

Escape

FUNDAMENTALS

*Example of Escape
Behavioral Medicine*
**DR. YEALLAND'S CHAMBER
OF HORRORS¹**

During World War I, Ed B. fought with the U.S. Army in France. In one battle several of his friends were killed. When he was finally rescued, Ed said his right leg felt weak. Within an hour, he couldn't move his leg at all; he broke out in a sweat each time he tried. His leg had become rigid and sometimes trembled.

In the spring of 1917, Ed came on crutches to see Dr. Yealland. Yealland listened thoughtfully to Ed's story as he examined Ed's leg. Then Yealland did a strange thing. He walked to the door of his office, the only exit from the room, and locked it securely. Turning to Ed he said, "Ed, I don't know the exact cause of your paralysis but apparently the tissue is OK. It is a subtle problem of the muscles and the nerves, but one I can treat. We will stay in this room until I have cured you."

With that, Yealland walked across the room to a metal cabinet where he carefully opened several drawers. Various pieces of apparatus lay within. An electric generator was alongside. Before reaching into the drawer, he hesitated and turned to Ed.

"I can see," he said, "that your muscles have become antagonistic. By the proper stimulation, we can alleviate this condition. I'm going to apply a faradic stimulator to your leg."

He withdrew a roller-like object and, turning on a switch, applied it to Ed's paralyzed leg. Ed's muscles jerked as electric current passed throughout his leg. Yealland withdrew the roller and applied it again. After several such applications, Yealland said, "The muscles seem joined in their antagonism; therefore, I must increase the intensity of the faradic stimulation."

With some ceremony he turned up the dial and again stimulated Ed's leg. Soon he saw a slight movement in the leg. He immediately jerked the roller away.

"Ah-ha," he said, "movement." He increased the intensity and applied the roller again. This time the movement was greater. Again he promptly withdrew the roller.

"Ah-ha," he said again, as he further increased the intensity of the electricity.

After 10 minutes of this procedure, Ed said he could move his leg without any more stimulation. Yealland quickly removed Ed's crutches and asked him to place weight on the leg. Ed did so, cautiously at first, with little trouble.

Yealland looked at Ed and smiled, "This condition should bother you no longer. Of course, if it does come back, I'm always here. I am always ready to give you further treatment. If, on the other hand, the cure remains intact, I'm sure you will be happy to leave the hospital and resume your life as a civilian."

As he prepared to leave the office, Ed grabbed the doctor's hand, and shaking it with enthusiasm, thanked him for his help. Taking one last look at his crutches lying in the corner, he strode boldly out the door and returned to his ward. A week later he left the hospital and went back to his farm in Iowa.

Yealland had used this intervention with dozens of veterans suffering from the same sort of problems. In all but a few cases he had complete success. In his few failures, other doctors later found previously undetected tissue damage that caused some of the problems.

ANALYSIS IN TERMS OF THE ESCAPE CONTINGENCY

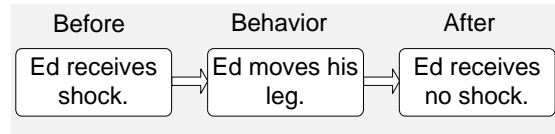
In the past, people used "shell shock" to refer to these common problems among veterans. Shell shock didn't always mean shock from exploding shells. Often it referred to a process that took place as time and experience in combat lengthened. Physicians used the label "shell shock," for example, when combat soldiers suffered blindness, deafness, or paralysis without any trace of physical damage. The problem was behavioral, not physical, but it caused great suffering nonetheless.

Yealland developed a complex theory to explain the shell-shock phenomenon. But we won't focus on his theory, because it makes no sense at all to modern medicine. However, this does not detract from Yealland's great success with his clients. Without his treatment, many veterans would have spent their days in military hos-

¹This section is based on Yealland, L. R. (1918). *Hysterical disorders of warfare*. London: Macmillan.

pitals, confined to wheelchairs or in cheerless and somber seclusion.

Yealand's procedure didn't involve basic principles of medicine; instead, it involved a basic principle of behavior—*reinforcement by the removal of an aversive condition*. The removal of the electric stimulation (aversive condition) reinforced Ed's leg movement.



Put another way, the removal or reduction of an aversive condition, contingent on a response, reinforces that response; as a result, the rate of that response class increases. An *escape response* is one that removes or reduces an aversive condition. So the movement of Ed's paralyzed leg was an escape response that removed the aversive electric stimulation.

At first, you might think of escape behavior only as behavior involving your leaving the place of aversive stimulation. For example, you escape from the heat by moving out of the bright sun and into the cool shade. But as you think about it, you'll realize that escape behavior also can involve the removal of the aversive condition from the place where you are. For example, you escape the heat in your house by opening a couple of windows and letting a refreshing breeze blow through; you may not have to escape from your house.

QUESTIONS

1. *Escape response* (behavior)—give an example.
2. Give an example of the use of reinforcement by the removal of an aversive condition. Specify the aversive condition and the escape behavior.

Concept AVERSIVE CONDITION

In Chapter 1, we defined *reinforcer* as any stimulus, event, or condition immediately following a response that increases the frequency of the response. Now, check out this parallel definition of **aversive condition**.

DConcept

Aversive condition (negative reinforcer)

- Any stimulus, event, or condition
- whose **termination** immediately following a response
- **increases** the frequency of that response.

The only difference between the two conditions is that we're talking about the *stimulus, event, or condition terminating*.

Concerning the *stimulus, event, or condition*, we will use those three terms somewhat interchangeably, depending on the context. The traditional *stimulus* sometimes seems limiting and strained.

For example, making a fool of yourself in public would be an aversive condition, but it seems awkward to call making a fool of yourself an aversive stimulus.

Note that one way you can minimize contact with an aversive condition is to make responses that have escaped that aversive condition in the past. (By the way, this is not the official definition of aversive condition—just a characteristic.)

Life is full of conditions that are harmful for us (they will damage our body's cells). Fortunately, most animals, including the human animal, have evolved so that many of those biologically harmful conditions are also psychologically aversive. For example, we tend to minimize immediate contact with high and low temperatures, loud sound (unless we call it rock and roll), bright lights, painful stimuli that can cut or bruise us, and spoiled food that has an aversive odor. It's only because of much social pressure that we overcome the aversive taste of other harmful substances and manage to become addicted to them, such as alcohol, nicotine, and coffee. Yealand's electric shock is just one more potentially harmful stimulus that, fortunately, is also aversive.

Unfortunately, not all harmful stimuli or conditions are aversive. For example, many of us fail to minimize, or at least moderate, contact with salt, processed sugar, and fat—all substances that can harm our bodies when consumed in typical American quantities. And once we become addicted, alcohol, nicotine, and caffeine lose their aversive properties. The gum- and tooth-destroying plaque that accumulates on our teeth often fails to be aversive—we don't minimize contact, contact of the most intimate sort, with it. And the thrilling stimuli resulting from driving a car faster than we should are often not as aversive as they should be. We human beings have changed our world faster than we can biologically adapt to it. We can no longer depend on our animal nature to steer us away from harmful substances.

And, unfortunately, some conditions, stimuli, and events that are good for us are aversive. I remember, with embarrassment, the time a physician had to waste 5 minutes running around his office, chasing a screaming 8-year-old Dick Malott with his pants down around his knees, so the good doctor could stick a shot of penicillin in the timid lad's rear end. Dick was doing his best to minimize contact with that hypodermic needle.

QUESTIONS

1. *Aversive condition*—define it and give an example of how you could use an aversive stimulus to modify behavior.
2. Give an example of
 - an aversive condition harmful to you
 - a harmful condition that is not aversive
 - an aversive condition that is not harmful

AVERSIVE VS. ADVERSIVE

DConcept**Escape contingency**

- the immediate,
- response-contingent
- removal of³
- an aversive condition
- resulting in an **increased** frequency of that response.

By the way, notice the term we're using is *aversive*, not *adversive*. *Adversive* is not a word²; and *aversive* is a word only because psychologists coined the term. *Aversive* is a cousin of *aversion*, which means "intense dislike." Ed has an *aversion* for Dr. Yealland's electric shock. He dislikes the shock. He finds the shock *aversive*.

But *dislike* is not a reliable criterion. For example, people may claim to dislike seeing swimmers chased by sharks and then pay \$5 to see the movie *Jaws*. So, to be safe and to get more reliable results, behavior analysts don't use the commonsense *dislike* as their criterion for whether a condition is aversive. Instead, they use our formal definition: They ask if a condition will increase the future likelihood of a response if the condition is terminated immediately after the response. Put more simply, we say a condition is aversive if its termination reinforces an escape response. By that criterion, Dr. Yealland's electric shock was aversive.

Along the same lines, suppose something makes you feel bad or sad. Is that something or that feeling an aversive condition? Maybe, perhaps often—but not always. Again, many people plopped down many dollars to see *Titanic* so they could cry their eyes out. And again, the only way we can be sure is to go back to our formal definition and ask: Does termination of this particular sad feeling reinforce the response that terminates it? If not, then we don't have an aversive condition, no matter how much we cry.

QUESTION

1. You should be so hyped up about how dumb it is to use "adversive", that you'd spot it immediately on a written quiz and get full credit for correcting it. And, of course your sly but caring professor might occasionally slip an "adversive" into her lecture, just to give you an opportunity to correct it. When that happens, feel free to blurt out, *I heard the really dumb thing you said!* She will probably be so impressed she'll offer you a full-ride assistantship on the spot.

Concept ESCAPE CONTINGENCY

We've been discussing *aversive condition*, a fundamental concept of behavior analysis. Now let's formally introduce a principle that relates the aversive condition to behavior. **The escape principle:**A

²*Adversive* is not a word, however, *adverse* is a word. It is an adjective meaning acting against or in a contrary position. But in any case, *aversive* is the word we want here, not *adversive* and not *adverse*.

response becomes more likely if it has immediately removed or reduced an aversive condition in the past.

This is a form of reinforcement—reinforcement by the removal of an aversive condition (negative reinforcement). And the procedure involved is an **escape contingency**.

