the undesirable behavior.

In summary, I commit to completing my program by progressing through each sub-goal until reaching my final goal (50 lbs. of weight loss, or falling from 270 to 220 lbs.). I will accomplish this goal by the end of the 2014 calendar year and I will begin it once this plan is approved. I will record my behavior accurately and honestly and I will reinforce my behavior through the use of tokens. I will only be rewarded with tokens after I have completed the required behavior. At no time will I receive a token for actions I have not done. I will not "cheat" in any form. I will follow my plan as laid out in this document.

Signature: ***Lee William Daffin Jr.*** Date: 3-12-14

Module Recap

Module 11 completed our discussion of all relevant content to be able to develop, propose, and then implement a plan. We discussed the need to have clearly stated rules, identify mistakes that could be made so they can be planned for, and the function of a behavioral contract.

So, what's next? We will discuss how to implement your plan in Module 12 and then in Module 13 we will discuss how to evaluate and adjust your plan. Assuming all has gone well, we will move into maintenance phase and discuss how to avoid relapse in Module 14.

If you have any questions, be sure to ask your Instructor now.

Part V. Running the Plan and Staying the (*New)* Course

Part V. Running the Plan and Staying the *(New)* Course

Module 12:

Implementing the Plan – The Treatment Phase

Module 12: Implementing the Plan – The Treatment Phase

Module Overview

Once you have developed your plan proposal and worked out all the details with your applied behavioral analysis or in the case of this class, your instructor, its time to bring about positive change. Module 12 is short and sweet, but important. We will go over how to get started and what to do during your treatment phase.

Module Outline

12.1. The Treatment Phase

12.2. Record Keeping

Module Learning Outcomes

- Discuss the treatment phase of your behavior modification plan.
- Explain the importance of wellness and the eight dimensions.
- Implement your plan.
- Use the ABC chart and journal for record keeping.

12.1. The Treatment Phase

Section Learning Objectives

- Define the treatment phase.
- Identify and explain the eight dimensions of wellness.
- Demonstrate how the dimensions relate to every behavior a person might desire to change.

Now that you have a behavior modification plan to change your target behavior for the good, it is time to implement the plan and see how it works. The treatment phase is when you employ all antecedent, behavior, and consequence-focused strategies. In the grand scheme of scientific research and specifically experiments, the treatment phase, but more so the strategies, are your IV or independent variable. Remember, this is the one that is manipulated. You have chosen certain strategies and decided to use them in a specific way which is the essence of manipulation. If you are doing a self-modification project in your class, consider that you and your classmates will have used antecedent manipulations and may have chosen to present a cue for the desirable behavior. Even if you and another student are trying to work out more and are using this strategy, you might decide to employ it in different ways. Maybe you will leave your clothes by your bed, but your classmate may leave the clothes in their bathroom. Both are cues to engage in the target, or desirable, behavior. Maybe instead the classmate uses their phone as a reminder to workout, assuming the phone is also not a temptation to engage in the undesirable behavior of surfing Facebook or playing a game. No matter what, manipulation is at work but so is measurement. Recall that your behavior is measured via your goals and behavior counts and is the dependent variable or DV.

Your treatment phase will last three weeks, though different instructors may make this time shorter or longer. To be able to really see if your strategies are working, you need two weeks at least. Though the designated treatment phase will end after at minimum two weeks, that is just for the purpose of having time to write your project up. Feel free to continue past this. The skills you learned in this class go well beyond this class. You will use these, or have strategies used on you such as prompting, reinforcement, and punishment procedures, all throughout life. So the applicability of the subject is enormous. Outside of that, if you have a true target behavior you want to establish or change, the impact can last the rest of your life and lead to better health and wellness. How so?

The Substance Abuse and Mental Health Services Administration (SAMHSA) defines wellness as "being in good physical and mental health." They add, "Remember that wellness is not the absence of illness or stress. You can still strive for wellness even if you are experiencing these challenges in your life." Most people see wellness as just focused on the physical or mental. These are part of the picture, but definitely not the whole picture. SAMHSA proposes eight dimensions of wellness as follows (this information is directly from their website):

- Physical - Recognizing the need for physical activity, healthy foods, and sleep.
- Emotional - Coping effectively with life and creating satisfying relationships.
- Environmental - Good health by occupying pleasant, stimulating environments that support well-being
- Financial - Satisfaction with current and future financial situations
- Intellectual - Recognizing creative abilities and finding ways to expand knowledge and skills
- Occupational - Personal satisfaction and enrichment from one's work

- Social - Developing a sense of connection, belonging, and a well-developed support system
- Spiritual - Expanding a sense of purpose and meaning in life

Okay. So who cares? Consider the following target behaviors students attempt to change for the better and which dimensions of wellness could be affected:

Table 12.1. Target Behavior and Impacted Dimensions of Wellness

Target Behavior	Phy	Emo	Env	Fin	Int	Occ	Soc	Spir
Go to the gym more often.	X	X					X	
Drink more water.	X			X				
Read my holy book more often.		X			X		X	X
Read for pleasure more.		X			X		X	
Use better time management skills.		X		X	X	X		
Study more regularly.		X		X	X	X		
Go for walks.	X	X	X	X			X	X
Clean up behind myself at home.		X	X	X			X	
Eat healthier food.	X			X				
Talk with people of the opposite sex.		X			X		X	
Use more effective coping mechanisms.		X					X	X
Curse less.		X	X		X	X	X	X

Note: Phy = Physical, Emo = Emotional, Env = Environmental, Fin = Financial, Int = Intellectual, Occ = Occupational, Soc = Social, and Spir = Spiritual

You could make a case for other dimensions on some of these, but I am sure the bigger issue is that you might be thinking how in the world could that dimension relate to that target behavior? I don't wish to spend a lot of time on the 12 target behaviors I used as examples explaining why I selected these various dimensions of wellness, so I will just cover four. You can think critically about the other 8 behaviors, and others you might decide are worth changing.

- Go for walks – Physical is obvious. Emotional might be too but this is an opportunity to get away from life and destress. If you go for a walk in a park, you are communing with nature which is environmental and potentially spiritual. If you go with another person, you are working on social and while walking you could engage in a conversation of current issues which is intellectual. Financial is on the list because unlike going to the gym, walking outside is free.
- Read a holy book – This can help you find meaning and purpose in life which is spiritual or to discover another coping mechanism which is emotional. If you are in a Bible study group this is social and intellectual, and as for the latter, you will discuss what individual passages mean on a personal and general level.
- Cleaning up behind myself at home – If you are staying clean you save yourself needless stress of angry roommates which is emotional. Respecting your roommates and their wishes is social. A clean house is part of environmental wellness. Keeping clean means you guarantee yourself a place to live which ties into financial wellness, as having to find another place to live may cost you more money.
- Study more regularly – Emotional in regards to stress reduction. If you fail a class you have to pay to repeat it which impacts financial wellness. Intellectual in terms

of mastering material related to your major. Better grades open up more doors when you start applying for jobs and so occupational wellness.

As you can see, you get quite a lot of bang for your buck when you bring about positive behavioral change. So let's get started.

12.2. Record Keeping

Section Learning Objectives

- Use the ABC chart during treatment phase and keep a brief journal.

There is nothing to do here. Your plan has been decided. You just need to start it. So when do you this? Simply, follow the lead of your instructor or ABA specialist as to when they have decided the treatment phase will occur. Ideally start your plan the first day of the week as soon as you wake up. Personally commit to this start date and time *before* it arrives. This way you are motivated to see yourself change for the better. Also, you may need to physically manipulate your environment in a way consistent with the strategies you selected such as leaving clothes by your bed or taking a water bottle with you to school. Be sure this is all in place ahead of time. Follow your plan rules.

Be sure you use the ABC charts and journal that I have provided below to last the entire treatment phase. If you are not carrying them with you throughout the day, make sure you have your intermediary recording method in place such as downloading a needed app on your phone.

Note one major change in the treatment phase ABC charts that was not present during the baseline phase – the presence of a comment box at the bottom to serve as a journal entry for the day. You will want to record anything that is important to understanding either the complete failure, partial failure/success, or complete success of your plan. This qualitative data complements the quantitative data and really adds the level of understanding you may need to understand how your plan is going or went.

Figure 12.1: Sample ABC Chart and Journal

Treatment Phase: Day ____, Week ____

Date: _____ Time: _____ AM PM

Observer: _____ Location: _____

Antecedents: (Describe any environmental or internal events that led to the occurrence or non-occurrence of the desired behavior)	Description:
Behavior: (Describe the behavior that was made and any relevant dimensions: frequency, duration, intensity)	Description: Behavior Count (see your goal) - _____
Consequences: (Describe the results of the behavior using terminology learned in this course such as PR, NR, PP, and NP)	Description:

Journal Entry

Encountered Temptations –

Mistakes –

Strategies –

Rules –

Recording Method –

Other Issues -

Your journal entry can include any information you feel is relevant. I included a few talking points such as which temptations were encountered and how you dealt with them, any mistakes you might have made, success of your strategies, clarity of your rules, effectiveness of your recording method and plan, and any other issues that may arise. Don't wait to complete these daily journal entries as the passage of time will decay your memory and make completing them much more difficult. Plus, you may forget something relevant that can help explain your plan's success or failure later. If there were no temptations or mistakes, or issues with the strategies or rules, just leave this blank. I would maybe note that there were no issues so you don't wonder later if you simply forgot to make notes. Any information about the ABCs of behavior will go in the table above the journal, as well as a behavior count in the row for behavior. If you believe your behavioral definition is flawed, note it in both tables. Changing a definition while you are implementing a plan can be tricky so consult your instructor or ABA analyst for advice.

As a note, the process of recording the ABCs and what is working and what is not, will be more involved for some of you than others. Individuals with a plan involving increasing working out will only need to record once a day when they work out while someone tackling drinking water will likely have to record throughout the day as water is consumed. Bear this in mind but in the end, you all are reducing some problem behavior or increasing a desired one.

Module Recap

You are now ready to rock and roll. This project is all about you and changing a behavior you are excited about. Likely, you will be successful at least in part. Some of your strategies or rules may not work out and that is fine. Heck, your whole plan may be a disaster. Though I truly hope this is not the case, taking detailed notes during the treatment phase will help you to figure out why you succeeded or failed. Good luck!

Part V. Running the Plan and Staying the *(New)* Course

Module 13:

Evaluating and Adjusting the Plan

Module 13: Evaluating and Adjusting the Plan

Module Overview

In Module 13, we will discuss how to go about evaluating your plan, or a client's, to see if it is working and if any changes are needed.

Module Outline

13.1. Evaluating Your Plan

13.2. Adjusting the Plan

Module Learning Outcomes

- Describe general strategies for evaluating your plan.
- Identify statistics to summarize your data.
- Construct a line graph to plot your data.
- Discuss ways to adjust your plan.

13.1. Evaluating Your Plan

Section Learning Objectives

- Clarify what to do if you have to change your target behavior.
- Name and discuss other situations that may necessitate adjusting your plan.
- List ways to numerically show your plan's progress.
- Describe how to graph your data.

13.1.1. Changing the Target Behavior

As you are going through your plan it is a good idea to see how you are doing. Fortunately, you are collecting a great deal of data and have all you need to make a determination. Though I sincerely hope this does not occur, an issue you might discover right away, or within a week or so, is that you selected the wrong target behavior. You might be wondering how you could possibly make such a mistake. Maybe you are trying to increase the amount you work out but as you go through your plan you discover that you do regularly work out. Now you could add a day or work out longer possibly, but your issue is not having enough motivation to work out. The reason why your weight loss endeavor is not going anywhere is because you have crappy eating habits. I fall in this boat as I love going to the gym but fail to lose weight because I do not eat as healthy as I should. My biggest problem is portion sizes and so a behavior modification plan to work out more really does not benefit my actual long-term goals. I would need strategies linked to monitoring my caloric intake daily. I might also notice that stress and sleep are problems and change both to help with weight loss. Again, about a week

into my plan I may realize that the target behavior needs to change which could result in creating a brand-new plan and quickly, as well as establishing a new baseline.

13.1.2. "Seeing" Your Progress

For most of you, changes as extreme as developing a brand spanking new plan will not be needed, but you may not feel you are making progress either. It's likely more an issue of not making progress as *quickly* as we would like, but progress is being made. How can you tell?

