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This chapter is different than most chapters in *Mindfulness for Two*. Most of the book is voiced in first and second person. Chapter 2 is certainly the most technical chapter. It just wouldn't make sense to do a book length treatment of the work I do without a chapter on behavior analysis. The chapter was completed with the assistance of my excellent grad student Emily K. Sandoz and my friend, colleague, and lab co-director Kate K. Kellum.

Y'all learning behavior analysis have really been an inspiration to me, and, I/we hope this chapter contributes to that effort.

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Chapter 2

A Clinician's Guide to Stimulus Control

I often introduce myself by saying, in a hushed tone appropriate to a confessional, "My name is Kelly, and I'm a behavior analyst." I typically follow by asking whomever I'm speaking to not to hold that fact against me. Given the work I do—especially the frequency with which I throw around words like heart, suffering, and liberation—many people are often puzzled by my claim to be a behaviorist. But I find that this is because the core characteristics of the behaviorism to which I adhere—contemporary contextual behaviorism in the tradition of radical behaviorism—is confusing and obscure to a lot of people. Many of the folks I encounter have very firm convictions about the value of behaviorism. Yet they have a far-less-firm idea of what behaviorism actually is. My hope is to shift this trend, at least somewhat, with this chapter.

Brace yourself. This chapter is going to be technical, more so than any that follow it. And the terminology is going to be heavy. I can't really get around this. My hope, though, is that by becoming more familiar with the basics of stimulus control, your ability to detect subtle shifts in stimulus control in the therapy room—whether in yourself or in your clients—will help you connect more deeply and intimately with your clients, building a strong foundation for mindfulness for two.

ACT is the application of contemporary contextual behavioral psychology as it emerged from the tradition of radical behaviorism. In an important sense, ACT is really applied behavior analysis. For many years, we didn't call it that—for some rather compelling reasons. Until recently, if you brought up "applied behavior analysis" in a group of professionals, most of them would say, sometimes out loud, sometimes to themselves, one of two things: "Oh, I know about that already, and I hate it, so I don't need to listen any more." Or, on the other hand, "Oh, I know about that already, and I like it, so I don't need to listen anymore."

I'd like convince you that there *is* something important to listen to in applied behavior analysis, whichever side you fall on. If you're inclined to view behavior analysis as too narrow, mechanistic, and reductionistic, I ask that you keep an open mind. There are a lot

of behaviorisms out there, and I think you'll find that this one may leave out the elements to which you object. If you have a positive view of behavior analysis—or, even, are a behavior analyst yourself—I would request that you join me to look anew at some domains that maybe have gone unexplored or where we, as behavior analysts, drew premature conclusions that satisfied us at the time but failed to exhaust the possibilities of the theoretical model. If you take the time to engage with this material, I promise that it will have a positive impact on the work you do in the service of your clients.

[A]Not the Behaviorism You Think You Know

Behaviorism often turns therapists off because it hasn't particularly been known for its contributions to psychotherapy. When many of us think of behaviorism, we conjure up images of rats pressing levers. When we think of radical behaviorism, we imagine all of the limiting, negative things we think we know about behaviorism—and then we “radicalize” them, making behaviorism seem even more objectionable. In fact, *radical behaviorism* is the perhaps-unfortunately named philosophy, developed by B. F. Skinner, that forms the basis for modern behavior analysis. And it's far from limiting.

When I encounter people who don't like behaviorism, I sometimes ask them why. The most common misconception is that behaviorism denies thinking and feeling. And the second is the notion that behaviorism shrinks human behavior down to an atomistic account of punishment and rewards a reductionistic process that eventually mechanizes rich and varied human experience, turning us all into robots. If these caricatures are true anywhere in behaviorism—and this is arguable—they're not found in the behaviorism of B. F. Skinner, and they're certainly out of place in the contemporary contextual behavioral account I'm describing in this book.

[A]Thinking-Feeling Behaviorism

All of us have a fraction of the world to which only we have direct access. Others may see what we do with our hands and feet quite directly, yet they don't have such direct access to our *private events*, that is, what we think, feel, imagine, and desire. Any psychology that doesn't address these matters is likely to be, and probably ought to be, rejected out of hand. But this issue of whether private events are a proper subject of study has been the frequent subject of contention in the history of psychology. In the middle of the last century, empirical psychology—in its search for a so-called objective psychology—ran away from questions about this world inside the skin.