And remember:

RESPONSE = BEHAVIOR

So Dr. Yealland's procedure is an escape contingency; Yealland turned off the electric shock contingent on each leg movement. And, sure enough, the principle worked—Ed's leg movements became more likely.

Here's the strongest example of an escape contingency I've ever personally experienced.: Years ago, in my decadent days of cigarette smoking, I was driving with a friend through late-night, rural Ohio. I pulled out a pack of cigarettes, stuck one in my mouth, pulled out a pack of matches, struck one, and yeeooww! A spark from the match hit the cornea of my left eye! The most pain I've ever experienced.

We sped through the Ohio night in desperate search of a town large enough to have a physician. I was crying because of the pain and because of the certainty that I would lose my left eye. Finally, we found a hospital and rushed into the emergency ward. The physician on duty laid me down on the examination table, put a drop of dutyn sulfate in my eye, and immediately the pain disappeared and my eye was perfect. I thought that physician, with his magic drops, was God. You can bet your bottom dollar that if I ever get a spark in my eye again, I'm going to rush to Ohio in search of that physician and his magic drops. Talk about reinforcement by the removal of an aversive condition!

Yealland's shock removal reinforced leg movements. The pain removal by the physician in Ohio reinforced lying on the examining table and gamely trying to hold open my left eye. Reducing an itch reinforces scratching. Reducing bladder pressure reinforces getting up in the morning and going to the bathroom. Escape from the drip, drip, drip reinforces blowing your nose. The contingent

³Instead of saying *removal of an aversive condition*, we would be more precise to say *removal or reduction of an aversive condition*. For example, suppose the temperature is 90° and you turn on your funky air conditioner that reduces the temperature only to 80°. Well, the reduction of that aversive condition from 90° to 80° reinforced your turning on your air conditioner, even though you were not able to completely remove the aversive heat. So, *you're suffering a 90° temperature* ⇨ *you turn on your air conditioner* ⇨ *you're suffering only an 80° temperature*. That's an escape contingency based on the reduction, not the removal of an aversive condition. As with our definition of *reinforcement contingency*, just to keep your life simpler we won't put *reduce* in the formal definition, but you should understand that we're always implying it. Also, we could attach similar footnotes to the remaining six contingencies we present in later chapters; however, just to keep your life simpler, we won't, but you should understand that we're implying them.

removal of various aversive conditions reinforces many of our crucial everyday actions.

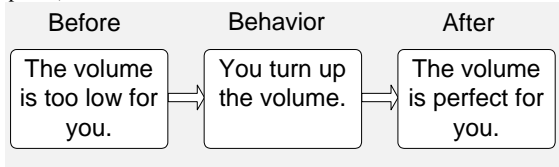
QUESTIONS

1. *Escape contingency*—define it and diagram an example.
2. To escape—use it in a sentence in a technical sense.

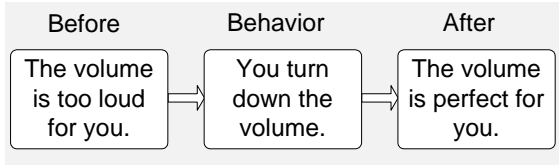
Compare and Contrast REINFORCEMENT BY THE PRESENTATION OF A REINFORCER VS. REINFORCEMENT BY THE REMOVAL OF AN AVERSIVE CONDITION

The two types of reinforcement produce the same results—an increased response rate. But one procedure increases the response rate by the contingent presentation of a reinforcer and the other by the contingent removal of an aversive condition.

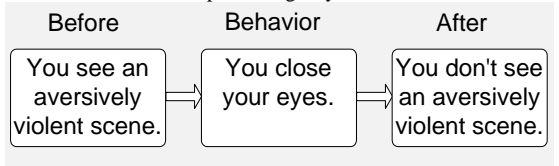
Suppose the radio is playing your favorite song. But the volume is so low that you can hardly hear it. You turn up the volume. The louder sound (reinforcer) reinforces turning up the volume (response).



But now suppose your sister's stereo is almost blasting you out of the house. Then you turn down the volume. Here the reduction of the sound (removal of an aversive condition, relief) reinforces your turning the volume down (escape response). Each response would be more likely to occur the next time the proper occasion arose.



Suppose, you're watching *Halloween XII*, and a scene comes on the screen that is too violent. You close your eyes. No longer viewing the aversive event (removal of an aversive condition, relief) reinforces closing your eyes (response). Again, in similar circumstances, you will be more likely to close your eyes in the future. So this is an escape contingency.



You're sitting at your desk completely engrossed in *Principles of Behavior*. You haven't eaten for a few hours. You are sharing your desk with a huge bowl of popcorn. After a few minutes, you notice all the popcorn has disappeared. But there's no one else in your room. Our guess is that the taste of the popcorn in your mouth reinforced your responses of taking an occasional bite of that nutritious food, though you may have been largely unaware that you were making those responses. Reinforcement by the presentation of a reinforcer.⁴

The following contingency table summarizes all this. Here's how you read this particular one: First, read one of the cells (boxes) from the white row across the top, then a cell from the white column along the left, and finally, the matching gray cell in the center. So you might select *Present* and *Reinforcer*. The corresponding gray cell in the center is "Reinforcement." This means: *If you present a reinforcer, you call the contingency reinforcement, and the frequency of the behavior increases (\hat{U}).* Or if you *remove an aversive condition, you call the contingency escape* and the frequency of the behavior also increases. And, instead, you can go from the inside to the outside of the table: If you want to increase the behavior (\hat{U}), you can use either a reinforcement contingency, with which you present a reinforcer, or an escape contingency, with which you remove an aversive condition.

⁴What about our classic example—Rudolph presses the lever and gets a drop of water. Reinforcement by the presentation of the water reinforcer, or escape from aversive thirst, from aversive dehydration? Traditionally, we behavior analysts have considered this as an example of reinforcement by the presentation of the water reinforcer, because the water is the thing we directly deal with, not the thirst. But students typically think of the thirsty guy crawling across the parched desert, crying water, clearly suffering, clearly the place for an escape contingency. So that's a gray area.

Response Frequency Increases ↑	Reinforcement contingency Reinforcement by stimulus addition Positive Reinforcement (S^{+R})	Escape contingency Reinforcement by stimulus subtraction Negative Reinforcement (S^{-R})	Contingency Table (preliminary #1)	
			Present	Remove
			Reinforcement ↑	Go to Chapter 5
			Go to Chapter 4	Escape ↑

Here's another form of essentially this same table some professors prefer. You can read it this way: If you present a stimulus (a cell from the white row across the top) and the response frequency increases (a cell from the white column along the left), then you've got a reinforcement contingency (corresponding inside gray cell), which you can call reinforcement by stimulus addition or, more commonly, positive reinforcement (S^{+R}).

Similarly, if you remove a stimulus (a cell from the white row across the top), and the response frequency increases (a cell from the white column along the left), then you've got an escape contingency (corresponding gray cell), which you can call *reinforcement by stimulus subtraction* or, more commonly, *negative*

Contingency Table (preliminary #1)

reinforcement (S^{-R}).⁵

	Present Stimulus, Event or Condition	Remove Stimulus, Event or Condition
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TREE DIAGRAM OF THE TWO BASIC REINFORCEMENT CONTINGENCIES

⁵My students strongly prefer the first version of this table, the simpler version. Me too. But if they ever plan to leave my protective custody and mingle with other professors, they might do well to get familiar with the second table also.

The tree diagram is saying that we use *reinforcement contingency* in two ways:

- the specific way, where we refer to the contingency involving the presentation of reinforcers, and
- the general way, where we refer to any contingency that reinforces behavior (increases the rate of behavior), and that includes both reinforcement and escape

Review question:

Are behavior analysts concerned with *aversive* stimuli or *adversive* stimuli?

Our answer:

The correct technical adjective is *aversive*, not *adversive*. Impress your instructor by never saying "adversive".

QUESTIONS

1. Compare and contrast reinforcement by the presentation of a reinforcer vs. reinforcement by the removal of an aversive condition. Illustrate your points with an example.
2. Draw the contingency table (preliminary #1) and explain it.
3. Draw the tree diagram of the two basic reinforcement contingencies.

Warning: Whenever you see a table in the text, there's a good chance you'll see a blank table in the quiz and you'll be expected to fill it in. But that's not all: the blank table might be rearranged, so you have to really understand it; rote memorization won't cut it.

Example of Escape Behavioral Clinical

THE GOIL WITH THE DOITY MOUTH⁶

The beauty of Grace's thin, 19-year-old face was enhanced by the contrast between the pale skin she had inherited from her German-Swiss father and the dark eyes and hair she had inherited from her Mexican mother. Her mother's family was dining with them, and they all chatted and laughed gaily, chili peppers spicing

⁶Based on Goldiamond, I. (1984). Training parent trainers and ethicists in nonlinear analysis of behavior. In R. Dangel & R. Polster. *Parent training foundations of research and practice*. New York: Guilford Press.

the food and recorded, high-intensity mariachi trumpets spicing the talk and laughter. Everyone was having a great time. Everyone but Grace. She could feel it coming.

Grace stood abruptly. Her body became rigid. The talk and laughter stopped. Silence, except for the mariachi band. Now the whole family could feel it coming.

Grace's clenched fists flew to her collar bones. The fists stayed there, rigid, vibrating back and forth. Her face grimaced. Her lips twisted to the left. From her mouth came the sound "f-f-f" merging into "uck."⁷

Grace's body relaxed. She sat back down. No one said anything. No one ate. Then her father said, "That's all right, Grace. You can't help it."

Grace stood again. This time more slowly. "I hope you'll excuse me. I don't feel too well." She went to her room, lay down on her bed, and cried. Now the house was as silent as a death watch. No mariachi trumpets, no talk, no laughter—just Grace's quiet weeping.

The reason for Grace's tears was not that she had ruined the family dinner. This had happened often. The family could cope. She thought she already heard the sound of forks discretely clicking against the dinner plates, as the family began, again, to eat the enchiladas and refried beans.

Grace cried because she knew she would ruin her wedding ceremony. She knew she would break out in a full-blown display of the Gilles de la Tourette syndrome, right in the middle of the wedding ceremony, as she had at dinner. The wedding ceremony was just the kind of stressful occasion that caused the display. Then that awful word would come out of her mouth. And that would be the last she would ever see of Greg—the man she loved more than anything else in her life—the only good thing that had ever happened to her.