13.1.2.1. Strategy 1: Weekly counts. You can use a few different strategies, or all of them, but the first thing you should do is get a count for each week of the treatment phase. How so? If you are trying to increase your water consumption, you might have recorded the following data for your first two weeks of the plan:

Table 13.1. Example Weekly Counts Log

Day	Week 1	Week 2
Monday	8	16
Tuesday	8	16
Wednesday	8	8
Thursday	16	16
Friday	8	16
Saturday	8	8
Sunday	8	8
TOTALS	**64**	**88**

Say your Week 1 goal was to drink at least 8 oz. of water each day and your Week 2 goal was to drink at minimum 16 oz. of water each day. As you can see, you did well in Week 1 but not as well in Week 2. We can see this from just eyeballing the data, but how much water did we actually drink each week? Our Week 1 Total is 64 oz. and our Week 2 Total is 88 oz. By simply ***counting the total amount*** drank each week (through simple addition), we can see a trend in the upward direction.

13.1.2.2. Strategy 2: Daily average. We could also calculate an ***average or mean*** of total water drank each day. To do this, take the total and divide it by 7 days. Upon doing this we see that the Week 1 average is 9.14 oz., and the Week 2 average is 12.57 oz. The advantage of the average is that daily fluctuations are not as apparent, especially for Week 2, and the data smooths out.

13.1.2.3. Strategy 3: Percentage of opportunities. We could also calculate a **percentage of opportunities** to gauge our success for the week. In this case, we would want to

divide the total amount of water drank for the week by the total amount of water that could have been consumed. Based on our goals, we know we were shooting for 8oz. of water a day for 7 days in Week 1, or 56 total ounces, and in Week 2, we should have drunk 112 oz. (16oz. x 7 days). Since we drank 64 oz. in Week 1, we were at 114% success rate while in Week 2 we drank 88 oz. which was a 78.57% success. Visual inspection of the data again shows us achieving our goal each day in Week 1, and even exceeding on Thursday, while in Week 2 we drank the required 16 oz. on four days and half that for three days. Something went wrong in Week 2 and by going back and evaluating our data for Wednesday, Saturday, and Sunday, we can figure out what we did wrong. Maybe we found that on Wednesday, we left our water bottle home and so drank less as a result. Once home we drank a glass of water but did not want to drink 2 since it was close to bedtime. On Saturday and Sunday, we noticed that we were out with friends a lot and did not have a water bottle with us, and also drank soda or tea instead. Armed with this information, we can adjust our plan by using antecedent manipulations; we could set our phone to give us a reminder (a cue for the desirable behavior), place a water bottle in the car in case we run out (reducing the effort for making the desirable behavior), take a water bottle to the gym with us when we work out (an establishing operation), have a friend remind us to drink water (social support and a verbal prompt), and develop a plan for dealing with the temptation to drink soda or tea when out with friends.

13.1.2.4. Strategy 4: Counting behaviors. As a note, you can also ***count the number of behaviors*** that were made. Your behavioral definition likely was 1 behavior = drinking 8 oz. of water. As such, in Week 1 you made 8 total behaviors and in Week 2 you made 11 behaviors. The trend is upward but should have been 7 behaviors in Week 1 to 14 in Week 2. The extra behavior in Week 1 makes the gap narrower but still, we were not as successful as we should

have been in Week 2. Outside of the strategies mentioned above, you might also revisit your criterion. Maybe we should have held at 8 oz. for two weeks before moving from Goal 1 to Goal 2.

13.1.2.5. Strategy 5: Counting and graphing tokens earned. Another option is to find out how many ***tokens you earned*** from one week to the next. If you are making the desired behavior you should see an increase from week to week, but in the case of our example, Week 1 likely had a good number of tokens but Week 2 had not as many as it should have, and you may only have been slightly above the Week 1 total if you are using response costs for engaging in the undesirable behavior of drinking soda or tea.

13.1.2.6. Summary of descriptive statistics to use. So, in all, you can determine how your plan is doing by:

1. Weekly counts – How many ounces drank, how many days worked out, how many pages read, etc. See Section 13.1.2.1.
2. Computing the daily average – Divide total for the week (calculated in #1) by 7. See Section 13.1.2.2.
3. Percentage of opportunities – What you did divided by how many times you could have done it. See Section 13.1.2.3.
4. Counting the number of behaviors – Using your behavioral definition. See Section 13.1.2.4.
5. Determining how many tokens you earned – Examining your token economy and the tables you developed for how many tokens earned for making the desired

behavior each week. See Section 13.1.2.5. You can also graph this information. More on this in a bit.

These strategies to numerically summarize your data do not work for all behaviors. Determine which ones you need based on what your target behavior is and how you operationally defined it. Look at your goals and token economy too. Lastly, be sure you examine your journal each day. As I noted earlier, you may be showing progress, but not as fast as you would like. That is the case in the example I gave and analyzing why you did not meet your goal some days can identify problems with your plan, temptations you did not account for, or mistakes requiring new or clearer rules.

13.1.2.7. Treatment phase summary table. As during the baseline phase, you will also want to summarize your ABC charts which pools the data from the individual ABC charts for each day into one place. Record how much of the behavior you made on this table, not behavioral counts. You can conduct all analyses using this table.

Table 13.2. Treatment Phase Summary Table

Day	Week 1	Week 2	Week 3
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			
TOTALS			

13.1.3.1. Target behavior graph. One final way to evaluate your data is to graph it. You can do this for the behavior (whether totals, counts, averages, or a percentage), and for your token economy. To graph, you need to do the following:

1. Draw a horizontal line on your paper. This is the x-axis and you will record time on it. This could be on days or weeks, depending on how your project is set up. If weeks, you will have three tic marks. If days, you will have 21 tic marks for the three weeks of the treatment phase. Behaviors such as drinking water or achieving daily goals are best measured in days on the x-axis but if you are trying to increase the duration of workouts from week-to-week, you are best measuring in weeks. Why? If you measure days you will have some with 0 and others with the amount of time you worked out. This will look like you failed on some days and not on others, when all the 0 really means is that

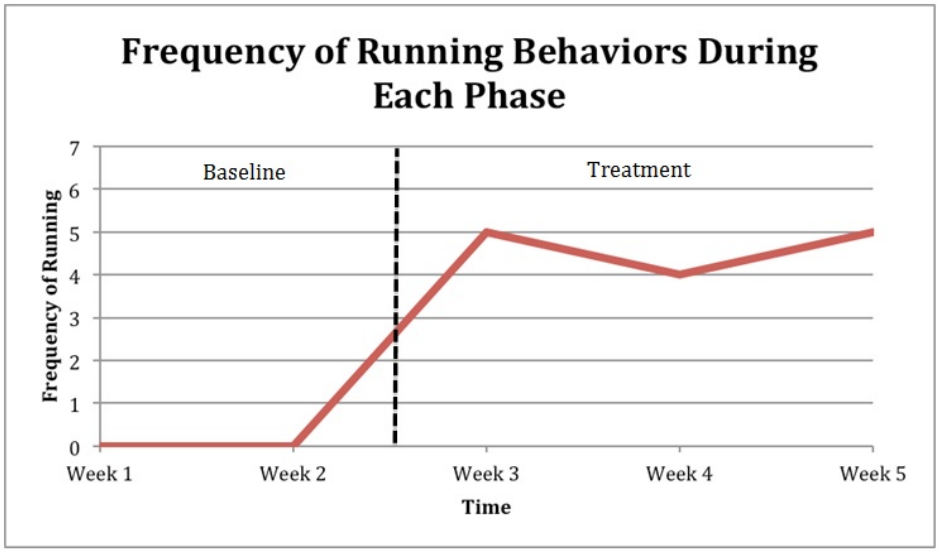
you did not work out that day and were likely not scheduled to do so. You will also include baseline data on the x-axis. More on this in #5.

2. Draw a vertical line that begins at the zero point of the x-axis, or is perpendicular with it. This is the y-axis and you will record your behavior on it, depending on whether you are using totals, counts, averages, or a percentage. In the case of working out, if you are trying to increase the number of days, or frequency, of the target behavior of working out, record counts or the number of days each week that you worked out. If you are trying to increase the time, you can record the average time each week, in minutes.
3. Plot your data on the graph.
4. Connect dots from time point to time point. If your plan is generally a success, you will see an upward trend.
5. On this graph you should also plot your baseline data (the two weeks or 14 days of data you collected when doing your functional assessment and practicing your data collection). This will go before the treatment weeks and serve as a comparison. So you are not only looking for an upward trend from week-to-week during treatment, but overall, you should see an upward trend from baseline to treatment phase.
6. Your baseline to treatment transition should be indicated by a vertical dotted line in the graph itself.
7. You should also use phase labels at the top of the graph – one for Baseline and a second for Treatment.

A sample line graph is given below. Note that it is best to create this graph in Microsoft Excel. Though there is a way to create the phase line and labels in Excel, it may be best to:

1. Take a screen shot of your finished graph
2. Move it to Microsoft PowerPoint.
3. Create the line and labels in PPT.
4. Once done, be sure to group the entire finished graph with phase labels and the line.
5. Copy and paste into your final paper in the appropriate Appendix.

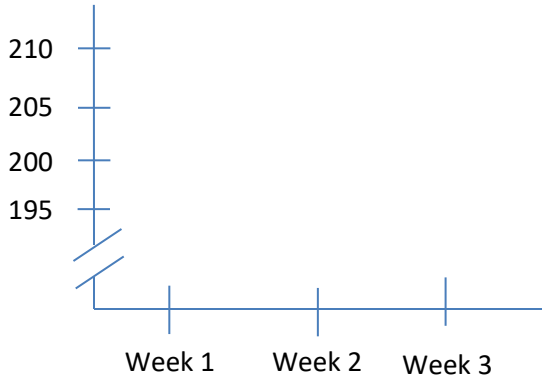
Figure 13.1. Example Line Graph



Again, your line graph can be easily produced in a spreadsheet program such as Excel, though statistical packages such as SPSS and SAS work too. The example above was produced in Excel and PowerPoint. Notice all key elements as described above, to include the x-axis and its labels, the y-axis and its labels, the data that was plotted and line connecting the dots, the phase line, the phase labels, and the figure title at the top.

Sometimes, it is not necessary to start at ‘0’ on the vertical axis such as in the case of plotting your weight across time. In this case, break the line which indicates you are not starting at ‘0.’ This will appear as follows:

Figure 13.2. Example Y-Axis When It Does Not Start at ‘0’



13.1.3.2. Tokens graph. You can produce a graph for your behavior but also your token economy results. In this case, there is no baseline data to report since you did not use the token economy at this time, and so the phase line and labels are not needed. This will look like a standard graph and if your plan was generally successful, the line should slope upward from Treatment Phase Week 1 to 3.

13.2. Adjusting the Plan

Section Learning Objectives

- Generate solutions to common problems with a behavior modification plan.
- Clarify what the next steps are.

13.2.1. Common Problems and Possible Solutions

If you are at the point of needing to adjust your plan, you need to figure out what is making your plan difficult to achieve. Likely, you will have at least one issue with your antecedents, behavior, and/or consequences. Look closely at the data you gathered and your notes in the journal. Do you see a pattern? Is there a temptation you did not account for? Are you not keeping good enough records? With this in mind, let's discuss some common issues that can be fixed (we discussed some of these in 13.1.):

1. Unrealistic Goals – Maybe your goals are just not realistic. Your distal goal may be fine, but your proximal goals along the way are too large leading to failure, or too small, leading to frustration. If too large, create more goals that are smaller and easier to achieve. Instead of going from working out 2 days to 4 days, workout 2, then 3, and then 4 days. Instead of increasing your speed on the treadmill from 5.5mph to 6pm in a matter of weeks, take baby steps and increase by 0.1 mph each week. For water consumption, move from 8 oz. to 12 oz. instead of 8 oz. to 16 oz. This subtle change may make all the difference.

2. Faulty Criterion – It is possible your goals are fine, but your criterion has you moving to the next goal too soon after the previous one is achieved. Instead of moving to 3 days working out from 2 days after just one week achieving this, increase your criterion to maintaining the current level for 2 weeks. Likewise, you may have too large of a criterion such that you are holding fast for 2 weeks when you can advance after just one week. It might be for the lower goals you can have a 1-week criterion but as you get to upper tier goals nearing your final goal, you increase the criterion to 2 weeks. This is especially important with any type of workout goal. You don't want to risk injury so play it safe, without being so safe you become bored. Consult a trainer or your physician if you are unsure when it is safe to move up and avoiding plateauing.
3. Record Keeping Issues – If your method of record keeping does not work for you, find another way. If you cannot remember to record, ask a friend or loved one to help. Use your phone to give you reminders. It could be that you are recording, but not making quality entries in your journal or ABC chart. If this is the case, then be sure you allow yourself enough time to reflect on your target behavior for the day. You might discover that a great time to do this is while you are on the bus going home from school or right after dinner. Make any adjustments you think are necessary.
4. Problems with Strategies – If a strategy is not working, either try and adjust how you are using it or just drop it. Maybe an antecedent manipulation is not working out such as in the earlier example of leaving your clothes by your

bed. Because you wake up before the sun rises you don't see anything until you enter the bathroom. Move your clothes to the bathroom so they adequately cue you, or remind you, to work out. Make sure your prompts are helpful, your token economy awards tokens at a steady rate and that your back up reinforcers are not too high priced or too inexpensive, you are using the correct type of differential reinforcement, and you are not either underusing or overusing punishment procedures. If you are unsure if you should change a strategy, consult your instructor.

