

Reinforcement

FUNDAMENTAL

Example of Reinforcement
Behavioral Social Work
THE GRANDFATHER¹

John “Juke” Jackson enjoyed telling people he was the first black student to receive a master’s degree in organizational behavior management at Big State University. His audience would always show how impressed they were with his success. And they would always comment on what a scandal it was that BSU was so racist. Why had BSU waited so long to allow a black student to graduate from that program? Then Juke would laugh and tell them he was the first student, either black or white, to enter that program.

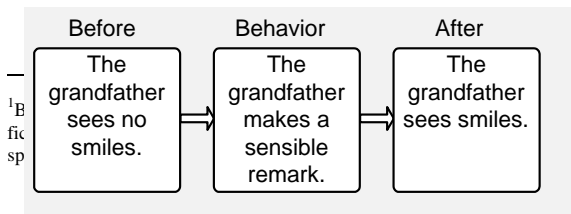
But he didn’t bother to tell them he had graduated with straight A’s and in only 16 months from a 24-month program; no one had yet come close to his record. And he didn’t tell them he was the first football player to earn a graduate degree from any program in the Psych Department or that he also had a graduate minor in sports psychology.

He didn’t tell them he drove a metallic-blue BMW Roadster and lived in the second most expensive condo in town. He didn’t tell them he spent as much time coaching kids in sports for no pay as he did coaching managers in business and industry for more pay than he ever imagined he’d earn.

And he didn’t tell them he cried for an hour without stopping when his mother called to tell him his grandfather had had a stroke and that his right side was paralyzed. His grandfather had taught him how to throw a football. His grandfather had come to every game he’d played from junior high through college. His grandfather had paid for his books and tuition in grad school. His grandfather always had a joke for him.

Juke’s heart was broken when he saw the old man lying in the intensive-care unit. His grandfather no longer had a joke for anyone. He just lay there staring at nothing. This wasn’t someone else’s grandfather; this was Juke’s grandfather. Juke didn’t know a football star and the hottest man in organizational behavior management could cry so much. Juke, the man of many cool moves, had no moves.

Four weeks later, Juke, in an impeccable \$700 suit, and his metallic-blue BMW Roadster again headed 3 hours south, to his hometown. The grandfather was in his own house now, sitting in an antique rocking chair. Just a few months ago, the old man had run out of the house to greet him, even before Juke had time to get out of his car. Now he didn’t even get out of his rocking chair. He just sat there, staring at nothing.



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“That’s the way he is,” Juke’s grandmother said. “He just sits there. And when he does talk, he doesn’t make any sense. He’s no better than he was in the hospital. John, honey, will he always be like this? Won’t he ever get any better?”

Juke didn’t trust his voice to reply. He hugged his grandmother and hid his eyes.

The grandmother went into the kitchen to prepare dinner. Juke sat and watched his grandfather. Only once during the next hour did the old man say anything spontaneously—something about the snow outside, though it was May. Juke questioned his grandfather several times, trying to get him to talk. The old man would answer; but often his answers made no more sense than snow in May.

Like the rest of his gang from BSU, Juke was a thoroughgoing, 24-hour-a-day behavior analyst. He naively believed that, with behavior analysis and hard work, he could solve all the world’s problems. At least he hadn’t found any he couldn’t solve. So the man of many moves began to make his moves.

“Grandma, here’s what I think we should do.”

“I’ll do anything you say, honey, ‘cause I can’t stand it like this. He doesn’t get any better. He just sits there.”

“OK, Grandma, now we’re going to start a reinforcement program. I want you to set aside an hour each day where you just concentrate on this program. Every time Grandpa makes any remark, I want you to count it. And I want you to ask him a few questions to try to get him to talk. Keep track of the number of times his answers make sense and the number of times they don’t.”

Juke started to tell his grandmother this would be the baseline period, but instead said, “We’ll just keep track of things for a few days. We have to make sure Grandpa isn’t improving on his own and we’re just not seeing it.”

“Honey, I know your Grandpa isn’t getting any better.”

His grandmother was right. Though Juke insisted on a few weeks of baseline, his grandfather averaged less than one spontaneous remark per hour, and only 67% of his answers made sense.