Grace cried, but she didn't give up. She never gave up. She had always had to work extra for what her friends took for granted. Nothing had ever been easy for Grace. Not from the day she was born. She had been a "blue baby," with a defective mitral valve, the valve that controls the flow of blood from the auricle to the ventricle chambers of her heart. In parochial school the Sisters treated her as much like a normal child as they could. But her mother had to come to the playground at every recess to make sure she did not overexert herself or to take care of any emergency that might arise.

At the age of 11, Grace had successful heart surgery, but the physicians told her she should never exert herself. She largely ignored their advice, doing the best she could to live a normal life. Her classmates accepted her spasms as something beyond her control

and just gave her the nickname of "the goil with the doity mouth." At the age of 17, she had gone to the famous medical school at Johns Hopkins University for further diagnosis and treatment. But nothing had changed. Nothing, except one thing. She had met Greg on the flight back from the hospital to her home.

Now Grace was 19. Her lips and nails were bluish, because of poor blood circulation. And her phalanges, the bones in her fingers and toes, were slightly enlarged and bulb like. She was going to college. She and Greg planned to get married. And she would do anything to prevent her Gilles de la Tourette syndrome from spoiling that. She would even go back to the university hospital.

INTERVENTION

Fortunately for Grace, on her return to the hospital, psychiatric services assigned her to Dr. Israel Goldiamond. He worked on her case with Dr. Sheldon Glass, who was doing his psychiatric residency in that hospital. They designed a behavior-analytic intervention.

"Doctor," Grace asked, "does my problem have anything to do with a death wish?"

"What makes you ask that?" Could there be something to this death-wish nonsense, so popular with traditional psychoanalysts?

"Every time I say something like 'this will be the death of me,' all the doctors look at each other significantly, and make notes in their notebooks."

The behavior analyst smiled. "I wouldn't worry too much about that one, Grace. Instead, why don't you tell me more about what happens before you display the syndrome and what happens afterward."

"Well, I have my attacks when things get too stressful. Like when the Mexican side of our family comes to visit. They're so much more noisy than the Swiss side of my family."

"Grace, you sound almost racist. Don't you like Mexicans?"

"I don't mean to be racist. And I love my family. It just . . . Oh, I don't know . . ."

"OK, let me see if I understand. Your reactions may result from living in a racist environment, where Mexican-Americans are discriminated against. And that may make you too sensitive to racial and cultural stereotypes. In any event, you're having trouble coping. So, at least to you, your mother's family seems noisy. And at the least, you find that aversive. And. . ."

"Yes, it's horrible. It upsets me so much that I have an attack and start twitching, and you know."

"And then what happens?"

"I guess everyone gets quiet, and I leave the room."

"Why don't you just ask them to be a little less noisy?"

"I do, but they don't listen to me."

⁷We apologize for this profanity, but this is true to the actual case study, and we thought it was important for you to understand the seriousness of this problem.

“OK, why don’t you try this. Tell them your doctors have said noise and excitement will harm your condition, and then say you sure would appreciate it if they would be a little more quiet.”

“They’ll never listen to me.”

“But didn’t you say the other day that the Mexican side of your family is especially fond of children? And didn’t you say they’re generally concerned about other people?”

“Well, . . . yes.”

“So?”

“Sooooo, maybe you’re right. Maybe they would quiet down if they understood that it was important for my health. Of course they would. I know they would. You’re right. I’ll do that. I’ll explain it to them.”

“Great. And at our next meeting, we’ll discuss ways you can reduce the stress in other situations.”

The behavior analysts also spent two sessions helping Grace acquire a more mild form of her tic, so that when it did occur, it would be much less disruptive. The results? Grace married right on schedule. No problems. No syndrome. No embarrassing swear words disrupting the sacred ceremony. And like 50% of the normal American couples who get married, a few years later Grace and Greg divorced, right on schedule. Only rarely did the Tourette syndrome recur, and then in a much milder form. Fifteen years after the behavioral intervention, Grace was holding down a regular job as an administrative assistant.

Analysis

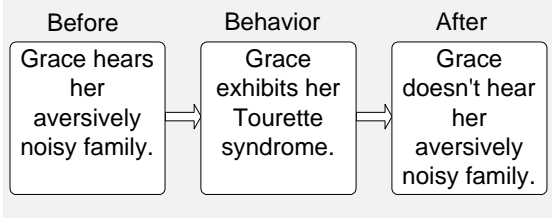
UNDESIRABLE BEHAVIOR MAINTAINED BY REINFORCEMENT BY THE REMOVAL OF AVERSIVE CONDITIONS

SID’S SEMINAR

Sue: Is that it? Is that all Goldiamond and Glass did to help Grace?

Sid: That’s it. That’s all they needed to do. And now, because I’m the teacher, I get to ask a few questions, too. First, how does Grace’s problem relate to the topic of this section—reinforcement by the removal of aversive conditions?

Tom: I know the answer you want, but I doubt if it’s true. You think Grace is having her attacks so she can escape from aversive situations, like the relatives she thought were too noisy. That seems far-fetched to me.



Joe: Doubting Thomas, I wouldn’t put it like that. When you say, “So she can escape,” it sounds like she’s doing it on purpose. I doubt if she meant to exhibit the Gilles de la Tourette syndrome. **I doubt if she was even aware of the contingency between those episodes and her escape from the aversive condition.** It’s like the reinforcement contingency snuck up and grabbed her, without her even knowing it. And before long she was having these attacks and couldn’t do anything about it. And it was all because those attacks took her out of the aversive condition. Escape responses without awareness.

Tom: Well, then, if her attacks were so helpful for her, why did she want to get rid of them?

Joe: First, she wasn’t aware of how helpful they were. And even if she had been, the price was too high. So a big part of the behavioral intervention was helping her acquire more appropriate escape responses—responses that wouldn’t disrupt her life so much, that wouldn’t humiliate her so much.

Tom: So you’re saying the attacks occurred because relief from an aversive situation reinforced them. Then why was she so concerned about having an attack in the middle of her wedding ceremony? That doesn’t make sense to me. She wanted to get married.

Sue: Let me answer that one. I’m a married woman. And I went through a big wedding ceremony. And it was the most frightening thing I ever did. It was really aversive. But I wanted to get married, and I also wanted the big ceremony. But when I was in the middle of it, I was shaking so badly I could hardly walk down the aisle. *Aversive* is the word all right. It’s . . .

Joe: Yes, what’s going on here is . . .

Sue: Now, Joe, let me finish. If Grace were deciding rationally, she would decide to put up with the aversiveness of the ceremony to marry Greg. But she’s not deciding rationally. She’s not even deciding irrationally. She’s not deciding. The escape contingency just gets hold of her behavior and produces the attack. So the immediate reinforcement of escape from an aversive condition might win out over the long-range reinforcer of a marriage with Greg.

Sid: Let me summarize your behavior analysis like this:

Immediate escape from an aversive condition (family commotion) reinforced an inappropriate response (attacks).

This unfortunate reinforcement could occur without the person’s being aware of the contingencies of reinforcement.

This reinforcement might maintain that escape response (attacks), though that response would have undesirable long-range outcomes (a less reinforcing and more humiliating life).

And this reinforcement might maintain that escape response, though the person is aware of those undesirable long-range outcomes.

Excellent analyses. Excellent class discussion. One point for Sue, 1 for Joe, and 1 for Tom.

Tom: Why me? I didn't agree with the party line.

Sid: No, but you knew what the party line was, and you presented a thoughtful, well-reasoned critique. I want to reinforce careful analysis, no matter what you conclude.

Tom: Then, Mr. Fields, you probably should present your points immediately after the analysis rather than at the end of the seminar. Or, you should say you want to give reinforcers for careful analyses and omit the misuse of *to reinforce* for the delayed delivery of reinforcers.

Sid: OK, then, Tom, let me give you 1 more point because you corrected my use of a technical term. Class dismissed.

QUESTION

1. Give an example of an unacceptable behavior maintained by an escape contingency and show how you might get rid of the bad behavior by substituting a more acceptable alternative escape response.
 - What is the unacceptable behavior?
 - What is the aversive condition?
 - What do you think would be the undesirable outcome of that behavior?
 - What is the acceptable alternative response?
 - What is the role of awareness in all this?

Example of Differential Reinforcement of Alternative Behavior Behavioral Special Education **JIMMY, THE AUTISTIC CHILD⁸—PART I**

Mae Robinson stood up as her secretary showed Herman Lewis into her office. Forty years old, gray temples, a little overweight, a dark blue, pinstriped suit, a beige camel's hair coat, a refined and confident style. Completely out of place in her ramshackle school building.

Yet he seemed at ease.

Once they sat, Herman Lewis wasted little time in social formalities. Instead, he began, "As I said on the telephone, Dr. Robinson, my son, Jimmy, is autistic. He's 6 years old and has the IQ of a 2-and-a-half-year-old. He can't speak in sentences, can't dress himself, and isn't toilet trained. He often has tantrums. Sometimes he pulls his hair out and bangs his ear with his fists. He shows no love or affection. He seems happiest when we just leave him alone to sit all day spinning his toy top. As I understand it, that pretty much defines what an autistic child is.

"We've flown him all over the country to five different specialists and two different residential treatment programs. Nothing works. He just gets worse. And so we've brought him back home. We'd rather have him with us, though he's a burden, especially for my wife. He's a full-time job for her.

"One doctor who belongs to our club, Dr. Taylor, recommended you. He said that if anyone in this town could help, it was you. Dr. Robinson, we'll do anything to help Jimmy. We know he will never be normal. But if his life could be just a little more human, it would be such a relief to us. We'll do anything. And money's no problem. We just want to enroll him in a special program in your school."

Mae sat silently for a few seconds, looking at the man. Then she said, "Mr. Lewis, I'm terribly sorry about the distress you and your wife are experiencing and about the tremendous difficulties your son is having. If I could do anything of value for you, I would. The problem is the intermediate school district is in such bad financial shape that they're closing down our school after this semester. And they're transferring me to a regular elementary school. In the few months left, we couldn't make any lasting progress with your son. And our staff is already working overtime. I'm really sorry."