5. Unrecognized Temptations – We may be unaware of a temptation that causes us to engage in the undesirable behavior or another situation or place that leads to the temptation. If you discover one, develop an if-then plan to deal with it.
6. Inadequate or Unclear Rules – It could be your rules need work too. Look over each rule that you wrote and see if adjustments are needed.
7. Social Support isn't Really Supportive – Maybe your problem is the people who are supposed to be delivering reinforcers and prompts to keep you on task. If this is so, talk to them about why they seem to be undermining your success and figure out a better path going forward. It could be that they do not like the "new you" and are punishing your attempts to engage in positive change. You may need to avoid these people while you are implementing your behavior modification plan.

Of course, there can be countless other issues that you may encounter. Identify anything you believe could be hindering your success so it can be adjusted for.

13.2.2. Next Steps

Once you have figured out needed changes to your plan, implement them. Continue the process of evaluation and adjustment until your plan works or you just cannot seem to reduce the unwanted behavior or increase a desirable one.

Assuming your plan works, and the behavior has changed in the hypothesized manner, you will proceed to the maintenance phase.

Module Recap

Module 13 discussed the important issue of evaluating your plan and making adjustments as needed. We discussed hypothetical situations and what you could do about them, and methods to numerically summarize your data. We also discussed how to graph your data to generate a visual representation of its progression.

Our final module will tackle the maintenance phase and relapse prevention.

Part V. Running the Plan and Staying the *(New)* Course

Module 14:

Maintenance and Relapse Prevention

Module 14: Maintenance and Relapse Prevention

Module Overview

Our final chapter in the textbook covers the last phase of behavior modification – maintenance. Once our behavior is occurring reliably, we need to begin to phase out most strategies we employed and ensure that we maintain our desired level of the target behavior. Also important is to make sure we do not fall back into old patterns, called relapse prevention.

Module Outline

14.1. Maintenance Phase

14.2. Relapse Prevention

Module Learning Outcomes

- State the importance of the maintenance phase and how to phase out strategies that are no longer needed.
- Develop a criterion for knowing when to move to maintenance.
- Describe issues that may occur during the maintenance phase.
- Propose strategies to make relapse less likely to occur.
- Clarify the role demands, stress, and coping play in relapse.

14.1. Maintenance Phase

Section Learning Objectives

- Describe the function of the maintenance phase.
- Identify specific strategies to phase out and propose ways to do this.

14.1.1. Maintenance Phase and Strategies to Phase or Fade

When planning to change our behavior we cannot lose sight of the fact that eventually, we will obtain our final goal. At this point, the target behavior is now occurring habitually or without conscious effort, or due to use of the many strategies we selected. Once this occurs, we need to transition from treatment phase to maintenance phase. Recall that the treatment phase is when we manipulate variables, or in this case use the various antecedent, behavior, and consequence focused strategies we have settled on. These cannot remain in effect for the duration of our life, so we must phase them out…well, most of them. Some strategies you will want to keep in place.

So which ones do we phase out and which do we keep? Table 14.1 gives you an idea of how to go about deciding this.

Table 14.1 Strategies to Keep and Strategies to Fade during Maintenance

Strategies to Keep	Strategies to Phase Out or Fade
Goal Setting – goals are a regular part of life, though you will likely make many others not related to changing an unwanted behavior or making a new, desirable one	**Antecedent Manipulations** – you could make a case to keep a few, but in general you manipulated the antecedents to engage in your desired behavior. Once you are making it, these strategies are not needed.
Self-Instructions – reminding yourself what to do never hurts and people typically do this.	**Generalization/Programming** – you will want to make sure your behavior occurs in all relevant situations and environments, but once it does, it will not be needed.
Social support – friends and family regularly help us to do the right thing and outside of behavior modification, are critical buffers against stress.	**Prompts** – these do not regularly occur in life and so will be faded. Consider that when you start a new job, your trainer will use a lot of verbal, gestural, and modeling prompts. Once you know what you are doing, these prompts stop.
Relaxation techniques – we all encounter stress and anxiety on a regular basis and so muscle relaxation, deep breathing, etc. can be useful.	**Shaping** – once you are making the desired behavior, the shaping steps to get there are not needed. The same is true of training your cat to use the litter pan. Once he/she is doing so, reinforcing steps along the way are not needed. In fact, in shaping, once the next step is taken the previous ones cease to be reinforced and this includes making the final behavior.
Cognitive Behavior Modification – in general, these strategies may be useful in our everyday life. We all suffer depression, anxiety, fear, doubt ourselves, and eventually deal with loss, and so having additional skills to deal with these demands can help reduce stress.	**Other Fear and Anxiety Procedures** – once the fear is overcome, these procedures will not be needed but having been trained in how to use them will be useful should the fear return or a new one emerges.
Self-Praise – there is nothing wrong with patting yourself on the back when it is justified. Of course, we can fall into the self-serving bias if we are not careful.	**Habit Reversal** – once the habit has been reduced the competing response is no longer needed, unless the habit returns or a new one begins.

Record Keeping – See below.	**Cognitive Behavior Modification** – once the maladaptive cognition is under control, specific strategies such as cognitive restructuring, cognitive coping skills training, and acceptance techniques will not be needed.
	Token economy – though a useful tool when trying to establish your target behavior, this type of system is not part of everyday life and so should be gradually phased out. To do this, change the schedule of when tokens are delivered, award less each time, and make your back up reinforcers cost much less. Eventually, the token economy will be forgotten.
	Differential reinforcement – recall that these strategies are meant to increase a desired behavior, eliminate a problem behavior, reduce the occurrence of a behavior, or to substitute a behavior. Once this has occurred, the procedure is not needed any more. This does not mean that reinforcement should be removed from life in general, just that it is not focused on a target behavior any more.
	Punishment Procedures – though punishment is a daily part of life such as getting a ticket for speeding, receiving a fine for making your credit card payment late, or being sent home from work for poor performance, any aversive control procedures established to help you make your target behavior and cease making a problem behavior will not be needed once you are reliably making the target behavior.
	Rules - since your plan is being faded out, you don't need to use the rules that governed your behavior any more. They were in place to help you make the desired behavior and you are now doing so.

Though not a strategy, it is important to continue *recording keeping*. Why is that? If you stop recording your behavior using your ABC chart and journal, you are more likely to stop

making the behavior all together. Your records provide you with feedback as to how you are doing and remember: you can visually "see" your progress by obtaining counts, an average, a percentage, or by making a graph.

Once your target behavior has been established you should notice that the behavior increasingly falls under your control. But is it time to stop your plan? Consider that to move from one goal to the next we had a criterion to help us decide. You also have a criterion to decide when to move from the final goal and full implementation of your behavior modification plan to the maintenance phase. So what is it? You already engaged in this type of exercise once and back in Module 3. You were asked to answer the question: "On a scale from 1 (low) to 10 (high), how successful do you feel you will be with achieving your goal? Why? In other words, what is your self-efficacy?"

Now your question will be:

> On a scale from 1 (low) to 10 (high), how successful do you feel you will be with maintaining your desired level of the target behavior without your behavior modification plan? Why? In other words, what is your self-efficacy?

Before moving on, consider this. If you do not state at least a 7, continue your plan until you can give this score at a minimum. Remember, maintenance phase implies that the behavior is under your control, and not being controlled by a token economy, differential reinforcement, punishment procedures, antecedent manipulations, etc…

14.1.2. Problems During Maintenance Phase

As with all things in life, we hit bumps in the road. We hit them when planning our behavior modification plan, likely hit a few as we employed the treatment, and even in maintenance phase we may hit some. In fact, there are two types of issues we may encounter during the maintenance phase:

- **Maintenance Problem** – Though we have gone to great lengths to ensure our target behavior stays at our desired level, based on the final goal, at times we falter. This is not necessarily due to a return to problem or undesirable behavior, but maybe just a loss of motivation for walking your dog every night, reading at bedtime, going to the gym, drinking water, studying more regularly, etc.
- **Transfer Problem** – Recall that we want to generalize our new behavior beyond just training situations/environments. If we establish good study habits when in our dorm, we want to do the same when studying in the student union or in the library. If we go to the gym regularly while at school, we want to do so at home on break. Or maybe you are studying well in all places, but this positive behavior only occurs for classes in your major. In all other classes, your poor study habits have not changed. So, you are performing as well as you want to in some instances, but not in all instances. The desirable behavior has not transferred or generalized as expected.

So how do we solve these issues? For maintenance issues, you could do the following:

- Look at your pros and cons for changing the behavior. Likely these have not changed but if they have, update them.
- Revisit your goals and reflect on how much you have accomplished, and likewise, how much you have to lose.
- Ask yourself how performing the desired/target behavior makes you feel. If you obtain happiness from making the new behavior, keep this in mind and maybe even develop a self-instruction as a reminder to engage in the desired behavior.
- Make sure you are still recording your behavior as noted above. This will give you feedback on your progress and information about potential temptations or mistakes you are making.
- Restate your commitment to your final goal, or maybe state your commitment to your new you, publically. Facebook and other social media tools work great for this.
- Seek social support. Ask friends and family to help you out.
- In dire situations, re-establish your behavior modification plan. Depending on how much time has passed since you last employed it, you might need to conduct another functional assessment and gather data about your current baseline if you have ceased data collection.

If you are having issues with transfer, you likely did not train yourself to transfer from the start. You will need to program for transfer now, which again, means generalizing beyond the

training situation (See Module 7.5 for details). This is a conscious effort and the expression "practice makes perfect" comes into play. So, do just that. Practice using your new behavior in a variety of situations and environments. Enlist your social support network to help you and recall that prompts are used in programming. In extreme circumstances, you might need to obtain professional help.

14.2. Relapse Prevention

Section Learning Objectives

- Differentiate a lapse and a relapse.
- Suggest strategies to help make relapse less likely.
- Describe the model for coping with life's demands and how it relates to relapse prevention.

14.2.1. Lapse vs. Relapse

Before understanding how to prevent relapse, we must distinguish the terms lapse and relapse. Simply, a **lapse** is when we make a mistake or slip up. Consider the expression, "Having a lapse in judgment." This implies that we generally make sound decisions but in this one instance we did not. We made a mistake. What we don't want is an isolated incident becoming a pattern of behavior. When this occurs, we have a **relapse**. Don't beat yourself up if a lapse occurs. Our problem behavior will inevitably return at some point. We just don't want it sticking around for the long term.

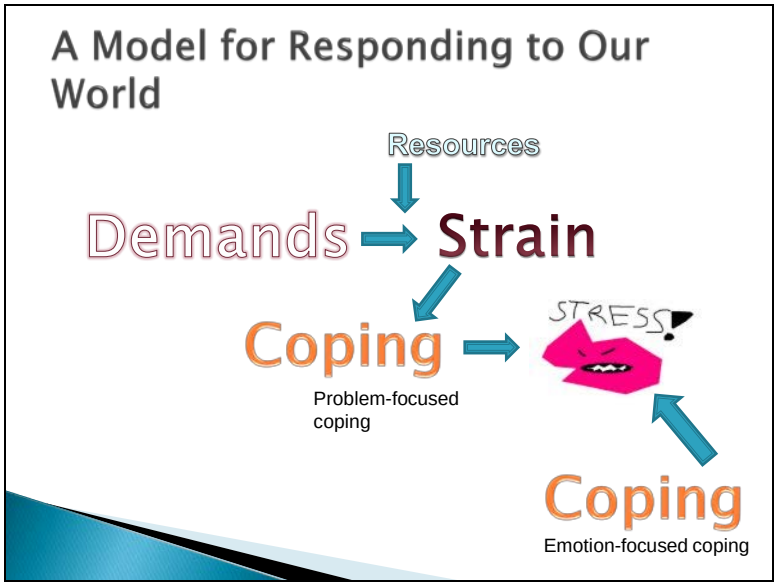
14.2.2. Temptations…Again

There are people and things that tempt us and situations or places that lead us to temptation more than others. To avoid a lapse turning into a relapse, reconsider high-risk situations and environments (these will be the ones you ranked higher on your scale) and the people who are present when we cave into temptation, that you identified when completing your functional assessment. Keeping good records of the ABCs of behavior, and your journal, will help you to identify these situations and people. Then you can develop new if-then plans to deal with them, or to re-establish old ones. Look at the rules you wrote for how to deal with these situations. It is likely you already have a plan in place and only need to implement it.