In a symposium in 1945, the famous historian of experimental psychology E. G. Boring stated, “Science does not consider private data.” Responding to Boring, B. F. Skinner quipped, “Just where this leaves my contribution to the symposium I do not like to reflect....The irony is that while Boring must confine himself to an account of my external behavior, I am still interested in what might be called Boring-from-within” (Skinner, 1972). Skinner never disavowed interest in private events, but his was only one voice among many in behaviorism. And many within the broader behavioral movement did call out for an analysis that dismissed our inner life—or at least placed it outside the range of science. It's very possible that a good deal of the contemporary rejection of *behavior analysis*—which is the empirical observation of behavior with the goal of predicting and influencing it—has been in reaction to this rigidity, to positions that were held too stridently, to versions of behavioral psychology that truly failed to take human cognition seriously. But, as even Hamlet remarks, “...there is nothing either good or bad, but thinking makes it so” (2.2.250–251). Commonsense observation alone suggests that

the human capacity for cognition exerts a considerable influence on our behavior. It's not so far-fetched to imagine that, by neglecting to provide a workable explanation of the role of private events within the framework of behaviorism, the mainstream of this tradition fell into disuse during the ascendancy of cognitive psychology in the latter part of the twentieth century. Regardless of the reason, the plain fact is that we now find ourselves at a point in time where many—if not most—individuals providing mental health care are not well trained in behavior analysis.

[A]Why Do We Need Behavior Analysis?

So what? What difference would it make if few or none of today's clinicians have been trained in behavior analysis? It might not have made much difference at all but for the fact that contemporary psychotherapy took a turn in the 1990s, the new third-wave behavior therapies (of which ACT is one) emerged into the profession, and clinical research started to suggest that this work showed promise. With encouraging research findings came interest, and as interest grew, more clinicians wanted to take advantage of these new and promising technologies. And, several of these third-wave therapies formulate case conceptualization from a behavioral perspective. The glass-half-full view here is that, if you're interested in the third-wave therapies, an understanding of behavior analysis is a genuine asset for you. But if you're partial to a more pessimistic worldview, you might say that, without a solid foundation in behavior analysis, you'll have some serious holes in your understanding and application of third-wave technologies. And if you do, you're certainly not alone. Basic behavioral training all but vanished from clinical psychology curricula in the last couple decades of the twentieth century.

[A]Rethinking Behavioral Training

So we have several generations of clinical professionals that may lack a strong foundation in basic behavior science, and we have a number of emerging modalities that depend on these skills for successful case conceptualization. What can we do about that?

There are several different approaches to basic behavioral training. Some are highly technical and make use of the hugely precise language and razor-fine discriminations that are necessary for basic laboratory work. Yet while these technical details are important in research, some are less so outside the laboratory. I'm going to go out on a limb and guess that you've not made notes about "a changeover delay in a concurrent VI-2' /VI-2' schedule of reinforcement" on any of your clients' charts lately. What would be of great benefit to you, especially if you are drawn to the third-wave therapies, is an understanding the core of behavior analysis: the functional relation between behavior and the contexts in which it occurs

This is what I'll be guiding you through in this chapter. I want to introduce behavioral thinking in a way that I hope is useful for you if your behavioral training happened a long time ago, was maybe less rigorous than you might now wish, or was not well integrated with clinical work. And, of course, this chapter should be of considerable value to you if you've had no behavioral training at all. Along the way, I'll give you the barest outline of a contextual behavioral perspective from which you can observe your clients' activities (and your own).

As someone trained at depth in both basic behavior analysis and clinical psychology, I think that basic behavior analysis has an important message for applied psychology (of which clinical work is a subset). In what follows, I've struck a balance between applicability to clinical work on one hand and technical accuracy and completeness on

the other. The material here is directly relevant to both understanding and doing ACT. As we go, we'll connect technical explanations with clinical examples. By doing this, I hope both to keep these technical distinctions relevant to your practice and to prevent you from lapsing into a technical analysis coma.

[A]Behavior Analysis: Getting Started

The foundation upon which behavior analysis rests is the relatively uncontroversial idea that behavior is influenced by the context in which it is embedded. In a certain sense, behavior analysis can be thought of as a relatively refined language that enables us to talk about behavior and the contexts that influence it. It is, in a real sense, *contextual behavioral psychology*

Contextual behavioral psychology serves a practical purpose: it helps us make sense of the world around us. As with other scientific perspectives—physics, geology, biology—we (humankind) adopted it because we found it useful to organize the world and its events into categories and into the relations among categories. But make no mistake: the categories and relations you'll encounter in the following pages are not “true” in the capital T sense of true, or, by any means, exhaustive of all human behavior. They serve a practical purpose—to enable us to have the discussion that is behavior analysis—and we can and should let them go when they no longer serve us well.

Behavior analysis, as I said earlier, is nothing more than a way of speaking about what people do. There are innumerable many ways of speaking about what people do, including other scientific ways of speaking that I mentioned above. In addition to these, there are countless nonscientific ways of speaking—poetry, theology, just plain old common sense. Behavioral ways of speaking ought not be measured against other ways of speaking. Rather behavior analysis ought to be measured against the ways such speaking can be useful in meeting our goals. In short, when evaluating our use of behavior analysis, or this way of speaking and categorizing, we need to ask ourselves to what extent our analysis helps us in understanding the behavior of clients such that they become free to move their lives in a valued direction.