"Dr. Robinson, I heard from Dr. Taylor about the future of your school, and I expected an answer something like that. But as I said, money is not a problem. Jimmy is our only child."

Lewis continued, "I'm a business man, Dr. Robinson. And I'll make you a business deal. If you take Jimmy on, and if he shows signs of progress this semester, I'll guarantee you that your school will not close down, at least not until the end of the school year. And if by that time Jimmy has made substantial progress, I'll guarantee you that you'll have a permanent school. I have the connections, I have the friends with money, and I have the money myself."

Jimmy Lewis enrolled the next day.

During the following week, Mae saw that Jimmy's problems were at least as bad as his father had said. Mae wanted to get more baseline data on Jimmy's behavior. But there wasn't time, not if she was going to make enough progress with Jimmy in the next few months to be of any value to him. And not if she was going to convince Herman Lewis to do what it would take to keep her school open.

But she was working right at the edge of human knowledge. The only interventions that had helped any autistic child were behavioral interventions. She would have to search through her behavioral journals to get all the knowledge she could to work with Jimmy.

Jimmy sat across a small table from Sue. Sue held up a card divided into four quadrants. Each quadrant contained a different picture. "Jimmy, point to the ball." Nothing.

"Jimmy, look at the card. Now point to the ball." Nothing.

"Jimmy, look at the . . ." Jimmy hit the card with his fist, knocking it out of Sue's hand.

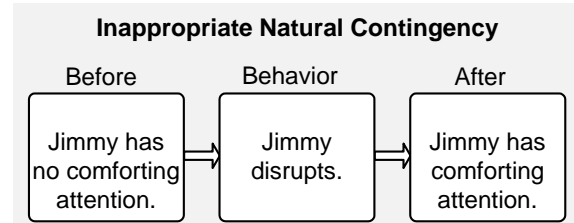
⁸Based on Carr, E. G., & Durand, V. M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis*, 18, 111-126.

Sue picked up the card. “Now, Jimmy, don’t do that. You’re a good boy.” Sue patted him on the shoulder. “Now, Jimmy, point to the ball.” Jimmy tried to hit the card, but Sue pulled it out of his reach. Then he started pounding his fists on the table and screaming.

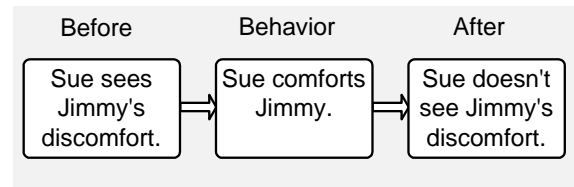
Sue got up from her chair, walked around to Jimmy, and gave him a soothing hug. “Just be calm, Jimmy. Everything will be OK.”

THE LABEL “AUTISTIC”

Children vary greatly in terms of the frequency of adaptive and maladaptive behaviors they exhibit. Some children may exhibit a



high frequency of adaptive behaviors and a low frequency of maladaptive, dysfunctional, inappropriate behaviors. This varies



from child to child so much that some children may exhibit almost no adaptive behaviors and almost all maladaptive, dysfunctional, inappropriate behaviors. Children who exhibit a high frequency of maladaptive behaviors and a low frequency of adaptive behaviors, especially verbal behavior, are often labeled “Autistic.”⁹

Examples of Appropriate Behaviors: eye contact, social interaction with others, and age-appropriate talking.

⁹Many people, including me, are uncomfortable with applying labels to people, such as saying, *Jimmy is autistic*. It would be more accurate to say, *Jimmy has an autistic repertoire*. Recently some people have started using the expressions, *with autism* and *with retardation*. And while I think the desire to stop labeling people is a noble one, I’m afraid such expressions as *with autism* cause even more problems. It suggests that autism is a thing, like a disease, like a cold, that a person has caught. But inferring a causal entity from a person’s behavior is an illogical form of analysis called *reification*. It’s an illogical form of reasoning called *circular reasoning*: Why does Jimmy act strangely? Because he has autism. How do you know he has autism? Because he acts strangely. Why does he act strangely? Because he has . . . And around in the circular argument you go. Better just to say he has *autistic behaviors* and then to look independently for the causes—for example, in the child’s past and present reinforcement and escape contingencies.

Examples of Inappropriate Behaviors: excessive crying, tantruming, aggression, hand-flapping, teeth-grinding, nonsensical talking, and toe walking.

Children whose repertoires are sufficiently dysfunctional for them to be labeled “autistic” rarely show improvement unless they undergo training in an intensive behavior-analysis training program.

INTERVENTION AND ANALYSIS

Mae knew she would need to find the contingencies maintaining Jimmy’s disruptive behavior before she could help him. So she sat quietly in a corner of the room, behind Jimmy, so she could observe all the details of the teaching session without disturbing it. She wore an earphone connected to a small cassette tape recorder fastened to her belt. She held a pencil and a clipboard that contained a ruled form.

The tape recorder beeped in her ear and said, “Interval 15.” Mae recorded on the form that Jimmy pounded and screamed during that interval. Ten seconds later the recorder beeped again and said, “Interval 16.” This time Mae recorded that Sue comforted Jimmy during that 10-second interval. Mae continued observing and recording in 10-second intervals throughout the teaching session. As she continued to observe Jimmy’s disruptive behavior, she began to see the contingencies maintaining that behavior.

Right after the session, Mae and Sue evaluated their intervention. Sue began: “I know what you’re going to say, Dr. Robinson. You’re going to say I reinforced Jimmy’s disruptive behaviors by attending to him and by comforting him. And I suppose you’re right.

But it’s so hard to sit there while the poor little guy feels so bad.”

“It sure is,” Mae replied. “I sympathize with your plight, and I may have some good news. I’ve been reading about an interesting technique—**differential reinforcement of alternative behavior**. It might help us deal with this problem, and we sure have to deal with it right away.”

“We both suspect your approval and affection are reinforcers for Jimmy. Nothing wrong with that; that’s good. What’s wrong is the response that gets that reinforcer. So far, your approval and affection have reinforced his disrupting. As a result, no matter what tasks he works on, Jimmy screams, or pulls his hair, or hits. And we can’t get any teaching done while he’s disrupting.”

“Yes, but what’s differential reinforcement of alternative behavior, Dr. Robinson? I’ve never heard of it.” Sue smiled for the first time since the start of the evaluation session.

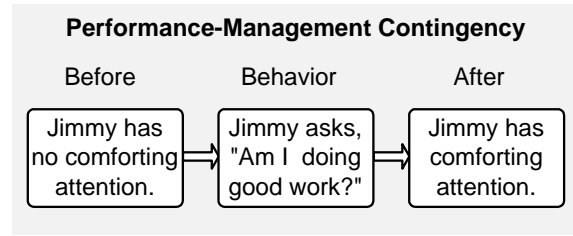
“In the future, you should **differentially reinforce a more appropriate alternative response**. Only when Jimmy makes a more appropriate alternative response will you provide the reinforcers of your approval and affection.”

“What alternative response will I reinforce, Dr. Robinson?”

“*Am I doing good work?*”

"Oh, yes, Dr. Robinson, you're doing great work. I just wanted to know . . ."

"Thank you, Sue; but I want you to teach him that. I want you to teach him to ask, 'Am I doing good work?'" Sue blushed. Mae ignored her embarrassment and went on, "And then, whenever he asks, you tell him if he is doing good work. Also, if he is doing good work, shower him with love."



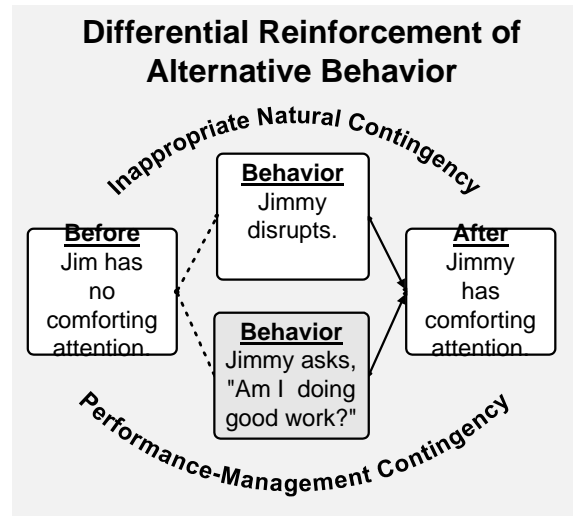
"I still don't understand."

"OK, what will happen when you differentially reinforce the appropriate alternative response, 'Am I doing good work?' Is that you will do two things: You will decrease the frequency of his disrupting, and you will increase the frequency of his asking 'Am I doing good work?' You will replace a horrible class of responses that's preventing your teaching with an undistruptive question."

"Sounds good in theory, but his language skills are so poor that it won't be easy. I'll do my best," Sue said.

"Yes, it won't be easy."

We can best show Sue's new procedure like this:



This is a combination of the two previous diagrams of the contingencies on Jimmy's behavior. This combined diagram makes it clear that the before and after conditions are the same for both the inappropriate natural contingency and the performance-management contingency. The only difference between the two is the appropriateness of the behavior.

RECYCLING

The next time she started training Jimmy, Sue laid out a row of three picture cards, one with the infamous ball, one with a cat, and one with a shoe. (These were the sample cards.) Then she gave Jimmy a stack of similar cards, pointed to the top card on the stack, an identical cat picture, and said, "Match them, Jimmy. Put them on top of the cards that look like them."

After a couple of false starts, Jimmy picked the picture of the cat from the stack and placed it on top of the sample card with the picture of the cat. Then he took the next card from the stack, a picture of the shoe, and placed it on the correct sample card.

Now Sue was wearing the "bug in the ear," the earphone connected to the cassette recorder. It said, "Beep." And Sue asked, "Do you have any questions?" She paused, and then prompted, "Say, 'Am I doing good work?'"

Jimmy stared past Sue for 5 seconds and then said, "Good work," without looking at her.

Sue grinned, nodded her head, tickled Jimmy briefly, and said, "Oh, Jimmy, you're doing great work. You're putting the pictures where they belong."