14.2.3. Emotion and Stress

Don't let your emotions dictate your behavior. What does this mean? Consider the following model for who we respond to life's challenges:

Figure 14.1. Model for Responding to Our World



14.2.3.1. Explaining the model. The model above is a useful way to understand the process of detecting, processing, interpreting and reacting to demands in our world. First, the individual detects a **demand**, or anything that has the potential to exceed a person's resources and cause stress if a solution is not found. These demands could be something as simple as dealing with traffic while going to work, having an irritable boss, realizing you have four papers due in a week, processing the loss of a loved one or your job, or any other of a myriad of possible hassles or stressors we experience on a near daily basis. Once we have registered the demand and determined it to be emotionally relevant, we begin to think about what **resources** we have to handle it. Resources are anything we use to help us manage the demand and the exact resources we use will depend on what the demand is. For instance, the loss of a job might require you to look closer at how much money you have in savings and how long that money can realistically sustain you. Or if you have two exams and a paper due in one week, you might look

at how busy your schedule is and find ways to free up time so you can get the work done. In both cases, you could use your social support network to help you out. Our resources may be inadequate to deal with the problem or can only help us for so long. When this occurs, we experience **strain** or the pressure the demand causes. This strain is uncomfortable and so we take steps to minimize it.

The best way to do this is to try to find a solution to the demand called **problem focused coping (PFC)**. If you have a paper and a test in the same week you may go to your boss and ask to trade a shift with a coworker. This gives you the additional time you need to complete the paper and study for the test. If the boss refuses, you could always ask your professor for an extra day or two with the paper. If these strategies fail to manage or remove the demand we experience **stress**. You might think of stress as strain magnified enormously. Whereas strain may have left us a bit anxious, depressed, or exhausted, stress takes these symptoms to a whole new level. For some demands such as the loss of a loved one, the depression experienced in strain could reach clinical levels in stress. Now to effectively deal, you will need to consult a clinical psychologist. Or maybe when the big presentation in your public speaking class was a week away you only felt a bit anxious but now that it is... TODAY!!!! and in an hour... you are feeling very anxious. Not just that, you have a sick feeling in your stomach, your hands are shaking, you are breaking into a cold sweat, etc. Now your strain has manifested itself into something much more.

These physical, psychological, and behavioral reactions to stress have to be dealt with so you can either return to more rational strategies, if practical, or just “weather the storm” and wait for the demand to pass. Hence, you employ any one of a series of **emotion focused coping (EFC)** strategies. Think of stress as an emotional reaction. Hold out your arms and make a circle around your head. It's a pretty big circle. Your initial reaction may be that big. If your EFC

strategy works well your emotional reaction becomes smaller. Take those arms you likely still have in the air and start moving them in. As you do that, the circle becomes smaller. In the case of the presentation, you cannot take a 0 on it so you have to confront the demand head on and do the presentation. Better start imagining your audience in their underwear (See Module 8.2.2. and attention focused exercises for dealing with anxiety)!

14.2.3.2. Demands, resources, and strain. You might think of demands as being assigned to one of two major categories - daily hassles or stressors. Within these two major categories are various subtypes which we will explore now.

The first major class of demands is daily hassles. What are they? **Daily hassles** are petty annoyances that over time take a toll on us. There are three types of daily hassles. **Pressure** is when we feel forced to speed up, intensify, or shift direction in our behavior. What pressures do you experience in school? At your job? In your fraternity or sorority? From your coach? **Frustration** occurs when a person is prevented from reaching a goal because something or someone stands in the way. Examples of frustrations include money and delays. Some of you can relate to the first two if you have ever had to wait for your financial aid to post to your student account and did not have the money to buy textbooks before the first day of class. Then your professors are assigning readings in the first week but how do you complete them without a book? This is may be where having a friend helps out - assuming this friend is not waiting like you are! Finally, **conflict** arises when we face two or more incompatible demands, opportunities, needs, or goals. We all have experienced this one. Whether the conflict is with a roommate, significant other, boss, professor, parents, etc., these little conflicts alone are no big deal but if they keep occurring can cause problems. Did you ever have to break up with your boyfriend or girlfriend because these conflicts became the highlight of your relationship and never seemed to

resolve themselves? Did you ever drop a class or quit a job for the same reason? If so, you understand the cumulative effects of conflict.

Think about the types of daily hassles discussed above. Isolated, they are not a big deal. But have you ever noticed that what was not a big deal at the beginning of the week really starts to get under your skin by the end of the week? For instance on Monday, having to run class-to-class, drive to work and sit in traffic, wait in line for lunch, etc. are mere inconveniences that can be dealt with. By Friday they have become infuriating and annoying. In other words, over time daily hassles take a toll on us and we likely experience several at the same time (i.e. pressure to do well, not having enough money, and conflict with a roommate, for instance).

The second major class of demands is stressors, a term you may have heard before. What are they? **Stressors** are environmental demands that create a state of tension or threat and require change or adaptation. Most people assume that it is only *bad* things that cause stress. But is this true? Can *good* things cause stress also? The answer is 'yes' and these good things are a special type of stressor called **eustressors** (Selye, 1976). When we think of things usually equated with stress, these are technically called **distressors**. Coming up with a list of distressors is easy. What are some good things that can create stress too?

There are three types of stressors, whether eustress or distress:

a. **Change** is anything, whether good or bad, that requires us to adapt. What change have you had to deal with recently? For many of you, starting college is likely a stressor you've been dealing with. Think about it for a minute. A few months ago you were living at home and under your parent's rules. Now you are on your own, and within reason, living under your own rules. For many students the change college life represents is difficult and it takes a

year or two to fully make the transition. The danger is that during this time, grades may suffer. One important thing to consider with change is that the more you need, the greater the stress.

b. **Extreme Stressors** are stressors that have the ability to move a person from demand to stress very fast. Examples include divorce, catastrophes, and combat. Hopefully you haven't had to deal with any extreme stressors recently but if you have, they would most likely take the form of the loss of a loved one or some type of catastrophe such as a natural disaster. Why? Because we live in a country that is fortunately not experiencing war firsthand, many of you are not married and so divorce or separation is not an issue, and even if you are working it is likely just for extra money and so unemployment is no real threat. In your life you will encounter at least one devastating situation and the distinguishing feature of extreme stressors is their ability to move you from demand to stress very quickly. In other words, many of them create stress immediately unless you had time to prepare. Maybe you knew your company was going to be doing layoffs and so you spent the months leading up to your dismissal putting money on the side, preparing your resume, and applying for jobs. Or maybe you knew a loved one was dying and it was just a matter of time. So you said your good-byes and made peace with their absence. It's when these events occur without prior warning that they are most detrimental to us.

c. **Self-Imposed Stressors** - Okay so let's face it. For some of the students in the class, possibly including you, psychology is not your cup of tea. You are fine with just getting by and passing the class and there is nothing wrong with that. But when you take classes in your major that ‘getting by’ strategy will not cut it and you know it. So you have put pressure on yourself to excel in the classes related to your major. In fact, one strategy you likely came up with is to focus more time on these courses and less on those that do not matter as much. This

could be a great strategy but be cautious that you do not let these other classes go too much and therefore cause yourself the distress of failing them, being put on academic probation, and/or having to take them again!

The next step in the process is to start figuring out something to do about the demand. The obvious task is to see what resources you have and as previously noted, these are specific to the demand. Think about what resources you would have at your disposal to handle the following:

- Daily Hassle → Frustration → Traffic
- Daily Hassle → Conflict → Constant arguing with your girl/boyfriend
- Eustressor - Birth of a new baby
- Extreme Stressor - Loss of your job
- Self-imposed Stressor - Student athlete with a swim meet in one week
- Distressors - Three exams and one paper in a week

So you likely made a great list of resources for each of the demands listed above. These resources may be adequate to deal with the demand and so you have no problem. In the case of demands that arise from being a student, you are likely able to handle everything thrown at you early in the semester but as demands build on one another, your resources are exhausted and you experience strain**. Strain** is the pressure the demand causes; occurs when our resources are insufficient to handle the demand. It may be experienced as exhaustion, anxiety, depression, discomfort, uneasiness, tension, or fatigue.

14.2.3.3. Stress. Stress is one of those terms that everyone uses but no one can really define. Much of what we know about stress can be attributed to the work of Hungarian endocrinologist, Hans Selye (1907-1982). Selye (1973) defined **stress** as "the nonspecific response of the body to any demand made upon it" (pg. 692) and pointed out that the important

part of the definition was the word *nonspecific*. Though each demand exerts a unique influence on our body, such as sweating due to heat and so in a sense is specific, all demands require adaptation regardless of what the problem is, making them nonspecific. Selye writes, "That is to say, in addition to their specific actions, all agents to which we are exposed produce a nonspecific increase in the need to perform certain adaptive functions and then to reestablish normalcy, which is independent of the specific activity that caused the rise in requirements" (pg. 693).

It is important to also state what stress is *not* since the term has been used loosely. Selye says stress is not…

- simply nervous tension - Stress reactions occur in lower organisms with no nervous system and in plants.
- the result of damage - "Normal activities - a game of tennis or even a passionate kiss - can produce considerable stress without causing conspicuous damage" (pg. 693).
- something to be avoided - In fact, Selye says stress cannot be avoided as there will always be demands in our environment, even when sleeping as in the form of digesting that night's dinner. Furthermore, adaptation and growth can occur from it.

So how do we get to the point of stress? Selye (1973) talked about what he called the **General Adaptation Syndrome** or a series of three stages the body goes through when a demand is encountered in the world. We already discussed this in Module 8.2.1. and so will not cover it again.

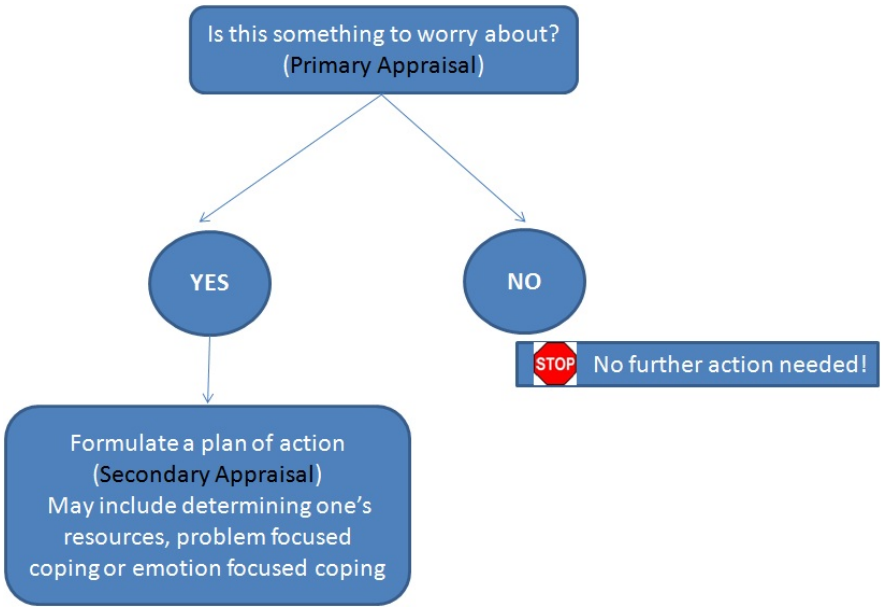
14.2.3.4. Coping. Alright so let's talk about coping with demands and coping with stress but as a prelude to this, it is necessary to discuss **appraisal** or the process of interpreting the importance of a demand and how we might react to it (Folkman and Lazarus, 1985; Lazaraus and Folkman, 1984). When a demand is detected we have to decide if this is something we need to worry about. In other words, we need to ask ourselves is it relevant, benign, positive, or stressful? This process is called **primary appraisal (PA)** and is governed by the amygdala (Phelps & LeDoux, 2005; Ohman, 2002; LeDoux, 2000) which is used to determine the emotional importance of events so that we can either approach or withdraw. You might think of primary appraisal as answering the question with a one word answer. If the question regards what the nature of the event is, we could answer with one of the words above. If the question is whether or not this is something to worry about, then we might answer with a 'Yes' or 'No.' Either way, the answer is simple and a word or two are only required.

Let's say we decide it *is* something to worry about. So what do we do? That is where **secondary appraisal (SA)** comes in. You might think of it as developing strategies to meet the demands that life presents us or forming a plan of action. This is controlled by the prefrontal cortex of the cerebrum (Ochsner et al., 2002; Miyake et al., 2000). These strategies range from assessing our resources, using problem focused coping and then later using emotion focused coping.