[A]The Distinction Between Behavior and Context

Behavior analysis is a precise yet general way of speaking about behavior, the context in which it occurs, and the relations between behavior and context. Since the elements of our analysis will be aspects of behavior and context, it's very useful to distinguish between the two.

[B]Behavior

There are widely divergent views in psychology regarding what is meant by behavior. My own first encounter with behavior was in developing and implementing behavior plans for individuals with developmental disabilities. I was taught in most of my introductory psychology courses that behaviorism confined itself to publicly observable responses—walking, talking, speaking, and the like. My very first course on behavior analysis was taught by Sam Leigland, an early mentor of mine who still teaches at Gonzaga University. Sam is a tall fellow of Scandinavian descent who can turn his entire body into a question mark. So, on the first day of class, this tall Scandinavian question mark turned to us and asked, “What is the subject matter of behavior analysis?” He didn't wait for an answer. He supplied one emphatically: “The subject matter of behavior analysis is any and all of the activities of the integrated organism! Any and all!”

At the time, I was carrying a copy of *Man's Search for Meaning* around in my pocket as a sort of compass. I went to Sam's office after that class and asked him, "What about this? Can behavior analysis help us to understand what happened to Frankl in that death camp? Can it help us to understand the human capacity to find meaning in the midst of horror?"

Sam didn't give me an answer that day. Instead he gave me a job. The essence of what Sam told me was that if behavior analysis could not make sense of the most profound human activities, then it is not worth much. Sam got me reading papers like "Radical Behaviorism in Reconciliation with Phenomenology" (Day, 1992) and "Making Sense of Spirituality" (Hayes, 1984). He showed me that there was a richness in behavior analysis that was nowhere to be seen in introductory psychology texts. (As I write this, I'm reminded what a great gift my best teachers have been to me.)

Often behavior is distinguished from things like thinking and feeling. The behaviorism Sam offered to me, and that I in turn offer to you, says that if an organism can do it, it is behavior. Could a person think, imagine, believe, hope, want, freak out, feel exuberant, despondent, inspired? Or, like Frankl, could a person find meaning in the midst of a death camp? If the answer is yes, then that is behavior from this perspective, and is an entirely proper subject matter for our science. Behavior, all behavior, is our dependent variable. Behavior is what is to be explained.

For our purposes, *behavior* will be considered an ongoing, evolving stream of activity in dynamic interaction with context. Behavior, so defined, is the dependent variable of our analysis. We will seek the ways in which it depends on, or is organized by, context.

[B] *Context*

Just as behavior is anything that an organism can do, context is anything that can happen to an organism. This includes both what is currently happening and also what has happened to the organism all the way back to the beginning of its existence. From this perspective, context is anything outside of the behavior being analyzed that influences the development, expression, modification, or maintenance of that behavior, including both current and historical context.

Context, or some aspect of context, is the independent variable in our analysis. If we want to have an influence on our clients' behavior, we will need to understand that which influences behavior. We could suppose that behavior just changes on its own or that change will come spontaneously from the client, but if that is all there is to it, what is our job as therapists?

The issue of influencing client behavior has been a sticking point for behavior analysis. Perhaps it sounds manipulative.. Sam had a response to that too. He asked me what I wanted to do for people. I told him that I wanted to help them to find meaning.

"How?" he asked. "What will you do?" In that simple question, Sam was leading me back from the client's behavior (meaning making) out into the client's environment (his or her interaction with me and the world around them). "What will you do?" is a practical question.

This is useful because we are an important part of our clients' environment. Anything we do to influence our clients' behavior is done from outside that behavior. We change both the immediate context of a behavior to give clients the opportunity to do something different, and, through a series of interactions, change the historical context of a pattern of behavior. The context in which the behavior occurs is your point of impact as a

therapist. *Context*, then, is that which lies outside behavior, and which exerts an organizing influence on the behavior being analyzed.

[B]*A Clinical Lifeline: Context and Behavior*

Imagine a client comes into your office. He says to you, “I want to die. Every day I get up and I wonder—can I do one more day? And, if I can, how many more can I do after that?”

There are a lot of ways you could respond to a statement like that. How might it influence that ongoing stream of your client’s behavior if you threatened hospitalization, if you appeared distraught and frantic when you heard your client’s words, or if your response suggested that your first concern was to avoid liability with respect to your client? And how might it influence your client if you seemed genuinely interested in hearing the heart of his despair? Depending on your client’s history, any of these different responses might produce dramatically different effects on how he responds to you and what actions he chooses to take, if any, because of your encounter. Your client might become angry. He might jump out of the window. He might be calmed—or might feign calm.