Then Juke made his next move. He set up what he hoped would be a reinforcement procedure. For one hour each day the grandmother attempted to reinforce spontaneous remarks and sensible answers. Each time the grandfather responded properly the grandmother would smile, say a few kind words, and caress the old man. But she caressed only the left side of his head and body, where he could still feel her touch. Juke hoped the smile, kind words, and caresses would act as reinforcers for his grandfather.

Juke coached his grandmother just as he coached the athletes and the managers. He told her what to do. He showed her what to do. He praised her when she did it right and suggested corrections when she didn’t. It took a few sessions before she was delivering her reinforcers immediately after her husband’s sensible responses. But Juke was as patient and as skilled in shaping the behavior of his grandmother as he was with everyone else he coached. Juke was the master with the praise contingency, putting that praise at

*D*Concept
Reinforcement contingency

- the immediate,
- response-contingent
- **presentation** of ⁴
- a reinforcer
- resulting in an **increased** frequency of that response.⁵

just the right place at just the right time—immediately after the correct response or an approximation to the correct response.

The BMW Roadster made the 3-hour trip every weekend. Juke plotted the data his grandmother had recorded, showed her the graphs, watched her working with his grandfather, praised her appropriate efforts, and suggested concrete changes. He also ate his share of his grandmother's cooking and put on a couple of pounds over those weekends.

During the next 6 weeks, his grandfather's spontaneous remarks rose from fewer than 1 to 2.5 per hour, and his sensible replies rose from 67% to 84%. Now it was time to help his grandmother maintain the reinforcement program more independently. Juke replaced his visits with weekly phone calls and then stopped the calls, asking his grandmother to call whenever she had any questions. At Christmastime, the grandmother was still faithfully maintaining the program on her own and the grandfather was maintaining the same reasonably high rate of spontaneous and sensible remarks as he had when Juke had been helping with the reinforcement procedure.

Christmas was bittersweet that year. The grandfather was not as he had been the Christmas before, but he was much better than in May and June. Juke's grandmother said, "John, I thank the Lord I've got such a fine grandson as you. I don't know what I'd have done without you, honey." Juke covertly wiped a tear from his eye.

QUESTION

1. Briefly describe how to use reinforcers to improve behavior in stroke victims. What were the behaviors, the reinforcers, the procedures, and the results?

Concept

REINFORCEMENT CONTINGENCY

We've been talking about the concept of reinforcer, a fundamental concept in the analysis of behavior. Now we need a principle for tying the reinforcer to the behavior. **Reinforcement principle:** *a response will occur more frequently if a reinforcer or an increase in a reinforcer has immediately² followed it in the past.³* However,

²Most definitions of reinforcement do not require that the reinforcer immediately follow the response. We've added this requirement to distinguish between *reinforcement* and *analogs to reinforcement*, as we will

we'll concentrate on the definition of the relevant contingency because that's the definition you'll use most:

So, what does this mean?

Response contingent means *caused by the response (the behavior) or produced by the response (the behavior)*.⁶ For example, the grandfather's response of making a sensible remark caused the presentation of the grandmother's reinforcing smile. So this was a response-caused presentation of a reinforcing smile. It was a response-contingent presentation of a reinforcer. Her reinforcing smile was contingent on his response. Her smile was response contingent. Or we might say, *response dependent*. Whether or not she smiled depended on his response of making a sensible remark.

discuss in later chapters. With verbal human beings, sometimes a reinforcer will follow the response by several days; and yet, as a result, the response will occur more frequently in the future. We will later argue that this is an analog and not true reinforcement.

³Here's a more elegant but less obvious statement of the principle of reinforcement: A response will occur more frequently if an increase in a reinforcer has immediately followed it.