The level at which the brain processes information gets more sophisticated as you move from one major area of the brain to the next. The initial detecting of environmental demands occurs due to the actions of the various sensory systems and then this information travels to the *thalamus* of the central core. From there, we need to determine if it is something to worry about

and so it travels to the limbic system and the *amygdala*. Recall too that in the limbic system it is the *hippocampus* which governs memory. We also try and access memories of similar demands (or the same one) experienced in the past to know if we need to worry. Finally, we take the simple answer obtained in the amygdala and if it is something to truly worry about, a plan of action needs to be decided upon which involves the most sophisticated area of the brain or the cerebrum and the *prefrontal cortex* specifically. So how we handle this information and what we do with it becomes increasingly detailed as we move up from the lowest area of the brain to the highest.

Figure 14.2. Appraisal Decision Matrix



So once we determine there is a demand we need to respond to, we do just that, respond. If our resources have been surpassed we experience strain and begin to use **problem focused coping**. Notice the name for a minute. *Problem* focused coping does just that. It is a type of coping focused on the problem itself. This *problem* is the *demand* we are facing. This should

help you distinguish it from emotion focusing coping which will be defined in a bit. There are three types of PFC:

1. **Confrontation** – when we attack a problem head on.

2. **Compromise** – when we attempt to find a solution that works for all parties

3. **Withdrawal** – when we avoid a situation when other forms of coping are not practical

A logical question to ask is whether one strategy produces more favorable outcomes over the others. The answer is that no single strategy is really better, but their effectiveness depends on the demand. For some demands, all PFC strategies may help whereas for others only one may be practical. Again, it depends on the demand.

So within the model we have been working off of in Figure 14.1, when PFC does not work we experience stress. Recall earlier that stress was described as the giant circle around our heads (that is, if we held our hands up and formed a circle). The second type of coping, **emotion focused coping** (EFC), deals with the emotional response. This response could be intense happiness as with eustressors, or frustration, anger, sadness, etc. To be able to deal with the demand and its stress from a rational perspective, we need to manage the emotional reaction we are having. This is where *emotion* focused coping comes in. You can distinguish it from PFC if you recall that stress is our *emotional* reaction and we need to manage it.

There are six types of EFC:

1. **Wishful thinking** – when a person hopes that a bad situation goes away or a solution magically presents itself

2. **Distancing** – when the person chooses not to deal with a situation for some time

3. **Emphasizing the positive** – when we focus on good things related to a problem and downplay negative ones

4. **Self-blame** – when we blame ourselves for the demand and subsequent stress we are experiencing

5. **Tension reduction** – when a person engages in behaviors to reduce the stress caused by a demand; may include using drugs or alcohol, eating comfort foods, or watching a funny movie

6. **Self-isolation** – when a person intentionally removes themselves from social situations to avoid having to face a demand.

NOTE: At times, we may not be able to use any *rational* strategy to deal with a demand (PFC) and can only wait until it passes or ends. To be able to do this successfully, we need to manage the emotional reaction (EFC). Also, notice that some of the EFC strategies sound like the maladaptive cognitions discussed in Module 8.4.1.

14.2.3.5. What this means for relapse prevention. We often engage in problem behaviors or make bad decisions when we are angry, upset, depressed, anxious, or bored. We fall into these states due to demands in our environment. The EFC strategies mentioned above can

help you to manage the stress so you can return to PFC strategies and deal with the demand itself. But be careful, some of the forms tension reduction takes are health defeating behaviors and temptations in plans such as working out more, drinking water, losing weight, eliminating or reducing alcohol consumption, quitting smoking, etc. Stress has the ability to undermine the best laid plan.

The best advice I have is that if you are in an emotional state or stressed out, ***avoid high-risk situations, environments, and people all together***. The best way to not have a problem is to make it a non-factor from the start. In general, you cannot acquire a STD if you don't have sex! You won't feel guilty about having a beer if you don't go to the bar from the start. ☺

Module Recap

In Module 14, we discussed the final stage of our behavior modification plan – maintenance. Knowing when to move to this stage is half the battle and the other half is knowing what to do when we have maintenance or transfer issues. Our bad behavior will rear its ugly head, and this is to be expected, but what we need to do is prevent it from becoming the norm and not the exception. This is where relapse prevention comes in. Effective stress management can go a long way to helping us to avoid tempting people, things, situations, and environments, and to allow rational processes to govern our behavior.

Final Remarks

That's it. You made it to the end of this book and the course. As noted, you now have a good foundation to build off in terms of your understanding of behavior modification principles and procedures. Usually in the area of behavior modification you take a series of courses, so this is just the first step of a longer journey if you are really interested in becoming an Applied Behavior Analyst. Unlike many other books, this one tried to combine information from other classes you might take so it is my belief this textbook is more comprehensive than most. I hope you enjoyed it and found it easy to follow.

If for any reason you did not understand a topic or have a suggestion to improve the book, please email me at ldaffin@wsu.edu. Since this is an OER or Open Education Resource, I can update it at will and post these updates for all using it. This is incredibly advantageous to you as a student and most publishers cannot do this with traditional textbooks. As you well know, subsequent editions come only every few years and at great expense to students. This book, and whatever updates it will go through, will be at no or low cost to you, depending on your institution of higher learning. And the quality of this textbook is as good as traditional textbooks.

Again, I thank you for your time reading the book, completing the self-modification project, doing the practice exercises, and taking the exam your instructor has provided. I hope you learned much.

Lee W. Daffin Jr., Ph.D.

Glossary

A

A-B design – A research design in ABA which includes just one rotation from baseline to treatment phase and then from that we see if the behavior changed in the predicted manner

A-B-A-B Reversal Design - A research design in ABA in which the baseline and treatment phases are implemented twice

ABC Charts – Charts used to record antecedents, behaviors, and consequences

Abstract - A 150-250 word summary of a research article

Abolishing operation - When an event makes a reinforcer or punisher less potent and so less likely to occur

Acceptance techniques – A cognitive behavior modification strategy in which the person comes to accept that which he/she cannot change

Action stage – The stage of change when the person engages in behavior change

Adaptation energy - The ability to handle change/stress/demands

Antecedents – Environmental events or stimuli that trigger a behavior

Anxiety - The anticipation of future threat

Applied Science – The type of science which desires to find solutions to real-world problems

Appraisal - The process of interpreting the importance of a demand and how we might react to it

Attention Focused Exercises – Relaxation occurs when attention is directed to a neutral or pleasant stimulus

Autonomic Nervous System - Regulates functioning of blood vessels, glands, and internal organs such as the bladder, stomach, and heart; consists of Sympathetic and Parasympathetic NS

Awareness training – The stage of habit reversal in which the client must be aware of exactly what the habit is, when it occurs, in what situations, and with whom around

B

Backup reinforcers - The regular reinforcers the person has in their life that come to be associated with tokens in a token economy

Baseline Phase – The phase of behavior modification before any strategy or strategies are put into effect; serves as a comparison with the treatment phase

Basic Science – The type of science concerned with the acquisition of knowledge for the sake of the knowledge and nothing else

Behavior - What people do, say, or think/feel

Behavioral assessment - The measurement of a target behavior

Behavioral contract - A written agreement between two people in which at least one of the two have agreed to engage in a specific level of the target behavior

Behavioral deficit – A behavior we want to increase as it is currently either not being performed or being performed not at the desired level.

Behavioral definition - A precise, objective, unambiguous description of the target behavior or a competing behavior

Behavioral excess – A behavior that we want to decrease because it is causing us some type of trouble in our life

C

Case studies – A detailed description of one person or a small group based on careful observation

Central Nervous System (CNS) – Control center for the nervous system which receives, processes, interprets, and stores incoming sensory information; Consists of the brain and spinal cord

Change - Anything, whether good or bad, that requires us to adapt

Changing-Criterion Design – A research design in ABA in which the performance criteria changes as the subject achieves specific goals

Cognition – a thought

Cognitive behavioral therapy – A type of therapy which focuses on exploring relationships among a person's thoughts, feelings and behaviors and seeks to reduce maladaptive cognitions

Cognitive coping skills training – A cognitive behavior modification strategy which teaches social skills, communication, and assertiveness through direct instruction, role playing, and modeling

Cognitive restructuring, also called rational restructuring – A cognitive behavior modification strategy in which maladaptive cognitions are replaced with more adaptive ones

Competing behavior - A behavior which interferes with the successful completion of a target behavior

Competing response – In habit reversal, this is a behavior that is incompatible with the habit and makes it occurrence nearly impossible or difficult

Compromise – When we attempt to find a solution that works for all parties

Conditioning – In respondent conditioning, this is the stage when learning occurs

Conditioned reflexes (Pavlov, 1927) - Reflexes that are dependent on the formation of an association between stimulus and response

Conflict - Arises when we face two or more incompatible demands, opportunities, needs, or goals

Confrontation – When we attack a problem head on

Connectionism – The idea that stimulus and responses were connected by the organism and this lead to learning; according to Thorndike

Contemplation stage – The stage of change when change is seriously considered, but within the next six months

Contingency - When one thing occurs due to another; in terms of enhancing the effectiveness of reinforcers and punishers, it refers to the uniqueness of the consequence to the situation

Continuous recording - When a client is watched continuously throughout the observation period and all occurrences of the behavior are recorded

Control group – The group in an experiment that does not receive the treatment or is not manipulated; it serves as a comparison with the experimental group

Consequence – The outcome of a behavior that either encourages it to be made again in the future or discourages its future occurrence.

Correlational Research – A research method which examines the relationship between two variables or two groups of variables

Counterconditioning - The reversal of previous learning

Covert - Behavior cannot be observed

Criterion - The specific "trigger" for when we advance from one goal to the next

Critical thinking - Our ability to assess claims made by others and make objective judgments that are independent of emotion and anecdote and based on hard evidence

D

Daily hassles - Petty annoyances that over time take a toll on us

Demand - Anything that has the potential to exceed a person's resources and cause stress if a solution is not found

Dependent variable – The variable in an experiment that is measured

Descriptive statistics – A type of statistic that provides a means of summarizing or describing data, and presenting the data in a usable form

Desensitization – When the client is exposed to fear producing stimuli in a gradual fashion and according to a fear hierarchy and then uses relaxation techniques to reduce sympathetic nervous system arousal; has two forms - systematic or in vivo

Diaphragmatic breathing – Also called deep breathing; person breathes in a deep, slow rhythmic fashion

Differential reinforcement – When we attempt to get rid of undesirable or problem behaviors by using the positive reinforcement of desirable behaviors

Differential Reinforcement of Alternative Behavior (DRA) - When we reinforce the desired behavior and do not reinforce undesirable behavior

Differential Reinforcement of Incompatible Behavior (DRI) – This strategy delivers a reinforcer when another behavior is used instead of the problem behavior; we substitute the behavior

Differential Reinforcement of Low Rates of Responding (DRL) – When we want to reduce the occurrence of a behavior, not eliminate it

Differential Reinforcement of Other Behavior (DRO) - When we deliver a reinforcer contingent on the absence of an undesirable behavior for some period

Direct observation or **assessment** - Used when the behavior is observed and recorded as it occurs, or in real time

Discriminated behavior - When a behavior is more likely to occur in the presence of the S^D and not the S^Δ

Discrimination training - Involves the reinforcement of a behavior when one stimulus is present but extinguishing the behavior when a different stimulus is present

Discriminative stimuli (also called a S^D) - When cues in the environment bring about a specific behavior

Discussion – In this section of a research article the researcher restates the main findings and hypothesis of the study, offers an interpretation of the findings and what their significance might be, and states strengths and limitations of the study which then allows for a listing of future directions

Distal goals – Goals that are far off in the future

Distancing – When the person chooses not to deal with a situation for some time

Distressors - When bad things cause stress in us

E

Emotion focused coping (EFC) strategies – Strategies used to manage stress

Emphasizing the positive – When we focus on good things related to a problem and downplay negative ones

Enactive learning – Learning by doing

Establishing operation - When an event makes a reinforcer or punisher more potent and so more likely to occur

Extreme Stressors - Stressors that have the ability to move a person from demand to stress very fast; examples include divorce, catastrophes, and combat

Eustressors – When good things cause stress in us

Exchange rate - How many tokens are needed to purchase a backup reinforce in a token economy

Exclusionary time outs - When the person is removed from the actual location where the problem behavior is occurring

Experimental group – The group in an experiment that does receive the treatment or manipulation

Experiments – A controlled test of a hypothesis in which a researcher manipulates one variable and measures its effect on another variable

Extinction - When something that we do, say, think/feel has not been reinforced for some time and so the behavior begins to weaken and eventually stops