I mean nothing controversial when I claim that context organizes behavior. Your client behaves, and you respond. Your response is the context for your client’s behavior, and it has an influence. The same analysis could, of course, be made of your behavior. Your client’s behavior is the context in which you yourself behave. Sometimes it’s useful for us to focus on the way in which context impacts your behavior as a therapist, but for now, let’s stay focused on your client’s behavior. Even when we do look at your behavior, we’ll want to start our analysis with one stream of behavior at a time. It is simpler and more likely to be useful to do so

[A] Responses and Stimuli

Another way of speaking about the behavior-context distinction is in terms of responses and stimuli. *Responses* are behavior, or what an organism does, and *stimuli* make up context, or what happens to an organism. For example, if we hear a phone ring, hearing is the response, and the ringing is the stimulus. This language highlights the practical nature of the context: we distinguish here between stimulus and response only to facilitate our discussion of what is actually a singular event in this case, hearing the phone. A stimulus is not a stimulus apart from that which it is stimulating, and a response is not a response apart from that to which it is responding. There is no stimulating without responding and no responding without stimulating. Responding and stimulating are a functional unit. So, in this case, there is no hearing (behavior) independent of what is heard, and no what is heard (context) apart from hearing.

Thus we will consider any behavior that we want to analyze in and with the context. Any part of any event that seems important in our project of prediction and influence will belong either on the behavior side of the equation (a response) or on the context side of the equation (a stimulus). Those on the behavior side are the events that we are seeking to influence, while those on the context side are the events that are doing the influencing. If, considering the example above, we wanted to determine when someone is likely to answer the phone when it rings and get her to answer more quickly (predict and influence behavior), we would consider the volume of the ringer, the subject’s proximity to the phone, whether she is wearing earmuffs, and so forth (the context in which the behavior takes place.)

[A]Two Common Errors in Understanding Responses and Stimuli

Two common misconceptions about stimuli and responses are that stimuli are discrete objects and that responses are movements. From a contextual behavioral perspective, these are both incorrect in the most technical sense. On the response side, standing still is defined as a response if I can demonstrate that, standing still, as the response of interest is capable of being organized by context, which is to say, capable of being provoked by some kind of stimulus. For example, if I give you a five-dollar bill when you stand still and take five dollars when you move, and thereby alter the probability that you'll stand still, then "standing still" meets our definition of behavior: it's something the organism can do. Also, standing still can be brought under contextual control—that is, it's in dynamic interaction with a stimulating environment.

On the stimulus side, the most common error is to think of a stimulus as an object. We might, for example, see the five-dollar bill as the stimulus that organizes behavior. In a limited sense, this is true, but a more sophisticated way to think of this is that standing still changes the world from one where you can't buy things to one in which, with your crisp, new fiver, you can. It is that transition from not having the power to buy things to having that power that organizes behavior, not the bill per se. For example, if I gave you a billion dollars, the promise of an extra five bucks would likely no longer organize your behavior, and you would stand still or move as it pleased you. Or if I locked you in a cell where money couldn't be spent or given away, five dollars (or even a billion) wouldn't do much to organize your behavior. Why not? Because receiving the five-dollar bill in either of those two contexts wouldn't change your world in any significant way.

In many applications, calling the five-dollar bill a reinforcer of behavior is probably workable. (We should remember that, despite the leaps and bounds of contemporary physics, Newton's classical mechanics work just fine in most instances too.) However, we want a more sophisticated understanding of the dynamic interaction of responding and stimulating.

Why does it matter? The distinction matters because sometimes there's no object or immediate discrete event to which we can point. Richard Herrnstein and Philip Hinkle (1966) carried out a classic experimental example that illustrates this point nicely. In their study, rats were placed in an experimental chamber, and the floor of the chamber was briefly electrified at random intervals. If the rats pressed a certain lever within the chamber, the shocks would come at a slightly reduced, though still random, interval. What Herrnstein and Hinkle found in the experiment was that lever pressing was maintained in the rats. We cannot understand the maintenance of the lever pressing by appealing to the immediate effects of lever pressing. The most common immediate effect of a lever press was that nothing would happen. In fact, as a result of the shocks coming at random intervals, the lever press was sometimes followed immediately by a shock. Why did the rats press the lever? In simple terms, the rat pressed the lever because doing so precipitated a transition in context from one in which shocks are more frequent to one in which they are less frequent.

[A]Seeing Patterns in Response and Context

Likewise in clinical settings, the contextual events (the stimuli that organize your client's behavior) will frequently not be nice discrete objects. You'll seldom have the luxury of seeing an M&M dispensed in the therapy room with the press of a lever. I sincerely hope that you won't see your clients respond to intermittent electric shocks.

What you will see, though, are transitions in patterns of responding. And where you see the transition, that's where you'll look for organizing context.