⁴Instead of just *presentation of a reinforcer*, we would be more precise to say *presentation or increase in a reinforcer*. For example, suppose you're sipping a soda through a crimped straw. Well, the presentation of that sugar-filled soda into your mouth is reinforcing the sipping response. So, *you have no soda* \Rightarrow *you sip* \Rightarrow *you have soda* is a reinforcement contingency. But also suppose your straw's got a crimp in it, so that the soda's not flowing as rapidly as it might. You straighten out your straw to get rid of the crimp, and now you've got an increase in the reinforcer, the flow of the soda into your mouth. So, *you have slow flow* \Rightarrow *you straighten straw* \Rightarrow *you have fast flow*. That's another reinforcement contingency, this time based on the increase in the amount of the reinforcer, not the mere presentation of it. Just to keep life simple, we won't put *increase* in the formal definition, but you should understand that we're always implying it.

⁵This last clause is a little redundant, because if a reinforcer is presented, the frequency will increase, by definition. But redundancy in the name of effective teaching is no vice.

⁶Incidentally, we talk about a *reinforcement contingency* wherein the response caused the reinforcer to occur; and as a result the future frequency of that response increases. But suppose the reinforcer accidentally followed the response a time or two, but the response didn't cause the reinforcer to occur. In other words, it was just an accident that the reinforcer happened to follow the response. Would that accidental relation between the response and the reinforcer also increase the future frequency of the response? Would reinforcement have occurred? Yes. The important thing is that the reinforcer immediately follow the response. All a contingency does is guarantee that the reinforcer will immediately follow the response often enough that you will get a significant increase in the frequency of the response. The contingency is just a practical way of making sure you reinforce what you want to reinforce. In *Chapter 18, Time Dependent Schedules*, we'll talk about *superstitious behavior* resulting from such accidental contingencies.

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Also, when we use *response* we mean essentially the same thing as *behavior*. We don't necessarily mean *response* in the sense of a *response (or reaction) to something*.

RESPONSE = BEHAVIOR

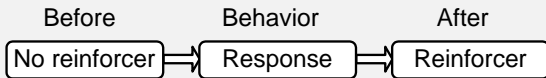
Again, how immediate is immediate? Certainly less than 60 seconds; ideally, only a fraction of a second. But it's not all or nothing; as the delay between the response and the outcome increases, there is a rapid decrease in the effectiveness of the reinforcement contingency. This is described in the following principle.

DPrinciple

Outcome Gradient

- The effect of reinforcement and punishment procedures decrease
- as the delay between the response and the outcome increases.
- Reinforcers and aversive conditions delayed more than 60 seconds
- have little or no reinforcing or punishing effect.

Generic Reinforcement Contingency



Results: Response frequency increases.

Each time the grandfather said something sensible, the grandmother said a few kind words and caressed him—reinforcement by the presentation of reinforcers. And each time his grandmother properly reinforced his grandfather's talking, Juke immediately praised her—more reinforcement by the presentation of reinforcers.

In Chapter 1, Rod cries and Dawn runs into his bedroom—unplanned reinforcement by presenting reinforcers. Dawn reinforces the crying response, increasing the frequency of Rod's crying on future nights.

In the same way, the student and staff attention reinforces Eric's throwing fits.

We hope the new concepts you learn as you read this book reinforce your reading so that you'll become a behavior analysis junkie—or at least finish this book.

By the way, we've added a phrase to the usual definition of the concept of *reinforcement*. We've added that an *increase* in a reinforcer also will reinforce behavior. In other words, behavior analysts usually recognize that reinforcement will occur if Dawn attends to Rod when no one was attending to him before; but we want to point out that reinforcement also will occur when she

increases the extent that she attends to him: Perhaps at first she was only looking at him, but now she picks him up, caresses him, and talks to him. Rod is getting more reinforcers, and that increase in reinforcers should reinforce whatever he was doing at the time—perhaps smiling or perhaps still crying.

You can strengthen concrete by sticking steel rods in it. Then you have reinforced concrete. You can strengthen behavior by sticking a reinforcer after it. Then you have reinforced behavior. Of course, reinforcement for the civil engineer differs from reinforcement for the behavioral engineer. But they're similar, too.

Here's a hypothetical example: Your professor's calling on you reinforces raising your hand in class. Laughing at your professor's jokes reinforces your professor's telling jokes. Your professor's jokes reinforce your efforts to stay awake. But eventually sleep wins. Then your startle response reinforces the professor's telling a boisterous joke about the student sleeping in the back row.