Extinction burst - When extinction first occurs, the person or animal is not sure what is going on and actually begins to make the response more often (frequency), longer (duration), and more intensely

Extraneous variable - An unseen and unaccounted for factor on the results and specifically our DV; may be the true cause of any change we see

F

Fading - The gradual removal of a prompt(s) once the behavior continues in the presence of the S^D

Fear - The emotional response to a real or perceived threat

Fixed Interval schedule (FI) – A schedule of reinforcement in which we reinforce some set amount of time

Fixed Ratio schedule (FR) – A schedule of reinforcement in which we reinforce some set number of responses

Flooding - A respondent condition technique in which the person is exposed to the feared stimulus at full intensity for a prolonged period

Frustration - When a person is prevented from reaching a goal because something or someone stands in the way

Functional analysis - Designed to test stimuli or consequences that are predicted to be related to the occurrence or nonoccurrence of the behavior; allows for a functional relationship to be drawn

Functional assessment - When we closely scrutinize the antecedents and consequences to see what affects the occurrence or nonoccurrence of a desired or problem behavior, all to maximize how effective our plan/strategies will be

Functional relationship - When we can say a target behavior (DV) has changed due to the use of a procedure/treatment/strategy (the IV) and this relationship has been replicated at least one other time

G

Gaps - Holes in the scientific literature of a given field that needs to be investigated

General Adaptation Syndrome (GAS) - A series of three stages the body goes through when a demand is encountered in the world; includes alarm reaction, resistance, and exhaustion

Generalizability – When a researcher is unable to draw conclusions about his sample and apply them to the population

Generalization training - When we reinforce behavior across situations until generalization occurs for the stimulus class

Gestural prompt – Making gestures with your body to indicate the correct action the person should engage in

Goal - An objective or result we desire that clearly indicates how our time and physical and psychological energy will be spent

Guided compliance - Physically guiding the person through the activity which is meant to be aversive and in the future he or she should engage in the desire behavior to avoid the discomfort of being guided

H

Habit - An acquired behavior pattern regularly followed until it has become almost involuntary (http://www.dictionary.com/browse/habit)

Habit disorder – When a habit becomes annoying for others due to an increase in frequency, duration, and/or intensity

Hypothesis - A specific, testable prediction

I

Immediacy – The idea that the quicker you deliver a reinforcer or punisher after a response, the more effective it will be

Independent variable – The variable in an experiment that is manipulated

Indirect assessment or **informant methods** - Include the use of interviews, checklists, questionnaires, and rating scales to gather information on the target behavior from the person exhibiting the behavior or from knowledgeable others

Inferential statistics – A type of statistics that allows for the analysis of two or more sets of numerical data

Interobserver agreement (also called interrater reliability) - When two people independently observer the same behavior and record that it occurred

Interval Recording – A type of recording method in which you take the observation period and divide it up into shorter periods of time; can be whole or partial

Introduction – The first section of a research article designed to provide a summary of the current literature as it relates to the topic

J

K

L

Laboratory observation - Involves observing people or animals in a laboratory setting

Lapse - When we make a mistake or slip up

Law of Effect (Thorndike, 1905) - The idea that if our behavior produces a favorable consequence, in the future when the same stimulus is present, we will be more likely to make the response again, expecting the same favorable consequence. If our action leads to dissatisfaction, then we will not repeat the same behavior in the future

Learning - Any relatively permanent change in behavior due to experience and practice

Literature review - When we conduct a literature search through our university library or a search engine such as Google Scholar to see what questions have been investigated already and what answers have been found

M

Magnitude – In terms of enhancing the effectiveness of reinforcers and punishers, it refers to the size of the reinforcer or punisher

Maintenance Phase – The phase of behavior modification which follows the treatment phase and which involves the continued measurement of our behavior to ensure that the strategies we used to bring about meaningful behavioral change stand the test of time and future or unforeseen temptations

Maintenance Problem – A problem during maintenance phase linked to a loss of motivation

Maintenance stage - The stage of change when change continues after the first goals have been achieved; relapse is possible

Memory - The ability to retain and retrieve information

Mental disorder - "A syndrome characterized by clinically significant disturbance in an individual's cognition, emotion regulation, or behavior that reflects a dysfunction in the psychological, biological, or developmental processes underlying mental functioning" (quote from the DSM 5, page 20; American Psychiatric Association, 2013)

Method – The section of a research article in which participants, materials or apparatus, and procedure are described in detail; it is like a cookbook

Modeling – Demonstrating for the person what to do

Motivating operations – When an event make a reinforcer or punisher more or less reinforcing or punishing

Multiple-baseline designs – A research design in ABA which involves use of a baseline and treatment phase for different people, behaviors, or settings

N

Naturalistic observation – When a scientist studies human or animal behavior in its natural environment

Negative Punishment (NP) – In operant conditioning, this is when something good is taken away or subtracted making a behavior less likely in the future.

Negative Reinforcement (NR) – In operant conditioning, this is when something bad or aversive is taken away or subtracted due to your actions, making it that you will be more likely to make the same behavior in the future when some stimuli presents itself

Nervous habits – Habits which occur when we are in a state of heightened arousal and nervous tension, generally causing no harm though they can be a nuisance

Non-exclusionary time out – When a person is not removed from the situation but cannot partake in the reinforcing activity either

O

Observation period – The predetermined period of time when you observe behavior

Observational learning – Learning by watching others

Operant conditioning - A type of associate learning which focuses on consequences that follow a response or behavior that we make and whether it makes a behavior more or less likely to occur

Overcorrection procedures - When a person is expected to engage in effortful behavior for an extended period after the occurrence of an undesirable behavior

Overt - Behavior that is observable

P

Parasympathetic Nervous System – Part of the nervous system that calms the body down after sympathetic nervous system activation

Peripheral Nervous System – Consists of everything outside the brain and spinal cord; handles the CNS's input and output; divides into the Somatic and Autonomic NS

Physical prompt – Guiding the person through physical contact to make the correct response

Places - The physical locations where temptations most likely will be present

Postconditioning – In respondent conditioning, this is the stage after learning occurs

Positive practice – A form of overcorrection in which a person is made to engage in the correct form of the behavior over and over again

Positive Punishment (PP) – In operant conditioning, if something bad or aversive is given or added, then the behavior is less likely to occur in the future

Positive Reinforcement (PR) – In operant conditioning, if something good is given or added, then the behavior is more likely to occur in the future

Preconditioning – In respondent conditioning, this is the stage before learning occurs

Precontemplative stage – The stage of change when the person is not considering making a change and even resists the idea

Preference assessment - Present several reinforcers to the person and see which one(s) are liked the most

Preparation stage - The stage of change when the person gets ready to change within the next month

Pressure - When we feel forced to speed up, intensify, or shift direction in our behavior

Primary – In operant conditioning, refers to reinforcers and punishers that have their effect without having to be learned

Primary appraisal (PA) - When a demand is detected we have to decide if this is something we need to worry about

Problem focused coping (PFC) – When we try to find a solution to the demand

Product or Outcome Recording – A type of recording method in which when there is a tangible outcome you are interested in

Programming - A procedure whereby we use prompts, in a temporary way, to establish a generalization

Progressive Muscle Relaxation or **tension-release method** – When the person systematically tenses and relaxes each of the major muscle groups in the body and so they become more relaxed than in their initial state

Prompts - A stimulus that is added to the situation and increases the likelihood that the desirable response will be made when it is needed

Prompt delay - When you present the S^D and then wait for the correct response to be made

Prompt fading - When the prompt is gradually removed as it is no longer needed; can fade within a prompt or across prompts

Proximal goals – Goals that are closer in time

Psychology - The scientific study of behavior and mental processes

Purposive behaviorism - Goal-directed behavior; advanced by Tolman

Q

R

Reactivity - When the process of recording a behavior causes the behavior to change, even before treatment is applied

Real-time recording – A type of recording method in which you write down the time when the behavior starts and when it ends, and then do this each time the behavior occurs

Reinforcement schedule - In operant conditioning, the rule for determining when and how often we will reinforce a desired behavior

Reinforcer - Anything that makes a behavior more likely to occur in the future

Relapse – When an isolated mistake becomes a pattern of behavior

Replication - Repeating the study to confirm its results

Research design - Our plan of action of how we will go about testing the hypothesis

Resources - Anything we use to help us manage the demand; the exact resources we use will depend on what the demand is

Respondent Discrimination – When the CR is elicited by a single CS or a narrow range of CSs

Respondent Extinction – When the CS is no longer paired with the UCS

Respondent Generalization – When a number of similar CSs or a broad range of CSs elicit the same CR

Response costs – A type of negative punisher in which some amount of a reinforcer is removed when a problem/undesirable behavior is engaged in

Restitution – A type of overcorrection procedure in which an individual is made to restore the environment to a condition that is better than it was before the undesirable behavior occurred

Results – In this section of a research article the researcher states the outcome of the experiment and whether it was statistically significant or not

Rules – Tools that add order, predictability, and reliability to our plan

S

Schools of thought - A group of people who share the same general theoretical underpinning, use similar research methods, and address most of the same questions

Scientific method - A systematic method for gathering knowledge about the world around us

Secondary or conditioned – In operant conditioning, refers to reinforcers and punishers that must be learned.

Secondary appraisal (SA) – Once we have decided a demand is something to worry about, we then need to figure out what to do about it

Self-blame – When we blame ourselves for the demand and subsequent stress we are experiencing

Self-control – The will power to resist temptation

Self-efficacy - Our sense of self-esteem and competence and feeling like we can deal with life's problems

Self-imposed Stressors - Stress we impose on ourselves

Self-instructions - Statements you write or say to yourself as positive affirmations and motivational tools

Self-isolation – When a person intentionally removes himself from social situations to avoid having to face a demand

Self-management – Use of behavior modification principles and procedures by an individual to bring about change in their own behavior; Also called self-modification

Self-monitoring – When you monitor your own behavior

Self-regulation - Our ability to carefully consider our actions and the effect they have on others or ourselves, and to make adjustments

Shaping by successive approximations or **shaping** – When we get a person or animal to make some desired behavior that they would not normally know to make by reinforcing approximations of that behavior gradually

Situations - The conditions during which a temptation is likely to occur

Social desirability - When a participant answers questions on a survey dishonestly so that he/she is seen in a more favorable light

Somatic NS – Allows for voluntary movement by controlling the skeletal muscles and carries sensory information to the CNS

Spontaneous Recovery – When the person or animal tries to make the response again in the future even though it stopped being reinforced in the past (in operant conditioning); When the CS elicits the CR after extinction has occurred in respondent conditioning

Statistical significance - An indication of how confident we are that our results are due to our manipulation or design and not chance

Stimulus class - Antecedents that share similar features and have the same effect on behavior

Stimulus control - When an antecedent has been consistently linked to a behavior in the past it gains control over the behavior

Stimulus discrimination - The process of reinforcing a behavior when a specific antecedent is present and only it is present

Stimulus generalization - When a behavior occurs in the presence of similar, novel stimuli

Strain - The pressure the demand causes; occurs when our resources are insufficient to handle the demand

Stress – Our emotional reaction to a demand when problem focused coping strategies are insufficient in managing it or making it disappear

Stressors - Environmental demands that create a state of tension or threat and require change or adaptation

Subgoals - Waypoints toward the final goal

Surveys – A questionnaire consisting of at least one scale with some number of questions which assess a psychological construct of interest

Sympathetic Nervous System - Involved when a person is intensely aroused; It provides the strength to fight back or to flee (fight-or-flight instinct)

T

Target behavior - Whatever behavior we want to change

Temptations - Anything or anyone that might lead you to engage in the undesired or problem behavior and not make the desired or target behavior

Tension reduction – When a person engages in behaviors to reduce the stress caused by a demand; may include using drugs or alcohol, eating comfort foods, or watching a funny movie

Termination Stage – The stage of change when the ultimate goal has been achieved but relapse is still possible

Time out - When a person is removed from an activity because they are engaging in an undesirable or problem behavior

Theory – The systematic explanation of a phenomenon

Tokens – Something that is accrued (and accumulated over time) once the target behavior occurs; part of a token economy

Token economy - An individual is provided with something that represents desired reinforcers and takes that "something" and cashes it in later for those reinforcers

Transfer Problem – A problem during maintenance phase linked to a desirable behavior not transferring or generalizing as expected

Treatment Phase – The phase of behavior modification when the strategy or strategies are being used

Trial and error learning - Making a response repeatedly if it leads to success

U

V

Variable Interval schedule (VI) - A schedule of reinforcement in which we reinforce a changing or varying amount of time

Variable Ratio schedule (VR) – A schedule of reinforcement in which we reinforce some varying number of responses

Verbal prompt – Telling the person what to do

Vicarious reinforcement - The idea that we can learn by observing others and seeing what the consequences of their actions are; advanced by Bandura

W

Wishful thinking – When a person hopes that a bad situation goes away or a solution magically presents itself

Withdrawal – When we avoid a situation when other forms of coping are not practical

X

Y

Z

Tables

Below is a list of all tables presented in this textbook. The first number indicates the Module where the table is found.