What are we seeking as we listen to our client's story? How do we find the organizing context? In some respects, a behavior analyst's job is one of pattern recognition. Although I am interested in the content of my client's responding, I am even more interested in the patterns of response—including the patterning of content—and the patterns of the contexts in which they are embedded. I have a particular interest in stereotypy, that is, in repeated patterns. These patterns can be quite fascinatingly complex and varied. Ask yourself these questions about your client's responses:

- [BL]Is there a particular pitch and pace to her responding?
- Does he complain and complain?
- Does she ruminate and ruminate?
- Is the topic the same, over and over again?[END BL]
- What is the physical posture he assumes as he conveys his story to me?

These are just a few possibilities of patterns. It's likely that your client will exhibit several patterns. Can you recognize them? Could you characterize them in terms of pitch, pace, tone, and content? This is the task we have at hand: to make useful observations about the behavior that our clients bring into the room.

Metaphorically speaking, the activity of observing behavior is like listening to a bit of music. You might listen for the bass line, and for a moment let go of the lyrics and the flashier lead guitar. Can you listen and let it move you? Tha-thump, tha-thump goes the bass guitar in the background. Can you hear that patterning of response?

Once you hear that pattern, can you bring your attention to the context side of the behavior-context interaction? The sound quality of the hall, the ambient noise in the background, the shuffle and rustle of the crowd? Can you listen for both behavior and context at the same time? Focus on both the music and the room? Yes, of course, but remember that dividing your subject matter into behavior and context is a pragmatic matter. Attending to one side of the interaction at a time is simpler. As you get better at it, you can begin to see the ebb and flow of interaction, but it is best to start with a simpler set of discriminations.

Two pieces of context are particularly relevant. First, what's going on in the story the client is telling? What is the context in which the story occurs? Is it a social context? Is it a context involving intimacy or potential intimacy? Is it a time when she is alone and has nothing to do? Is it a context in which he is being evaluated by a supervisor, a parent, or an acquaintance? And, second, when does this pattern come up in session? What was your interaction with the client when this pattern emerged? Are there certain topics that precipitate the client's behavioral pattern? Do certain emotionally laden issues precipitate the pattern? Are there things going on in your relationship with the client that seem to precipitate this behavioral pattern? What you're seeking are patterns of context that are correlated with patterns of behavior.

[A]Watch for Transitions

If you think about behavior as being in dynamic interaction with context, you can assume that when you see a transition in responding, there has been a transition in context. With nonhuman species, this is often obvious. The birds are chirping, and they suddenly stop. You look around and see a cat sneaking up through the grass. The dog is lying in its bed, then jumps up and runs to the window. Moments later you hear a

delivery truck pull into the driveway. The cat is sleeping on the sofa. You begin to open a can with the electric can opener, and the cat comes running. All of these are examples in which the transition in the environment organizes a transition in behavior—and the transition in environment—the cat sneaking up, the delivery truck arriving, the can opener whirring—is quite obvious.

With humans, a transition is often not so obvious. You may sit and listen to your client describe her week. At some point in the conversation, you note a change in pace or tone. Suddenly she becomes very animated or very anxious. Or perhaps you're asking about a client's visit to a friend and see him become momentarily emotional. Why? Sometimes it may be quite obvious what precipitated the transition, but sometimes it is not at all clear. As you delve more deeply into the ways context organizes behavior, you'll begin to see how you can look for particularly telling transitions in behavior. Neither therapists nor clients are typically skilled at detecting subtle shifts in context and the influence they exert over behavior. However, such skill can be cultivated. Noticing such transitions in behavior can lead you both to understanding what precipitated them and which interventions would be called for when you see them.

[A]Context: Antecedents and Consequences

Within the broad category of context, several distinctions can be made. The simplest of these involves distinguishing whether the relevant stimulating context occurs before the behavior of interest (antecedents) or after the behavior of interest (consequences).

[B]Antecedent Stimulation

Some client behavior is under antecedent control. *Antecedents* are stimuli that come before a response or pattern of responding that change the likelihood that the response pattern will occur. For example, a gunshot increases the likelihood that a startle response will follow. There are other kinds of antecedents too. For example, if the phone rings, we are likely to answer it. Both the gunshot and the ringing are antecedents, but as we shall see, there are important differences in the kinds of behavior they precipitate. The gunshot has a sort of automatic effect on behavior. Gunshot—startle. Gunshot—startle. We call this particular kind of antecedent an *eliciting stimulus*. The ringing of the phone is different. If the phone rings, we will probably answer it but maybe not. If we have a lot of other things to do, if a particularly good program is on the television, or if the caller ID says “blocked,” we may not answer. We call this sort of antecedent a *discriminative stimulus*.