By the middle of the session, she was asking, "Do you have any questions?" But now she had faded her prompt to such a low whisper that Jimmy could barely hear her say, "Say, 'Am I doing good work?'" And Jimmy was responding quickly and loudly, "Am I doing good work?" Her enthusiastic praise immediately followed.

By the end of the session Jimmy no longer needed any prompt when Sue posed her twice-a-minute query, "Do you have any questions?"

DIFFERENTIAL REINFORCEMENT OF ALTERNATIVE BEHAVIOR

A week later, Sue again came into Mae's office to evaluate her work. "Dr. Robinson, I'm so discouraged," she said. "Working with Jimmy is like riding a roller coaster, with all its ups and downs. In one session, he's great—almost no problems. Then, in the next session, he's back to disrupting."

"How often?" Mae asked.

"About 30% to 40% of the 10-second intervals the staff are recording. I don't know about him, but I'm not sure how much more of this I can take."

"Yes, our slow progress can discourage us," Mae said. "It's often harder to intervene than you would think, from reading a book or a few journal articles. Often you have to recycle and recycle on your procedures until you close all the loopholes."

Comment: Add diagram showing the two contingencies. May need to integrate with new diagram and check next section carefully, because there is the two diagrams separately and then together. Not sure, maybe show the two separate versions here and then only in integrated form in the escape condition a couple sections down.

DMae said, "Take a look at this definition," as she opened the book to a marked page. *Concept*

Differential reinforcement of alternative behavior (DRA)

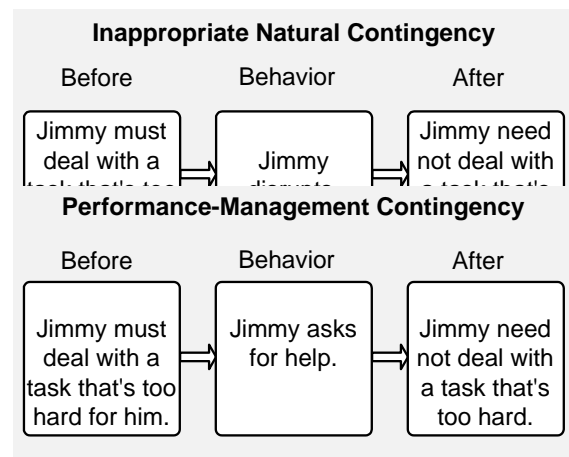
- The replacement of an inappropriate response
- with a specific appropriate response

"I guess so," Sue said, with little enthusiasm.

"Now we need to look at another part of this new alternative response intervention. There's a clear pattern to the way Jimmy disrupts. Before you started giving him an alternative response that would produce the reinforcer of attention, he ruined every session we had. But now he's out of control in only half of them, and they're the same half every day. He never causes problems in the picture-matching sessions. And if you look at the functional analysis data the staff recorded, he always causes problems in the receptive-labeling sessions where he has to point to the picture that matches the word you've spoken."

"Why is that?" Sue asked.

"I think those sessions he's still disrupting are too hard for him."



"Could be," Sue said.

"I think working on those hard tasks is aversive for Jimmy. And what happens when he disrupts? We immediately stop insisting he work on those aversive tasks. Instead, we start trying to cope with his disrupting. We start assuring him and calming him. So, without meaning to, we're reinforcing his disrupting by allowing him to escape briefly from the aversive academic tasks."

"But I don't know what else to do. I can't just sit there and let him pull his hair out."

"Right, I'm not blaming you, Sue," Mae answered. "We'd all do the same thing, in your place."

"What should I do?" Sue asked.

"Remember, you've been using **differential reinforcement of alternative behavior**. You used your attention to reinforce Jim's asking, 'Am I doing good work?' and you stopped attending to his disruptions. You broke the inappropriate contingency between disrupting and attention, and you established an appropriate contingency between 'Am I doing good work?' and attention. Now I think you should use differential reinforcement of alternative behavior to break another inappropriate contingency."

"I'm getting confused, Dr. Robinson." Sue frowned. "What other inappropriate contingency?"

"It's complex. When life gets confusing, I always take a look at *Principles of Behavior*."

Sue wasn't sure whether Mae was serious or joking.

Note that that *same reinforcing outcome* could be either the presentation of a reinforcing condition or the removal or reduction of an aversive condition.

Mae said, "So far, you've used the presentation of a reinforcing condition—your approval and affection. Now let's add the removal of an aversive condition—tasks that are too hard for him. Help him acquire a normal, nondisruptive alternative response that will allow him to escape the aversiveness of tasks that are too hard."

"How could I do that?" Sue asked.

"Just like you established the healthy alternative response of asking for attention—a response that produced the reinforcer of attention. Now you should establish the healthy alternative response of asking for help. And the alternative response will remove the aversive condition of struggling with a task that's too hard for him."

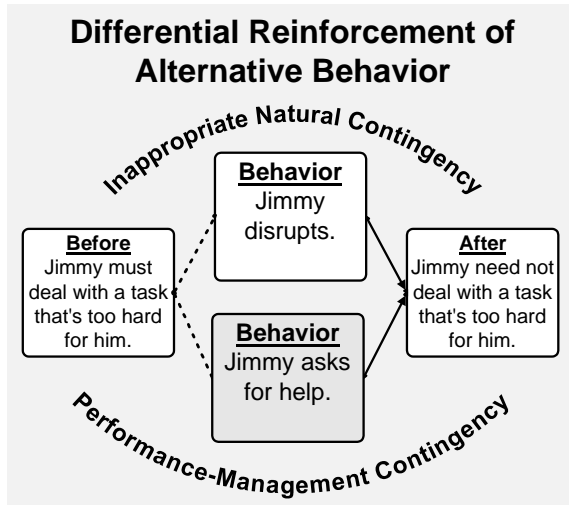
"It's beginning to make sense," Sue said, returning to her former smiling self. "Just as before, every 30 seconds I'll ask, 'Do you have any questions?' Except now I'll prompt with something like, 'Say, will you help me?' And instead of praising him when he asks that question, I'll help him."

"I think you've got it. What kind of help would you give him if he asked for help on a receptive-labeling task?" Mae asked.

"If he were having trouble with the word-picture pair for horse, I'd answer his request for help by pointing to the picture of the horse and saying, 'This is a horse.' Then I'd say to him, 'Point to the horse.'"

"Go for it, Susan."

Here's a way of showing the relation between those two previous contingencies that may help you better understand differential reinforcement of alternative behavior.



Check out this diagram and note that when you do differential reinforcement of alternative behavior,

*D*Concept
Functional assessment

- An assessment
 - of the contingencies responsible for behavioral problems.
- the before and after conditions are the same for the new performance-management contingency as they are for the inappropriate natural contingency
- you've just substituted an appropriate behavior in the performance-management contingency for an inappropriate one in the natural contingency.

The results? The new use of differential reinforcement of alternative escape behavior got rid of the inappropriate responses that escape from the aversive tasks had reinforced. This new procedure worked as well as the first when it got rid of the inappropriate responses that approval had reinforced. In other words, the two approaches to the use of differential reinforcement of alternative behaviors got rid of most of Jimmy Lewis's inappropriate behavior during the teaching sessions.

And Herman Lewis? He was so pleased with Jimmy's progress in Mae's program he promised her that her school would stay open for at least one more semester. Now, her school had a chance.

And you? You've learned about *differential reinforcement of alternative behavior*. This case illustrates the two uses of differential reinforcement of alternative behavior—it can be used to get rid of inappropriate behavior reinforced by the presentation of a reinforcer and to get rid of inappropriate behavior reinforced by escape from an aversive condition. And note, in neither case did they use a punishment procedure to get rid of the inappropriate behavior.¹⁰

**FUNCTIONAL ASSESSMENT,
NOT JUST A QUICK FIX**

"You amaze me, Dr. Robinson," Sue said.

"Why is that?" Mae asked.

"Well, to tell you a secret, I used to dread coming to work with Jimmy because he was such a monster. But now I can hardly wait to get here so I can be with him. You seemed to know just what we should do to turn him into a lovable kid. Sometimes I think you're psychic!"

Mae laughed. "Right. I'm psychic enough to realize we couldn't figure out how to help Jimmy without knowing what is reinforcing his behavior. In the old days, it was thought that behavior analysts would just move in with the giant M&M to fix problems and that they could ignore the cause of the problem—the contingencies maintaining the problem behavior. But in recent years, it has become clear that it helps to understand the problem contingencies. That allows us, for example, to then make the same reinforcer contingent on more appropriate behavior, as we do in the case of differential reinforcement of alternative behavior. Finding the problem contingencies is called a **functional assessment**.

In order to discover the contingencies maintaining a problem behavior, behavior analysts often completed a functional assessment of contingencies maintaining a problem behavior before designing an intervention to eliminate that behavior. In other words, they look for the contingencies that support the problem behavior. There are three ways to do a functional assessment:

¹⁰Some research suggests that the necessary component in procedures such as these is not that we differentially reinforce alternative behaviors but that we stop reinforcing the undesirable behaviors and that, without reinforcement, those undesirable behaviors decrease in frequency regardless of whether we differentially reinforce alternative behaviors. In any case, it seems the humane thing to do—helping our clients acquire appropriate alternative responses to get their reinforcers and to escape aversive conditions. (Incidentally, the procedure of withholding reinforcers is called *extinction*, as you will see in the next chapter.)

Three Functional-Assessment Strategies:

- **Interview.** Talk to the person with the behavior problem and those who interact with and have direct contact with that person.
- **Observe.** Observe the person in his or her daily routines for an extended period of time.
- **Intervene.** Present, remove, or modify the contingencies that may be reinforcing the problem behavior.¹¹

Of course, behavior analysts also use variations on these three strategies of functional assessment when the problem is that the person fails to do the right behavior, though most often they use functional assessment when the person is doing something he or she shouldn't do rather than not doing something he or she should do.)