Figures

Below is a list of all figures presented in this textbook. The first number indicates the Module where the figure is found.

Exercise Answers

Exercise 6.1

PR 1. Police stop drivers and give them a prize if their seat belts are buckled; seat belt use increases in town.
NP 2. A basketball player who commits a flagrant foul is removed from the game; his fouls decrease in later games.
PP 3. A soccer player rolls her eyes at a teammate who delivered a bad pass; the teammate makes fewer errors after that.
NR 4. To help decrease muscle aches when you are sore you take a hot bath. (You do it more often if it works)
PR 5. After a good workout in physical therapy, hospital patients are given ice cream sundaes. They work harder in later sessions.
NR 6. Homeowners who recycle get to **deduct** 5% from their utility bill. Recycling increases after this program begins.
NR 7. After completing an Alcohol Education Program, the suspension of your driver's license is lifted. More DWI drivers now complete the program.
NP 8. After Jodi flirted with someone else at the party, her boyfriend stopped talking to her. Jodi didn't flirt at the next party.
PR 9. The employee of the month gets a reserved parking space. Employees now work harder.
NP 10. A dog is banished to his doghouse after soiling the living room carpet. The dog has fewer accidents after that.
NR 11. A professor allows those students with A averages in the class to skip the final exam. Students work harder for A's.
NR 12. You clean up your stuff more regularly now to avoid your roommate's (or mother's) nagging.
PR 13. You wax your skis making them go faster. In the future, you wax them before sking.
PP 14. You do not study for your PSYC 101 exam and your earn a 'F.' Your parents scold you over the phone.
NR 15. To deal with hunger pangs, you eat food and feel better.
NP 16. You do not study for your PSYC 101 exam and your sorority or fraternity expels you from the house.
PP 17. You intentionally do not reply to an email from your boss and are given a reprimand. In the future, you do not ignore his emails.
PR 18. You are given a kiss by your girlfriend after you surprise her with a rose. In the future, you are more likely to shower her with gifts.
NP 19. You never surprise your girlfriend with anything nice to show her how much you appreciate her. Therefore, she refrains from talking to or kissing you. The point is to discourage your from not showing your appreciation. P is inferred.
NR 20. Your computer shuts down after you do not plug it up and allow it to recharge. In the future, you plug it up to when the battery indicator flashes red to avoid it shutting down and you losing work.
NP 21. A cat keeps confusing the sofa for the litter box and so her owner removes her feeding dish to discourage this smelly behavior.
NR 22. The sun is bright on the horizon. You put on your sunglasses and the discomfort is reduced. In the future you put on sunglasses in the same situation.

PR 23. You earn an A on your exam. Your professor praises you. In the future you study more.
NP 24. You and your brother are fighting over a toy. Your parents take away the PS3 for one week and fighting decreases in the future.

25. The annoying child jumps up and down, hand raised, yelling "Me, me, me!" until the teacher calls on her. The child jumps and yells even more in the future.
ANSWER: PR for the child as he gets attention and NR for the teacher as something aversive is taken away (the annoying child screaming) which makes it more likely that the teacher will call on the child in the future when he is acting up.

Exercise 6.2

FI 1. You get paid once every two weeks.
FR 2. A worker is paid $2 for every 100 envelopes stuffed.
VR 3. Slot machines at casinos pay off after a variable number of plays.
FI 4. Students are released from class when the end-of-period bell rings.
VR 5. A fly fisherman casts and reels back his line several times before catching a fish.
FR 6. You get a nickel for every pop can that you return.
FR 7. Every time you buy a sandwich you get your card punched; after 10 punches you get a free sandwich.
VI 8. Sometimes the mail is delivered at 1:00, sometimes closer to 2:00.
FR 9. A car salesman gets a commission on each sale.
VR 10. Consider the same salesman in #9. Does he get a sale for every car he attempts to sell? What schedule does this represent? He receives commission some varying number of times he attempts to sell a car.
FI 11. You receive a small increase in your hourly wage once a year.
VI 12. A teacher programs a buzzer to go off at various times during the period. If students are on task they receive a reward.
VR 13. Matt gets a hit *about* once every 3 times he swings the bat.
FR 14. Every time Matt gets a hit though, the fans cheer making him feel good and want to get more hits.

15. A child receives a star on the board when he is good and makes positive contributions to the class discussions, as determined by his teacher and after some random amount of contributions each day. Every three stars earn him a prize from the prize box. Is there more than one schedule present here? If so, what are they?
VR - some random amount of contributions each day
FR - Every three stars earn him a prize from the prize box

Exercise 7.1

1. Goal setting:
    a. Target behavior – **Quit smoking**; 1 behavior = smoking 1 cigarette
        i. Sub-goal 1 – smoke 15 cigarettes per day/ every day (105 behaviors per week)
        ii. Sub-goal 2 – smoke 10 cigarettes per day every day (70 behaviors per week, etc.
        iii. …Final goal – smoke 0 cigarettes every day (0 behaviors per week)
        iv. This is an example of extinction.
    b. Target behavior – **reducing caloric intake**; 1 behavior = eat 100 Calories
        i. Sub-goal 1 – eat no more than 2000 calories per day (20 behaviors per day x 7 days = 140 behaviors per week)
        ii. Sub-goal 2 – eat no more than 1800 calories per day (18 behaviors per day x 7 days = 126 behaviors per week)
        iii. Final goal – eat no more than 1500 calories per day (15 behaviors per day x 7 days = 105 behaviors per week)
        iv. NOTE – This would use a DRL procedure as a consequence focused behavior.
        v. Since it is an excess, the behavioral counts should go down.
    c. Target behavior – increasing **feelings of self-worth**; 1 behavior = write down 1 positive thought about yourself;
        i. Sub-goal 1 – write down 1 positive thought about self every day (7 behaviors)
        ii. Sub-goal 2 – write down 2 positive thoughts about self every day (14 behaviors), etc.
        iii. Final goal – write down 5 positive thoughts about self every day (35 behaviors)
        iv. For differential reinforcement, DRA should work.
    d. Target behavior – **overcoming social phobia**; 1 behavior = talk with a stranger(s) on any topic for 30 seconds;
        i. Sub-goal 1 – talk with a stranger for 30 seconds, 3x per week (3 behaviors)
        ii. Sub-goal 2 – talk with a stranger for 1 minute, 3x per week (6 behaviors), etc.
        iii. Final goal – talk with a stranger for 10 minutes, 3x per week (60 behaviors)

    e. Target behavior – **weight training**; 1 behavior = weight lift 5lbs more than starting weight when working all body areas;

i. Sub-goal 1 – weight lift 5lbs more than starting weight when working all body areas, 3x per week (3 behaviors)
ii. Sub-goal 2 – weight lift 10lbs more than starting weight when working all body areas, 3x per week (6 behaviors), etc.
iii. Final goal – weight lift 20lbs more than starting weight when working all body areas, 3x per week (12 behaviors)

f. Target behavior – **reducing late night eating**; 1 behavior = having a snack after 10pm;
   i. Sub-goal 1 – having a snack after 10pm only 5x per week (5 behaviors)
   ii. Sub-goal 2 – having a snack after 10pm only 3x per week (3 behaviors), etc.
   iii. Final goal – having a snack after 10pm only once per week (1 behavior)
   iv. This is another DRL procedure.

The criteria for moving from one goal to the next should also be established for each target behavior.

2. Since most of the behavioral work is done outside the place of where the child is having behavioral problems, we would need to practice new skills by:
   a. practicing these skills via role-play, in the imagined or simulated environments where the child is likely to act out (e.g., going to a different class, or practicing it in the space with no one else present);
   b. involving the child's PE teacher and others willing to help reinforce the desirable behavior is likely to help as well, although we would have to make sure that they understand the behavioral definition and what exactly should be reinforced and how;
   c. encourage the student to practice his/her desirable behavior during the PE classes he/she already attends;
   d. create and practice certain subtle cues or use small special items (e.g., carry a small stress ball that he/she squeezes when angry) that could remind the student of the desirable behavior.
   e. The information on promoting generalization in the textbook or on Slide 16 will help.
3. You can use all prompts in this example:
   a. Verbal to explain the rules, roles, and even about how to properly hold a bat. Also, use verbal cues to reinforce the behavior at later stages of learning.
   b. Modeling – demonstrate how to bat and catch a baseball.
   c. Gestural – point to appropriate bases, when to pick up a bat, catch a ball, or run.
   d. Physical – help the child hold the bat or catch the ball properly, by physically adjusting their stance, arms, etc.
   e. In this example, it will likely be best to move from most to least aversive (eventually, fade across prompts from most to least aversive). The child will likely need some more hands on training first and then less hands on later.

4. Target behaviors – reduce coffee intake AND increase water consumption. Antecedent procedures to be used:
    a. Create a cue for the desirable behavior – to drink more water, you could carry a water bottle with you or place full water bottles everywhere in your home, office, other environments that you spend a lot of time in;
    b. Remove a cue for the undesirable or problem behavior – make caffeinated beverages unavailable – remove all soda, coffee grounds, coffee making machines, and coffee cups from visible surfaces;
    c. Increasing the energy needed to make a problem behavior – do not bring cash with you where you can easily obtain a vending machine beverage, do not buy any sodas or any other caffeinated beverages, especially in bulk;
    d. Decreasing the energy needed to engage in the desirable behavior – bring water bottle with you everywhere; have water bottles or filtered water readily available;
    e. Establishing operations – drink a glass of water before going to a place that is likely to have coffee/ soda, that way you would be less likely to drink caffeinated beverages just out of thirst; if you consume of soda/ coffee, drink the same amount in water – will be less likely to reach for a 2nd soda/coffee!
    f. Abolishing operations – research negative effects of excessive use of caffeine and associated poor nutritional value and post it on your fridge, car dashboard, anywhere you can see it when you reach for a coffee/soda.
5. Establishing operations in overcoming social phobia:
    a. Putting oneself in social situations (e.g., going to a grocery store, mall, student union building), making conversations more likely;
    b. Creating and reciting every day a list of reasons for wanting to overcome social phobia.
    c. Natural contingencies of reinforcement play in here too. If you have a positive interaction and make a friend, you will want to interact with other people more often.
    d. Also, choose a topic you really like to talk about to break the ice.
    e. Is a cognitive behavior modification strategy needed too such as cognitive coping skills training?
6. Using abolishing operation to eliminate nail biting:
    a. Research negative effects of nail biting (i.e., getting infections, colds/ flu more easily, deformed nails) and post it somewhere visible (but maybe private) as a reminder to yourself;
    b. Plan to occupy hands (e.g., squeeze a stress ball, play with a pen/pencil or rubber band, draw/ color or do other crafts), especially during the times when most likely to bite nails (e.g., feeling stressed, bored, anxious). – Use DRI for a consequence focused strategy
    c. Place nail polish on nails or use acrylic nails.
7. Increasing feelings of self-worth:

a. Presenting a cue for the desirable behavior – have sticky notes with positive affirmations (e.g., "I'm worthy of love, care, and support") posted everywhere; listen to/ read self-help books, which should be easily available (e.g., placed near bed stand) on increasing self-worth; or purchase motivational posters; is there an app for this?
b. Self-instructions – make post-it notes with positive affirmations;
c. Social support – get others (friends, family, co-workers) to support/ reinforce your feelings of self-worth (e.g., remind of positive affirmations, praise when using those);
d. Prompts – have others for verbal prompts or use sticky notes as visual verbal cues to reminder to practice positive affirmations to increase self-worth.
e. DRA will work well for this as a consequence focused strategy.
f. Is a cognitive behavior modification strategy needed too such as cognitive restructuring?