[B]Consequential Stimulation

Some client behavior is under consequential control. *Consequences* are stimuli that reliably follow a response and change the probability that the response will occur again. Depending upon the effect on behavior, we call these consequences reinforcers or punishers. Stimuli that follow a response and increase the likelihood of a response are called *reinforcers*. For example, praise could be a reinforcer for a child's reading if it increased the probability of reading. By contrast, stimuli that follow a response that reduce the likelihood of a response are called *punishers*. A painful burn could be a consequence that would reduce the likelihood of touching a flame. These responses occur because the world changes in some important way when they happen. When the man yells at home, his wife and kids make no more demands on him. When the child cries, the parents allow another hour of television. These examples illustrate ways in which

behaving—man yelling, child crying—changes the world, and how that change or transition in context—no more demands, another hour of television— influences the likelihood of that response happening again.

There is a link between consequences and antecedents. Sometimes an antecedent, like the ringing of the phone, signals an available consequence. Discriminative stimuli and consequences go together. When the phone is ringing and I answer it, there are consequences. My world changes from one where I don't get to talk with you into one where I do get to talk with you. This doesn't happen when I answer the phone when it is not ringing. It seems so unfair!

[A]Behavior: Respondent and Operant Control

We can also look more closely at the behavior that is linked to these different kinds of stimulation (Stop, take a deep breath. I know this is getting a little dense and theoretical, but I promise that I will bring this back to the therapy room and show you why it is essential to understand these distinctions. And, breathe. Don't you *feel* better now?)

Like stimuli, responses can be divided into two major categories. Some patterns of responding are primarily sensitive to antecedents. Other patterns of responding are sensitive to both antecedents and consequences.

[B]Behavior Under Strong Antecedent Stimulus Control

Some responding is mostly sensitive to antecedents but relatively insensitive to consequences. Remember that gunshot and the startle response? What if I threatened to take one hundred dollars out of your wallet if you were the least bit startled when the gun went off? The gunshot would still produce a startle response. That startle response is just not very sensitive to consequences. You might be able to restrain it some. It's not perfectly fixed, but it's relatively insensitive to that aspect of context we call consequences. Behavior of this sort has an almost mechanical quality to it. If the stimulus happens, the response happens with near 100 percent certainty. Depending on the stimulus, if it is presented again and again in rapid succession, the response may get smaller over time. However, generally speaking, a period of time without the stimulus will restore the response to its original strength. This sort of strong antecedent stimulus control is sometimes called *respondent stimulus control* and the behavior it controls is called *respondent behavior*.

Behavior under strong antecedent stimulus control can occur with no learning history. This would be the case, for example, if you got startled after hearing a loud noise. We call this *unconditioned respondent behavior* or an *unconditioned response* (UCR) and the relevant stimulus an *unconditioned stimulus* (UCS). However, such behavior can also be learned. For example, if you were bitten by a dog, seeing a dog later might produce strong arousal. If you were in a serious car accident, you might become fearful of driving. Driving isn't innately fearsome, but it may become so when it's paired with something that is fearsome, like an accident. Of course pleasurable things can also be conditioned. Cases like all of these are sometimes called *classical conditioning* and the resulting behavior is called *conditioned respondent behavior* or a *conditioned response* (CR) and the relevant stimulus that was previously neutral a *conditioned stimulus* (CS).

In addition, humans often become fearful even without any direct experience of the feared object. For example, many people are afraid of snakes, even without any direct painful experience with snakes. There are documented cases of snake phobias where the individual has never even seen an actual snake. Not only can humans become fearful of

things they have never encountered, they can even become fearful of things that don't exist: demons or monsters under the bed, for instance. If you think about your difficult clients and the things that generate near-mechanical reactions in them, the overwhelming majority of the events that precipitate these reactions are learned, not unlearned. They are conditioned respondent behaviors. Some of these responses don't necessarily involve very direct learning histories, but they are, nevertheless, learned and therefore conditioned respondents.

Conditioned respondent behavior will be of particular interest to you in your clinical work. It differs from unconditioned respondent behavior in that it is much more malleable. If a person were to interact in a variety of ways with a conditioned stimulus without the unconditioned stimulus, the strong antecedent stimulus control would be reduced over time. For example, if a tone were reliably followed by a shock, the tone would begin to produce a stereotypical startle response. If the tone were presented many times without the shock, the startle response would diminish. The narrow patterning of behavior will be extinguished, leaving the stream of behavior more sensitive to other aspects of context.

[B] *Responding Under Both Antecedent and Consequential Control*

Some responding is sensitive to both antecedents and consequences. For example, if you bring the phone to your ear and get to converse with someone you enjoy, you will be more likely to pick up the phone again because doing so previously has resulted in an enjoyable conversation. You do not, however, walk around with the phone held to your ear all day. You wait for it to ring. The ring signals the availability of the enjoyable conversation, which makes putting the phone to your ear more likely when the ring occurs. Holding the phone to your ear is sensitive both to the antecedent ringing and to the consequential enjoyable conversation. The absence of either the antecedent or consequential conditions is related to decreases in probability of the response. Remember, as we discussed above, this sort of behavior typically has more flexibility and more sensitivity to other conditions (you are busy, a movie is playing on TV, and so forth). We call this sort behavior that is sensitive to both antecedents and consequences *operant behavior*.