Sue looked up from her favorite principles of behavior text (heh, heh) and smiled. "Oh, I get it. You used the second functional assessment strategy, *observation*, to discover the contingencies reinforcing Jimmy's problem behaviors. First, attention reinforced his disruptions. And then, after we stopped attending to his disruptions, escape from the adversely difficult task reinforced those disruptions. In both cases, differential reinforcement of a more appropriate behavior eliminated the inappropriate, problem behavior."

Mae laid a hand on her shoulder. "Sue, you've got it. Now just one thing—remember, it's aversive, not adverse!"

QUESTIONS

1. *Differential reinforcement of alternative behavior*—define it.
2. Draw the contingency diagrams for the use of the two procedures for differential reinforcement of alternative behaviors with the same person to get rid of
 - problem behavior reinforced by the removal of an aversive condition
 - problem behavior reinforced by the presentation of a reinforcer

In each case, draw the diagram combining the contingency supporting the problem behavior with the diagram showing the differential reinforcement of the alternative, appropriate behavior.

¹¹This last strategy is also called a functional analysis. Functional analysis is a specialized form of functional assessment in which contingencies are experimentally manipulated. Some behavior analyst erroneously call *all* functional assessment strategies, functional analysis, but that's like calling all dogs poodles. All poodles are dogs, but not all dogs are poodles. All functional analyses are functional assessments, but not all functional assessments are functional analyses.

3. Does differential reinforcement of alternative behavior involve the use of punishment to suppress the inappropriate behavior? **Warning:** *Students who can't answer this one will probably screw up the test.*

4. *Functional assessment*—define it.

5. What are the three functional assessment strategies?

Example of A Functional Assessment
School Psychology
ATTENTION DEFICIT HYPERACTIVITY
DISORDER¹²

Bob Ball stood tall and relaxed. The band blared the Lincoln Junior High fight song. And the crowd chanted, "Sink it, Bob! Sink it, Bob!" They knew he would. He knew he would. And he did: Whoosh—the basketball slipped through the net without touching the rim. Bob, the state's junior-high free-throw king had just raised his free-throw percentage from 82 to 84. The ball barely got back in play before the whistle blew and the game was over, 42 to 41. Lincoln Junior High had won again.

Bob Ball stood tall; Bob Ball walked tall though the halls of Lincoln Junior High. But all was not well at Lincoln J. H. All was not well with Bob Ball. The day after his big victory, Bob Ball had just been suspended from the team; his grades were so lousy that he was ineligible to play. And as things stood, Bob Ball would have to repeat the 7th grade.

When all else fails, including Big Bob, it's time to call in a behavior analyst. The coach, who was understandably concerned about Big Bob, called his old football-playing college buddy, Juke; and in this old-boy network, the buck eventually stopped with Mae.

FUNCTIONAL ASSESSMENT

With the permission of Mr. and Mrs. Ball, Mae did a functional assessment, using the interview strategy first.

Teacher Terry: Bob Ball's work is great—when he does his work. He understands the material. He just can't stay on task long enough to complete his work. He continually disrupts class with his smart-aleck remarks and behavior. When I reprimand him, he insults and threatens me. Then I send him to the principal's office.

Mae thought: Bob isn't learning much in the principal's office.

Teacher Terry: According to our regular school psychologist, Bob has **attention deficit hyperactivity disorder** (ADHD) and **oppositional defiant disorder** (ODD). He can't concentrate.

Mae thought: We could solve student problems so much more easily if other school psychologists would stop putting labels on

¹²Based on Ervin, R. A., DuPaul, G. J., Kern, L. & Friman, P. C. (1998). Classroom-based functional and adjunctive assessments: Proactive approaches to intervention selection for adolescents with attention deficit hyperactivity disorder. *Journal of Applied Behavior Analysis*, 31, 65-78.

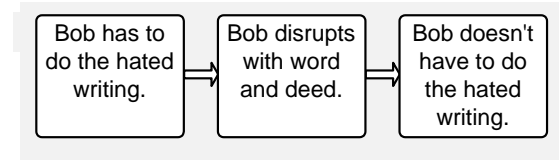
Comment: Check this out - functional assessment / functional analysis

the kids and start doing functional analyses of the problem behaviors.

Mae asked: When does Bob make his smart-aleck remarks and disrupt?

Teacher Terry (after a thoughtful pause): When he has to do a written assignment. Every day in my writing class, I require the students to write in their journal for about 6 minutes and to write a story for about 20. Bob hates writing.

Mae continued her functional assessment, moving on to the observation strategy. She observed Bob Ball and Teacher Terry in the writing class for a week. During that week, Bob started to disrupt the class every time he was told to begin writing. And



Teacher Terry sent him to the principal's office.

Mae thought: Looks like this is the contingency:

1. What kind of contingency is this?
 - a. reinforcement by the presentation of a reinforcer
 - b. escape—reinforcement by the removal of an aversive condition

Then Mae talked to Bob: What could we do to help you?

Bob Ball: I need more time to think about what I have to write. I can't stand the pressure.

Later, Teacher Terry said: Yes, Bob is more likely to get down to work and less likely to disrupt when we have a discussion about the topic before he has to start writing.

INTERVENTION

There are various procedures Mae might have used to help Bob, including differential reinforcement of alternative behavior, such as allowing him to escape the writing tasks if he politely asked to do so; but then he might never learn to write. Instead, she and Teacher Terry wanted to decrease the aversiveness of the task, thus giving Bob less reason to escape. (As you will see in Chapter 9, that involves changing the *establishing* operation.) Giving Bob less reason to escape would result in his learning to write better and would also make life more pleasant for everyone, including Bob Ball and Teacher Terry. As Bob had indicated, maybe he needed more time to think about his writing before he started. So, before each journal-writing session, Bob was allowed to brainstorm with a peer for a few minutes.

Mae recorded the percentage of time Bob was on task (e.g., actually writing) during the writing sessions as opposed to being off task (e.g., calling out, gesturing, talking to peers, playing with objects, making funny faces). As you can see in the following graph, the brainstorming worked. Bob Ball was right; he just needed a little more time to think before he wrote. His on-task behavior increased 26.6% when Mae and Teacher Terry allowed the brainstorming.

Mae and Teacher Terry tried a different intervention for the story writing assignments; they allowed Bob (and the rest of the students) to write the stories with a computer rather than by hand. And that worked too. Bob's on-task behavior increased 32% when he could write with the computer.

Now it's not clear how writing with the computer changed the effect of the escape contingency that reinforced Bob's disruptions. Maybe writing with the computer was less aversive than writing with a pencil, and thus Bob was less likely to escape the task by being disruptive. Or maybe writing with the computer was actually fun, because it was novel and because computers are just fun. And so, even though writing was still aversive, hard work, maybe Bob was less likely to escape that work by disrupting because that would mean he would also lose the opportunity to type on the computer (as you will see in Chapter 5, such a contingent loss is a *penalty contingency*).

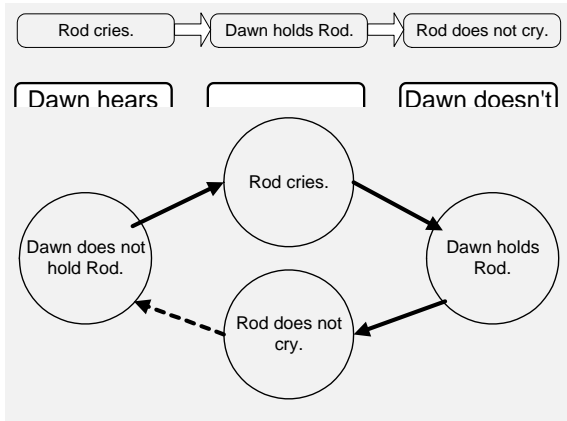
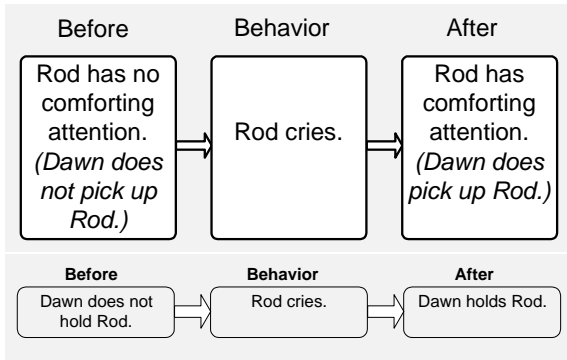
Oh, yes, Bob Ball's grades went up enough that the school lifted his suspension and he was able to lead Lincoln Junior High's 7th-grade basketball team through the season undefeated.

Example of the Sick Social Cycle (Victim's Escape Model) Behavioral Family Counseling

FAMILY LIFE—PART II

Dawn puts Rod in his bed and tiptoes out of the room. But Rod starts crying as soon as she crosses the threshold. So Dawn returns and picks him up in a soothing way. His crying turns to a whimper, and his whimper turns to sleep.

Now what are the behavioral contingencies operating here? In analyzing a behavioral episode, the first step is to specify whose behavior you're considering and what that particular behavior is. If you don't, you'll botch it four out of five times. We've already looked at Rod's crying, and we've said Dawn's comforting attention may have reinforced it.



So now let's look at Dawn's behavior—her response of picking up Rod. What reinforced that response? Relief from Rod's crying. Then what kind of reinforcement contingency is this? Hint: Nothing is more aversive than the sound of a crying baby, especially yours. Of course, this is an instance of escape—reinforcement by the removal of an aversive condition (Rod's crying).

This is all obvious to us as we sit here safely looking at life from behind a one-way mirror. But it's not always so obvious if you're on the other side of the one-way mirror trying to deal with a crying baby, especially yours.¹³

Dawn's problem is a good example of the **sick social cycle (victim's escape model)**. Someone behaves in an aversive way (your

¹³My guess is that crying and sounds of distress are *unlearned* aversive stimuli. This may often promote the survival of the infant, when ma and pa make an appropriately nurturing escape response. On the other hand, there are also nonnurturing responses that escape (or terminate) the sound of a crying, stressed-out infant.

baby cries whenever you leave it). You make an escape response (pick up your baby) that causes the person (your baby) to stop acting aversively. Escape from that aversive stimulus reinforces your escape response, so you will be more likely to make the same escape response the next time. But your escape response (picking up your baby) reinforces the aversive behavior (your baby's crying). So the aversive behavior also will be more likely to occur in the future. And the sick social cycle goes around and around.¹⁴

In the next set of diagrams, we show how the sick social cycle is constructed out of its two component contingencies—the contingency reinforcing the aversive behavior and the contingency reinforcing the escape response. We've rewritten those contingencies slightly to make their interaction clearer, and in so doing, we repeat the name of the person behaving in the before and after conditions.