8. The teacher might use stimulus discrimination to limit the student's social behavior to only certain, appropriate situations, such as during recess and gym, but not during class time. The teacher could give praise (and tell others in authority to give praise) to student when she is social *only* during recess and gym; however, the teacher and other authority figures should ignore her social attempts in class. After some time, her prosocial behavior in the classroom should be extinguished, while she still can maintain it in more appropriate social settings. The teacher can also use verbal prompts or a gestural prompt (cue that only the teacher and student know) to indicate a need to calm down. Social support can be used by having students in his or her group to deliver a verbal prompt to calm down.
9. You could begin with modeling the behavior of setting a table, including where to get utensils, dishes, other items, etc. and arranging them on the table. After that you could proceed with some physical prompts (if the child is young, guiding their placement for example), while still modeling and beginning to include verbal narration and gesturing prompts. You can begin the fading once the child can set up the table with only verbal/ gesturing assistance needed. You will then continue to limit the verbal and gesturing prompts until the child can set up a table on his/her own without any prompts within a reasonable amount of time. Also, use prompt delay. Ask the child to set the table and then give him/her a minute to engage in the correct behavior. If done correctly, no prompt is needed. If not done correctly, use the appropriate prompt for the situation and depending on where in the learning process you are.
10. Programming would allow for the social behavior to generalize to multiple environments at school. The friend could use a verbal prompt to remind you to be social in, say, your English 101 class, then once established, fade it and move on to another location/ situation in school, such as at a student union building or during another larger (or somehow different) class. You will also likely want to generalize the behavior beyond just the school setting. First, at school (a blanket term) there are multiple environments you could be in such as the classroom, walking across campus, standing in line waiting for food, being on the bus, being at a football game, etc. You would want to make this

behavior in all situations. Second, many of these environments will be similar outside of school such as waiting in line at the DMV or at a store, walking by strangers on the street, or going to a sporting event for a professional team. Since you have made response in similar situations at school, you should generalize easily and family and friends at home can provide prompts if you do not.

Exercise 8.1

1. A. Reducing hand flapping behavior (e.g. of a child with autism):
    - Define behavior – 1 instance of hand flapping on the floor when overwhelmed by stimuli
    - From baseline data/ functional assessment observed that hand-flapping occurs on average for 3 minutes after the child is asked to do something he/she does not want to do;
        - Starting point – limit hand-flapping to 2.5 minutes, then reduce by 30-second increments until no/rare hand-flapping occurs;
    - Reinforcer – a piece of candy, more time with a favorite toy, less homework (unless this was something that was already reinforcing the hand-flapping), praise;
    - Continue at 30-second increments every day, or less if needed, to avoid forcing the child.

   B. Language development (learning verb conjugations)

    - Define behavior – learning verb tense conjugations in Spanish;
    - From baseline data/ functional assessment determined that should start with verbs already know well in Spanish;
        - Starting point – begin with learning past, present, and future tense of 2 words, increasing verb tenses learned by 2 words at a time;
    - Reinforcer – self-praise or encouragement from others, more time on games, piece of candy, etc.;
    - Continue at 2-verb increments every day (can adjust to avoid forcing the process or making it challenging enough).
    - Or you could set up the shaping steps as learning basic vocabulary words, present tense and how to conjugate, then move to more advanced words and verb tenses and introduce irregular verbs.

   C. Getting a child to try a new food (be open to new experiences)
    - Define behavior – eat 4 tablespoons/ ¼ cup of a new vegetable or fruit;
    - From baseline data/ functional assessment observed that child currently only eats baked sweet potato and squash, bananas, or apple sauce once a day;

        - Starting point – introduce a ¼ cup of slices apple once a day, then increase the amount or times per day; then in 3-day increments introduce another new vegetable or fruit, while maintaining intake of the one previously introduced;
    - Reinforcer – a piece of candy, more time with a favorite toy, less homework or fewer chores, praise;
    - Continue at 1-2x per day increments every 3-4 days (adjust if needed, to avoid forcing the child).

D. Having a child go from leaving late for school to leaving 5 minutes early

- Define behavior – leaving home for school;
- From baseline data/ functional assessment observed that child currently leaves 10 late for school;
    - Starting point – have the child leave no later than 8 minutes late for school, then decrease by 2-minute increments each (or every other) day until leaves on time; then, have the child leave home early by 1-minute increments each day;
- Reinforcer – a piece of candy, more time with a favorite toy, less homework or fewer chores, praise;
- Continue at 2-min (when late and 1 min when need to be early) increments per day (or every other day) (adjust if needed, to avoid forcing the child).

E. Increasing the quality of an employee's job performance

- Define behavior – number of tasks completed error-free;
- From baseline data/ functional assessment observed that employee currently has on average 5 tasks per day on which he makes major errors;
    - Starting point – have the employee complete 1 task error-free per day, then increase at 1-task error-free every other day;
- Reinforcer – praise from boss and co-workers, getting a free coffee from boss/ co-workers, 5 extra minutes for break or lunch;
- Continue at 1-task error-free increments every other day (adjust if needed, to avoid forcing the employee).

2. With the fear of snow, systematic or in-vivo desensitization would be useful. If it snows only in the winter where your friend lives, then the systematic desensitization might be more appropriate, since it does not require the presence of the feared stimulus (i.e., snow). Regardless of the type of desensitization, you would first need to teach your friend some relaxation techniques (e.g., diaphragmatic breathing, progressive muscle relaxation, etc.) and then create a hierarchy of situations involving snow from least distressing to most distressing. Then exposure exercises will begin: With systematic desensitization all exposures are done imagining oneself in a situation with a fearful object/situation (e.g., imagining oneself looking outside at snow) gradually increasing in intensity (to

imagining touching the snow and holding it in one's hand). With in-vivo desensitization, one experiences the feared situation/object more directly (e.g., look at snow outside through a window), yet, gradually as well (to actually touching the snow/ picking it and making a ball). Throughout the exposures you will also want to encourage the friend to practice relaxation exercises and keep track of distress levels to notice that they subside after a certain period of exposure. An example systematic desensitization hierarchy for fear of snow:

a. Imagine watching a TV show on snow storms;
b. Imagine looking at snow outside;
c. Imagine opening your door and seeing snow falling outside;
d. Imagine walking outside and feeling snow fall on your clothes;
e. Imagine holding up your palm and looking at snowflakes as they fall into your hand; etc.
f. Final goal – imagine picking up handful of snow and making a ball and holding it for a few seconds;

Note: you could also use flooding, although she would have to do it with a professional and when snow is available for several hours.

3. See #2 for employing relaxation strategies and in-vivo desensitization. In-vivo desensitization or flooding would be most appropriate since darkness is a very common state and fear of it would be very impairing. With in-vivo desensitization you could start the hierarchy with an exposure to dim light, then proceed to twilight, then cloudy night, starry skies, and then complete darkness. Flooding, however, would be quicker, having taught the client relaxation strategies, you would expose them to complete darkness for as long as it takes for them to feel moderately comfortable in it, while reminding them to use relaxation strategies and continue taking their self-reported distress ratings.
4. You would begin the habit reversal with awareness training, recording every time you tap your foot while sitting or standing. It might be helpful to recruit family or friends to help you with noticing the behavior. You would also want to keep an ABC chart to record the antecedents and consequences of your tapping behavior. This will help you determine the purpose of the behavior and subsequently which competing response to use. Once you have a better awareness of the behavior, you will want to come up with a competing response, such as tightening leg muscles, walking, wearing heavier shoes so it is harder to tap the foot, or doing something else involving whole body or just legs. The next step would be to practice this response even prior to tapping behavior occurring and then every time tapping happens. This is also a good time to recruit family and friends to remind you to perform your competing response every time you have an urge to tap your foot. With their support and your constant practice, it is most likely that the competing response will become generalized to real life and will become the new habit. Finally, you will want to review your progress with a professional to assess your progress.
5. Competing responses for:

   a. Grinding teeth -> wearing a mouth guard, practicing progressive muscle relaxation, chewing gum or sucking on a hard candy;
   b. Biting lips -> wearing bitter-tasting or sticky lipstick/ lip balm, chewing gum; eating a lolipop
   c. Nibbling at pencils -> putting big erasers on pencils' ends, chewing gum or sucking on a hard candy;
   d. Stuttering the word statistics -> saying the word slowly, syllable by syllable; or saying stats instead
   e. Head tic -> tighten neck muscles every time get an urge;
   f. Arm jerking -> tighten arm muscles, occupy the arm/ hand with something else (e.g., squeeze a stress ball).
6. First, accept that it is a loss and it is OK to grieve (acceptance based strategies). Second, cognitive restructuring might help deal with guilt:
   a. Keep track of self-blaming/personalizing thoughts on an ABC chart, noting the circumstances surrounding the thoughts (i.e., did something remind you of your son or your self-efficacy? Did it feel like dwelling on it was actually justified – as if you deserve this as punishment?);
   b. Once you have a good understanding of the circumstances surrounding the cognitions, begin to challenge them (e.g., "was it really my fault?" "should I continue to punish myself for thinking that I am to blame?" "Am I really a bad person because I could not save my son's life?"), then write down evidence for and against original self-blame thoughts and see if you can come to a more realistic "compromise" (e.g., "while I do miss my son very much and I wish I have told him that more often, it is not my fault that he died.")
   c. Continue reminding yourself of the new, more realistic thought, so it becomes internalized and you actually believe it.
   d. You might need to start with realizing it was not your fault through cognitive restructuring so you can move to acceptance (acceptance based strategies and DABDA – Kubler-Ross)

Exercise 9.1

1. DRO – trying to eliminate squirming by giving a sticker only in the absence of fidgeting for a certain amount of time (10 mins).
2. DRI – the teacher wants to increase her students' use of their inside voices inside by having them speak softer every time they try to yell (i.e., replacing yelling with incompatible behavior).
3. DRA – want the negativity to decrease - only reinforcing positive comments, while ignoring negative ones, with hopes that negativity will go extinct.
4. DRL – limiting the number of jokes, not eliminating them entirely; set to a full session DRL because cannot exceed 5 jokes for the entire study period.
5. DRI – chewing gum is mostly incompatible with biting nails more appropriate behavior (chewing gum) replaces undesirable behavior (biting nails).
6. DRO – want to eliminate acting out; reward not acting out only after a certain period of time (30 minutes).
7. DRA – want to increase paying attention by answering the student only when she is paying attention during lectures (and ignoring her hand up when she is surfing the web).
8. DRL – parent doesn't want the child to stop all questions, just have fewer of them, so he/she limits them to 4.
9. Using a token economy to reduce procrastination:
    a. Define 1 behavior = starting on assignment or studying for a test/ quiz 1 day before it is due or it is a test/ quiz date
    b. Token = 1 poker chip for each 1 day early start on an assignment or studying for a test/ quiz
    c. Backup reinforcers = fun size candy, a toy from a treasure chest, getting extra credit points, extra minutes of recess
    d. Exchange rate = 2 poker chips buy 1 fun size candy; 4 poker chips buy a small toy from the treasure chest OR 1 extra credit point; 6 poker chips buy 5 extra minutes of recess OR a medium expense toy from the treasure chest; etc. 20 poker chips buy 10 extra credit points
    e. Extra points = receive an extra 2 poker chips for turning it 2 or more assignments due on the same day at least 1 day early
        i. Goals = 1. Turn in all assignments due for all classes 1 day early (extra 2 poker chips)
        2. Turn in all assignments due for all classes 2 days early (extra 4 poker chips)
        3. Turn in all assignments due for all classes 3 days early (extra 6 poker chips)
    f. Non-contingent events = 1st week – arts and crafts party; 2nd week – pizza party; 3rd week – extra 10 minutes of recess time for everyone
    g. Exchange schedule = points will be awarded/cashed every Friday during the lunch hour

   h. Response cost = once the token economy has been established for 2-3 weeks, response cost might be used to make reinforcers only intermittently available until they can be faded out completely.

10. You might use the overcorrection procedure, specifically restitution, and have the child restore the room to a condition that is even better than it was in before the tantrum. This will have to happen once he calms down though (can use time-out to help him calm down).
11. Token economy works best generally for children and it wouldn't work in this case because exam effort can be difficult to define and the token economy difficult to organize, implement, and reinforce in a college classroom (i.e., it might not be practical for the instructor to give out tokens after each time the students apply themselves and then give out the rewards later). What might be helpful instead is to redistribute the amount of points earned in the class so that exams would be worth the majority of points in the class (and doing poorly would result in a lower grade overall). Alternatively (or in addition), giving extra points to those who score higher (e.g., if got 90%+ get extra 2 points, 80-89 = extra 1), might be effective. You could also give students the chance to test out of the final exam for doing well on other exams (i.e. earning at least an A-; NR).
12. It depends – if child's room has nothing in it that could distract or reward him, then it would be OK. However, it is likely not the case and by being sent to his room, he will console himself with games, toys, other distractions that would serve as negative reinforcers, as supposed to positive punishers. Instead, he should be sent to sit in the hallway or bathroom or somewhere else where there cannot be anything that would distract him or serve as a reinforcer for avoiding the chore. It might also be worth to gradually take away his privileges, if he continues to act out, especially after time out, or if he is older. Also, the student is likely acting out to get into trouble and be sent to a time out (whether exclusionary or non-exclusionary) since he does not like to clean the house. The punishment is actually a NR.

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