[A] **Aversives, Appetitives, and Abundance**

In addition to being distinguished in terms of whether they precede or follow the behavior in question, antecedents and consequences can also be distinguished in terms of their effects on behavior. *Appetitive stimuli* are what we call stimuli that an organism will work to produce. *Aversive stimuli* are those that an organism will work to stop, postpone, or attenuate. There are some critical differences between behavior under aversive control and behavior under appetitive control. Understanding these differences can make you a better clinician.

Patterns of behavior under strong aversive control tend to be relatively narrow, relatively inflexible, and relatively insensitive to consequences—with the exception of consequences that discontinue, reduce, or postpone the aversive. If I shot a gun off in the room while you were watching television, notice what would happen. First, you would probably show a very strong startle response. That startle response is a good example of strong antecedent stimulus control. Second, you would stop doing just about everything else. For example, you might be noticing the smell of dinner cooking, you might be shopping on the Internet on your laptop, you might be sipping a cup of coffee. All of

these responses would stop immediately. Strong aversive stimuli have an overall suppressing effect on the patterning of behavior. One exception to this suppression is escape. In the presence of strong aversive stimuli, learned or unlearned, behavioral patterns become relatively narrow, relatively inflexible, and relatively insensitive to various aspects of context, except those aspects of context that are related to the aversive itself and to escape.

So in the gunshot example, you might have shown considerable flexibility in your patterning of behavior before the shot as your attention moved from the television to your laptop to smells emanating from the kitchen, and on. After the shot, all of those things would disappear psychologically. The only things that would be psychologically present would be the gunshot and the exit. An interesting program, a really great bargain online, or the smell of the roast chicken being pulled from the oven would have little influence over your behavior. All of your attention would be focused on whichever exit was closest to you and furthest from the gun-wielding maniac.

Just because aversive control tends to result in narrow behavioral repertoires doesn't necessarily mean that *all* appetitive control results in broad, flexible ones. In fact when deprivation is particularly high, as with starvation, or where even minor deprivation is experienced as very aversive, such as with drug dependence—it often results in the same narrowness of repertoire we find with aversive control. The greatest breadth of behavioral repertoires tends to occur when behavior is under the appetitive control of many sources of stimulation that the organism will work to produce—ample food and security, engaging environment, and so forth. Note, however, that abundance of reinforcement is not defined independently of the behaving individual. Abundance is a psychological factor, not one that can be defined by a physicist. A rich social environment might seem to be a source of abundant reinforcement. Even when people live among many others, they sometimes experience themselves as being cutoff, isolated, and alone.

[A] Responding Under Multiple Sources of Control

The distinction between responses mostly sensitive to antecedents and those sensitive to both antecedents and consequences is purely functional. We don't intend to imply that these types of behavior actually exist as separate entities. You are one organism. You have but one stream of behavior, and there is a constant, evolving, dynamic interaction between your pattern of responding and the context within which it is embedded. Your behavior could, at any given moment be sensibly described as being under multiple sources of stimulus control. If we looked carefully, we would likely find that all of your responses are under multiple sources of control, influenced at least partially by both antecedents and consequences. It is the ebb and flow of patterns of responding and patterns of stimulus control that interests us.

I make these distinctions between different kinds of stimulus control because different behaviors that your clients exhibit will show sensitivities and insensitivities, just like the ones I've described. If your client's behavior is under strong antecedent stimulus control, and you warn her about consequences or point out past consequences of engaging in that behavior, it's not likely to have much effect. Behavior under strong antecedent aversive control is like that, along with behavior under appetitive control where deprivation is high. By definition, those patterns are not sensitive to consequences (except possibly escape).

Also, it is not the form of these behaviors that distinguishes them, but rather their functional relationships with the different aspects of context. A particular behavior could look the same on the outside, but could be, in some conditions, under antecedent control and in other conditions, sensitive to both antecedents and consequences. For example, you might stub your toe walking down a bumpy sidewalk and begin to cry because of the pain. You may also get pulled over by a policeman and begin to cry because, in the past, you've escaped a ticket by crying. Crying outside of its context cannot be distinguished as either under antecedent or consequential control. With context, however, the distinction can be made. In the first situation, crying is under antecedent control, and in the second, it is under consequential control. At other times still, the same behavior may be under both sources of control. It's less important to determine if a behavior is an example of respondent or operant control and more important to discern degrees of control and sensitivity. Likewise you cannot determine the meaning of client behaviors without looking to the context in which those behaviors are exhibited.