The first contingency is Rod's reinforcement contingency that we just looked at:

And the second contingency is Dawn's escape contingency that we just looked at:

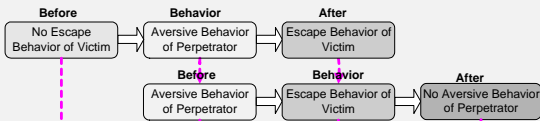
We then combine Rod and Dawn's diagrams to show the interaction between them, the sick social cycle:

We start with Dawn's not picking up Rod. In a sense, that causes Rod to cry (the solid arrow between the two). And in a sense, Rod's crying causes Dawn to pick him up (the next solid arrow). And in a sense, Dawn's picking up Rod causes him to stop crying (the third solid arrow). For the final connection, we've drawn a dashed arrow, indicating that it might be better here just to say Rod's not crying is **followed by** Dawn's putting him down, rather than that Rod's stopping the crying causes her to put him down. But these arrows are starting to get pretty metaphysical, and you or your teacher may want you to say *followed by* for all four arrows.

Finally we unite all three diagrams to show how the two component diagrams make up the sick social cycle.

¹⁴I've designated the person creating the inappropriate aversive condition *the perpetrator* (Rod) and the person escaping that aversive condition *the victim* (Dawn). In truth, of course, they are both victims of the sick social cycle; but later, it helps to distinguish between the two roles. As you read this and the next chapter, maybe you can suggest a better terminology. If so, please e-mail it to me for some pseudo bonus points.

The Generic Sick Social Cycle (Victim's Escape Model)



DGeneral Rule

The sick social cycle (victim's escape model)

- In escaping
- the perpetrator's aversive behavior,
- the victim unintentionally reinforces
- that aversive behavior.

Note that the first contingency is always some sort of reinforcement contingency, either reinforcement by the presentation of a reinforcer or reinforcement by the removal of an aversive condition; but, in either case, the perpetrator's inappropriate behavior is reinforced.

Note that the second contingency is always an escape contingency, where the victim's inappropriate escape behavior is reinforced.

Also note the arrangement of the names the diagram of Rod and Dawn's sick social cycle. In these cycle diagrams, we do it differently than in previous diagrams; here it works better to have the name of the person whose behavior we are analyzing in the behavior condition, of course, but to have the name of the other person in the before and after condition. So for Rod's diagram, Dawn is in the before and after conditions; and for Dawn's, Rod is in the before and after conditions. If you look at the generic diagram, you'll see that same arrangement applies.

The tints and the vertical and curved dashed arrows are to help you see how the components in the top two contingency diagrams combine to form the sick social cycle beneath them.

Unfortunately, the sick social cycle is typical of many of our efforts to correct behavioral problems. The parent or teacher (victim) attempts (victim's escape behavior) to quiet a child or get the child to start studying. And that attempt produces momentary success. But, in the process, the adult also reinforces the (perpetrator's) undesirable (aversive) behavior when he or she attends to that behavior. Picking up the child reinforces crying and the child's stopping crying reinforces picking it up. And the sick social cycle goes around and around.

Here's the generic diagram for the sick social cycle (victim's escape model) and its components.

Look at the first two component contingencies. Note that the first one is for the aversive behavior of the perpetrator. Also note that the before and after conditions for that contingency refer to the behavior of the victim. Similarly, note that the second contingency is for the escape behavior of the victim. And the before and after conditions for that contingency refer to the behavior of the perpetrator. Usually it will help to diagram those two contingencies that way.

Note that the dead-man test does **NOT** apply to the before and after conditions of a contingency. So it's OK that the victim is not behaving in the before condition of the first contingency, because that's really a stimulus condition for the perpetrator. And similarly, it's OK, if there's no aversive behavior by the perpetrator in the after condition of the second contingency diagram.

Here's our original version of this shortened definition: *Often, aversive behavior occurs because such behavior is reinforced by the attention, approval, or compliance of another person. In turn, the temporary relief from that aversive behavior reinforces the giving of that attention, approval, or compliance by the other person.* But this longer definition was too long to memorize. So read both a couple times, and the longer definition will help you understand the shorter definition. Then memorize the *Reader's Digest* version.

Most of the time, most of the victims seem unaware that the ways they reduce aversive behavior often increase the future frequency of that behavior. For example, Spot jumps up on Katie; and Katie throws Spot's rawhide chewy bone to get him off. And Katie's escaping the pathetically aversive sight of Spot's begging at the dinner table is a classic example. As is Dad's giving Junior some candy to stop his crying at the supermarket. I think most often perpetrators are also unaware of the impact of their behavior on the victim. Of course sometimes the perpetrators may be quite aware of the way their aversive behavior is manipulating their victim, as when Susie Creamcheese says to one of her friends, "Watch me whine until Daddy buys me an ice-cream cone."¹⁵

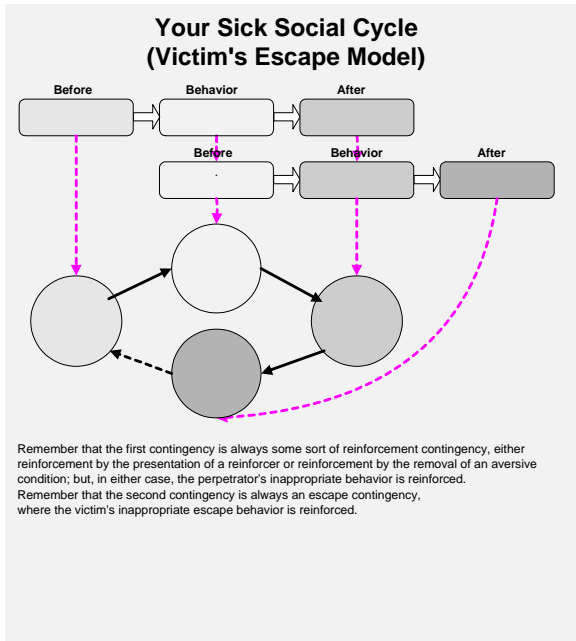
And many times these social cycles are not sick but quite healthy, as when the baby with the wet diaper cries, thereby creating an aversive condition for the parent who escapes that crying by changing the diaper.

Always, the behavior of the victim is controlled by an escape contingency, though the behavior of the perpetrator might be controlled by either escape (e.g., escape from a tough task) or reinforcement (sympathy and comfort).

QUESTION

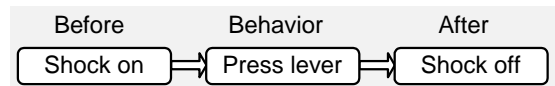
1. *Sick social cycle*—define it and give an example
 - Draw the two contingency diagrams for your example.
 - Draw the circular diagram of the sick social cycle.
2. Now please fill in the diagram for your whole sick social cycle. (The contingency for the perpetrator goes in the top row; and the contingency for the victim goes in the second row.)

¹⁵Thanks to Michelle Seymour for this true story.



BASIC ENRICHMENT

In the Skinner Box Experimental Analysis ESCAPE FROM ELECTRIC SHOCK



The next time you look through the window of the Skinner box, you notice that now the floor is a series of parallel, quarter-inch stainless steel rods, spaced half an inch apart. There's no hole for the water cup. But the familiar response lever still protrudes from the wall. The rat is standing with its paws right above the lever. Suddenly it pushes the lever down and then releases it slowly. A little later, the same thing happens again.

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What's going on here? Every now and then, a small electric current passes through the grid of steel rods that make up the floor—an aversive condition. The electric shock stays on, until the rat presses the lever; then it goes off. This is reinforcement of the lever press response by the removal of the aversive electric shock.

After some exposure to this contingency, the rat responds so quickly that it experiences practically no aversive electric shock; still, this is a gruesome procedure—one that reflects more of our everyday life than we might care to admit. This is an escape contingency—reinforcement by the removal of an aversive condition.

QUESTION

1. Diagram an escape contingency in a Skinner box.

¹⁶*Didactic diddling:* The professor who encounters our simple little contingency diagrams for the first time may find the *before condition* unnecessarily redundant with the *after condition*. And logically, that's a good criticism; but we think it's not a good criticism pedagogically or didactically. Redundancy is the foundation of clear exposition. Students have a hard time understanding the nature of contingencies, understanding that the response produces a change from one condition to another, from the before to the after. They have a hard time seeing the relation between the before and the after condition. And laying it all out in this superexplicit manner greatly helps. In support of our argument, we invite the skeptical professor to observe the students' initial difficulty in applying these little diagrams to novel examples. And we also invite the skeptical professor to do a social validity check
Continued on next page...

INTERMEDIATE ENRICHMENT

FEAR, PARSIMONY, AND ELEGANCE

Scientists are cautious about littering their sciences with unnecessary terms and concepts. They call this caution **parsimony**. To be parsimonious is to be economical. Another way to put it is to say we want to develop elegant theories. An *elegant* theory is one that explains as many facts as possible with as few concepts, principles, and assumptions as possible. So we look at each concept, principle, and assumption cautiously, admitting it into our theoretical framework only if we must to understand our world. We think you should be cautious about the following quote, though we found it in an excellent behavioral text.

“At 1 year, a child becomes particularly fearful of strangers.” What does that tell us about aversive stimuli for the 1-year-old? It suggests that strangers are aversive; put another way, the removal of strangers will probably reinforce escape responses, such as hiding. Maybe we should restate the quotation as follows: “Strangers become particularly aversive for a 1-year-old child.” That restatement makes *fear* and *fearfulness* unneeded concepts. If we can understand the behavior of the child in terms of a concept we already have, the concept *aversive*, then why add the others?

DPrinciple Parsimony

- The use of no unnecessary concepts, principles, or assumptions.

QUESTION

1. *Parsimony*—define it and give an example of how to convert an unparsimonious analysis to a parsimonious analysis.