[A]A Clinical Lifeline: Putting It All Together

Most psychopathology shares some restriction in range of behavior. Those with alcoholism may drink and drink; people with obsessive-compulsive disorder may wash and wash; folks suffering from major depression may stay in bed all day. The problem with alcoholism is not drinking per se, it's *having* to drink. It's *having* to hand wash rather than hand-washing itself that is the problem with obsessive-compulsive disorder. And that people with depression stay in bed all day with the covers pulled over their heads is really a matter of little consequence in and of itself. Staying in bed all day is delightful. I recommend it. Sometimes on vacation, I will get a nice fat novel and spend a day where I get up only to eat and go to the bathroom. Ah!

No, once again, the problem is not the staying in bed. The problem is the *having* to stay in bed. The problem is the dread that overcomes the person as he pulls the blankets off, drapes his legs over the side of the bed, and lets his feet touch the floor. To just roll back into bed would give such relief, with perhaps a promise to get up later. And in that moment, the act of surrendering to depression buys a little peace.

Even with difficulties typified by erratic behavior, like the dramatic cluster personality disorders, the thing that causes problems is that these individuals are systematically erratic. Try to get a client suffering in these ways to slow down a bit! Marsha Linehan, the founder of dialectical behavior therapy (DBT), has spent her career developing technologies that facilitate that process among just such clients. Setting aside the categories of problem behavior, there is a stereotypy (repeated pattern) that cuts across categories. It may have many different forms, but the narrowness of the pattern is suggestive of behavior under strong antecedent aversive control.

Take the example of a snake phobia. The defining features of a snake phobia are arousal and avoidance in the presence of snakes. A typical conceptualization of an exposure-based treatment is that the phobic individual begins to interact with snakes in a variety of different ways, the probability of arousal and avoidance decreases.

This process can also be construed more broadly, considering the range of responses that might be in the person's repertoire. People can feed snakes, pet them, talk about them, study them, read about them, watch them, and so on. With this in mind, snake phobia can be defined not merely by the presence of arousal and avoidance but also by the narrowness and inflexibility of the range of behaviors in which the individual

engages. Likewise the effects of exposure would not merely involve a decrease in arousal and avoidance but also an increase in the probability of alternative responses.

With our clients, however, it's not typically events that are intrinsically aversive, that are creating this narrowness and inflexibility. Rather it's aspects of context—like painful thoughts, feelings, memories, or physical sensations—that are experienced inside the skin. A client may, for example, be interpersonally engaging and facile during sessions until the memory of an abuse experience shows up. Suddenly that individual begins to exhibit affective, verbal, physical, and attentional inflexibility, just as if she had suffered an electric shock or other external aversive.

Some ACT interventions, such as values work, are about consequences. Specifically they are about reinforcers. However, if the pattern of behavior we see is under strong antecedent aversive control talking about values (that is, reinforcers) will have little effect. In fact, if the person notices how his own behavior is precipitating costs in some valued domain, that too will be experienced as aversive and narrow behavior even more so.

If you can encourage this individual to sit quietly in the present moment and to experience difficult emotion with acceptance and openness, then the strong antecedent stimulus control will lessen. As it does, you'll see the gradual emergence of flexibility in affect, speech pattern, physical posture, and other ways. Now, if you begin to gently ask questions about valued living, those questions are much more likely to be received in a more flexible and open way.

Being sensitive to the stimulus control being exerted can help to direct your interventions so that they are responsive to the stream of behavior occurring in that moment. You'll need to cultivate a sensitivity that stands in stark contrast to the rote execution of a series of interventions. Changing behavior under antecedent control requires different interventions than changing behavior that is under consequential control. Those sources of stimulus control will come and go many times over the course of a single session. Attention to both types of behavior is necessary to help free up your clients to cultivate and pursue their values.

[A] Stimulus Control and the Clinician

Having sufficient sensitivity to detect subtle shift in stimulus control can sound daunting. As is true elsewhere in the ACT model, the principles that apply to clients apply equally to clinicians. In fact, if you can learn to detect the coming and going of aversive control inside your own skin, you'll be better able to detect and treat your clients with sensitivity. In fact, your own reactions are the most sensitive instrument you have in that room. Think about the last client you had who told you that she wanted to kill herself. What happened to your repertoire when those words came out of her mouth? Close your eyes for a moment right now, and notice what happens as you think about them. Can you feel your chest tighten just a bit? Can you feel yourself wanting to move to the next section? That's what aversive control feels like. The time when your behavior will most likely come under aversive control is when your client's behavior is under aversive control. It is a painful fact, but your own experience is a sensitive instrument in making the discriminations I'm talking about. Generally, awareness of changes in stimulus control is a clinical asset, and mindful awareness is a means of becoming more sensitive to these changes in control.

So don't forget everything you've just learned about stimulus control. It matters! In the next chapter, we'll look more specifically at ACT processes and see how these fit with this more basic technical analysis of behavior.