Compare and Contrast PSYCHIATRY VS. PSYCHOLOGY

Who’s the most famous psychologist in the world? Freud. Right, Freud (1856-1939). What’s his first name? Ah, Sigmund? You’ve got it. Except Freud wasn’t a psychologist. He was a physician whose specialty was neurology. Today we would call him a psychiatrist, not a psychologist. What’s the difference? Psychiatry is a specialty in medicine, just like surgery. A psychiatrist must have an MD degree. A psychologist must have a PhD, an MA, or a BA (BS) degree, depending on the licensing requirements in the state where the psychologist works. Even psychologists who specialize in behavioral medicine are PhDs, not MDs. So psychiatry is a medical specialty, and psychology is a branch of the arts and sciences.

We’ve seen how psychiatry and psychology contrast. How are they comparable? Both deal with the understanding and improvement of behavior or the mind, depending on whether you’re a behaviorist or a mentalist.

OK, if Freud isn’t the most famous psychologist in the world, then who is? Gets tougher, doesn’t it. Pavlov? Yes, probably Pavlov (1849-1936), for the average person, the lay person, the nonpsychologist. He did the famous conditioning experiments with salivating dogs. But Ivan Pavlov also wasn’t a psychologist; he was a physiologist.

Then, who’s the most famous **real** psychologist according to other psychologists (determined by a poll of the chairs of U.S. psychology departments), not necessarily according to *People* magazine? The answer: B. F. Skinner (1904-1990). Incidentally, Skinner even beat out Freud in a count of the number of times his name was recently cited in scholarly journals—again, not necessarily in *People* magazine.

Skinner started out working with animals as Pavlov had, except Skinner worked with lever-pressing rats and disk-pecking pigeons. But the influence of his work has spread a long way from the simple behavior of the rats and pigeons. He started what we now call **behavior analysis**, an approach to psychology that forms a basis for understanding all human behavior, the approach we present in this book.

QUESTIONS

1. Compare and contrast psychiatry and psychology.
2. Who is the most famous real psychologist in the world?

Compare and Contrast PSYCHOANALYSIS VS. BEHAVIOR ANALYSIS

Behavior analysis is a behavioristic approach to the study and improvement of behavior. One of its central notions is: Past consequences cause current behavior.

Psychoanalysis is a mentalistic approach to the study and improvement of behavior and the mind. One of its central notions is: Past experiences cause current behavior by channeling unconscious mental forces.

Behavior analysis and psychoanalysis are similar in that both argue that experience causes current behavior. They differ in that behavior analysis points to the past consequences of behavior as the crucial cause and psychoanalysis points to unconscious mental forces (influenced by experience) as the crucial cause.

with the students at the end of the semester: Ask them if they found the diagrams helpful (by the way, we’re talking about grad students, as well as undergrads).

Freud is the father of psychoanalysis. Skinner is the father of behavior analysis.

**A basic principle of behavior analysis:
The consequences of past behavior
cause current behavior.**

**A basic principle of psychoanalysis:
Past experience causes current behavior by channeling
unconscious mental forces.**

QUESTION

1. In simple terms, compare and contrast behavior analysis and psychoanalysis.

**THE TOOTHPASTE THEORY OF
ABNORMAL BEHAVIOR**

Remember Tom’s concern about the escape behavior interpretation of Grace’s Tourette syndrome? He probably was making a common mistaken assumption—that her abnormal behavior reflected some inner mental force that had gone haywire and forced this abnormal behavior out of her. Most people in our culture, including most psychologists, seem to look at abnormal behavior as something that issues forth from a person like toothpaste squeezed from a tube. They know, somehow, that an inner pressure builds inside the person, forcing out the behavior.

A mass murderer kills 13 people. Why? The common view is that internal pressure built up (perhaps the result of a bad chromosome). And that pressure forced the violence to erupt from within the murderer like psychic boils.

People tend to overlook the complex nature of this violence. It involves a complex set of responses. And each of those responses is precisely controlled by its behavioral consequences. To understand these episodes, we must look at the direct-acting contingencies (the stimulus conditions, the response, and the behavioral consequences). We also must look at the behavioral history that may have established those consequences as reinforcers or as aversive events. And we must look at the behavioral history that may have provided the contingencies for the acquisition of those responses. To do less is to cop out.

DFalse General Rule

The toothpaste theory of abnormal behavior

- Abnormal behavior flows out of sick people
- like toothpaste squeezed from a tube.
- The abnormal behavior results from inner pressure.

People often fall back on the toothpaste theory to account for bizarre behaviors of autistic children, like Jimmy’s disruptive and aggressive behavior. They say, “He’s expressing an inner hostility that needs to come out.” Watch out whenever anyone talks about “expressing” anything, like expressing anger or even expressing

love. This toothpaste view always distracts us from looking for the contingent presentation of reinforcers and termination of aversive conditions that actually control the behavior.

QUESTION

1. *The toothpaste theory of abnormal behavior*—state and give an example of this false general rule.

**POSITIVE AND NEGATIVE
REINFORCERS AND REINFORCEMENT**

Now it’s time to mention some traditional but unpopular terminology we’ve hinted at earlier.

Fundamental Terms	
Traditional	Ours
Positive reinforcer	Reinforcer
Positive reinforcement	Reinforcement by the presentation of a reinforcer
Negative reinforcer	Aversive condition
Negative reinforcement	Reinforcement by the removal of an aversive condition

Behavior analysts often use the term *negative reinforcer* rather than *aversive condition*. As the table suggests, the two expressions mean about the same thing, but we prefer aversive condition because it’s less confusing. Here’s a refresher: **Aversive condition (negative reinforcer)**: any stimulus, event, or condition whose termination immediately following a response increases the frequency of the response.

For both nonhuman animals and people, stimuli and events exist that will function as aversive conditions or negative reinforcers. In other words, both animals and people will be more likely to do things that have previously removed those stimuli, events, or conditions—those negative reinforcers. For example, Ed’s leg movement seemed to become more likely because each movement immediately stopped the electric shock.

Warning: *Negative reinforcer* refers to the aversive condition (the shock)—not the condition of relief (no shock). This distinction will completely confuse you at least 10 times during your studies of behavior analysis. That’s one reason we prefer aversive stimulus, condition, or event.¹⁷

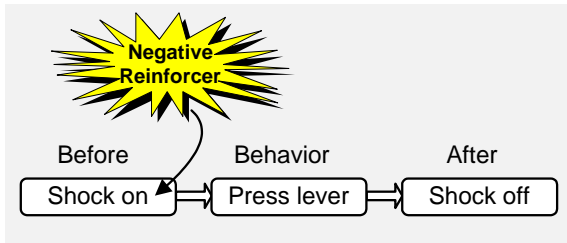
But if you’re going to deal with other behavior analysts or their writings, you may need to work hard on the use of negative reinforcer because it’s so difficult to use correctly. To keep it simple, let’s take another peek inside the Skinner box. Let’s look at the rat in the escape experiment. What’s the negative reinforcer?

“It’s when the shock goes off. It’s the absence of shock.”

¹⁷Such confusion has been our experience and the experience of most students and teachers we’ve talked to, though some teachers seem to have had few problems presenting the terminology *negative* and *positive* reinforcers.

**Comment: POSITIVE AND
NEGATIVE
REINFORCERS AND
REINFORCEMENT**
Students found this too confusing in EPB 3.0. I have added the diagram, but I doubt if that does the trick, so I need to find out what’s wrong, this summer in Psy 661.

Close; you're only 100% wrong. The negative reinforcer is the shock. We know it doesn't make sense, but look at the definition again and maybe it will: **Negative reinforcer**: any stimulus, event, or condition whose **termination** immediately following a response increases the frequency of that response. **Termination** is the key word here.



You said the absence of shock was the negative reinforcer. Does the termination of the *absence* of shock reinforce the lever press response—the escape response? Put another way, does the presentation of the shock reinforce the lever-press response? Of course not. It's the termination of the shock itself that reinforces the lever press, not the termination of the *absence* of the shock. So the shock is the negative reinforcer.¹⁸

We tend to think of the reinforcer as something good. But it ain't necessarily so—not if *negative* precedes it. The negative reinforcer is the condition you escape from, not the condition that provides relief. In this context, *negative* means “subtraction” or “removal.” So the negative reinforcer is something you remove.

Still confused? Then remember this: The negative reinforcer is the *aversive* condition.

Just as we have *negative reinforcer*, we also have *negative reinforcement*. *Negative reinforcement* is the same as *reinforcement by the removal of an aversive condition*. Here, *negative* means *removal*.

QUESTIONS

1. Be able to construct the table contrasting our fundamental terms and traditional fundamental terms. Then be able to use that table in answering the following questions. **Warning: To pass the quiz, mere memorizing won't cut it; you must understand it; and you must be able to construct the table with the rows and columns in a different order than in the book, at least if your professor is as tough as I am. If you're not sure, ask your professor if he or she is as tough as Malott**

¹⁸We'll worry about the exceptions some other time. For the moment, give us a break. This concept is hard enough to deal with without the exceptions.

2. Which of the following is the negative reinforcer in a Skinner box escape experiment? **Warning: Please be sure you've got this one cold because too many students are blowing it on the quiz, and we find the sight of a poor quiz score a negative reinforcer.**
 - a. the shock
 - b. the food
 - c. the termination of the shock
 - d. the termination of the food
3. Please explain your answer to the previous question by the logic of the definitions and the table.

PRONUNCIATION

1. Does your professor love you?
 - a. yes.
 - b. no.

If you answered *yes*, that means your professor cares about your education and your well-being, which means your professor will give you an oral quiz to make sure you can pronounce the following words properly

- aversive*, not *adversive*
- aversive* with the *a* sounding soft like the *a* in *attention*
- not hard like the *a* in *ape*
- and not supersoft like *a* in *father*;

also

- escape* not *exscape*

And for good measure,

- etcetera* for *etc.*, not *excetera*
- especially*, not *expecially*

If your professor really loves you and cares for your well-being, he or she will provide corrective feedback anytime you mispronounce one of these words in class. If your professor makes a condescending smirk while giving this feedback, however, his or her motivation might be questioned.

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