More examples: We take a bite of a delicious apple—reinforcement by the presentation of a reinforcer, the taste. We take a delicious kiss—reinforcement by the presentation of a reinforcer. We watch a TV show—reinforcement. True, the reinforcers from watching the tube often hold little value—you don't get much out of it; but then you don't put much into it either, as you sit there like a spaced-out zombie, staring at some lame *Leave it to Beaver* show. Hang your head in shame! Why aren't you reading *Elementary Principles of Behavior* instead? Reinforcement by the presentation of fascinating new knowledge. (Of course, we're just interpreting everyday life. To be sure we're interpreting correctly, we would have to show that our assumed reinforcers really are reinforcers. And assuming they're reinforcers without checking them out can lead to failure when trying to modify behavior.)

Question:

Rod toddles quickly across the room, falls down, and hurts himself. Is this reinforcement?

Our answer:

Is getting hurt a reinforcer? No. Will getting hurt cause the quick toddling to occur more frequently? No. So for those two reasons this is not reinforcement. As you will see in Chapter 4, it's punishment.

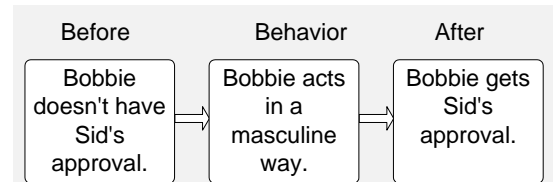
QUESTION

1. *Reinforcement contingency*—define it and diagram three examples. **Warning: Each line of a definition is a separate, crucial component of the definition. Any line missing means you ain't got it. My students sometimes leave out "immediate." Unfortunately, their definition is counted wrong when they do. And "immediate" will crop up in quite a few of the definitions to come. Remember, precision is next to godliness.**
2. *Reinforce*--define it and correctly use it in a sentence.
3. *The principle of the outcome-gradient effect*—state it.

Concept BEHAVIORAL CONTINGENCY

There is a **contingency** between Rod's tantrums and Dawn's attending. Put another way, there is a **dependency** between the tantrums and the attending. The attention depends on the crying; no crying, no attention or, at least, less attention. So a **contingency** is a *dependency* or a *causal relationship*. And **to be contingent** means *to be dependent on or to be caused by*.

Now don't let "dependency" mislead you. We say Janis was *dependent* on heroin. Would we also say she was *contingent* on



heroin? No. We don't mean "dependent" in that sense; we don't mean "reliant" or "addicted."

And we might say Rod is a *dependent* infant. But would we also say he is a *contingent* infant? Of course not. We don't mean "dependent" in that sense either. We don't mean "helpless" or "weak." We also wouldn't say Sally has a *contingent* personality.

What would we say? Getting good grades is *contingent* on studying. Sid's happiness is *contingent* on Dawn's saying she loves him. Your car's starting is *contingent* on your turning the key in the ignition. Mae and Juke's going to the beach is *contingent* on the weather.⁷

DConcept
Behavioral contingency
<ul style="list-style-type: none"> ○ The occasion for a response (behavior), ○ the response (behavior), and ○ the outcome of the response (behavior).

Thus, Dawn's attention is often *contingent* on (dependent on or caused by) Rod's crying. Of course, she sometimes attends to him when he's not crying; so on those occasions her attention is not contingent on his crying. Note that we would not normally say Rod's crying is contingent on Dawn's attention.

⁷Andy Lattal and Al Poling pointed out that the dictionary definition of *contingency* is almost the opposite of the customary behavior-analysis definition. The dictionary says *contingency is the condition of being dependent on chance*. But we think it will cause less confusion if we stick with the behavior-analysis definition provided in the text.

And we'd say the grandmother's smiles are contingent on the grandfather's sensible remarks, but we wouldn't normally say his remarks are contingent on her smiles.

Here are some other behavioral contingencies:

Your boyfriend's being with you is the *occasion* in the presence of which crying and smiling will produce their outcomes—a kiss. Your teacher's looking at you is the *occasion* in the presence of which raising your hand will produce the outcome of being called on. *The occasion is a stimulus, event, or condition in the presence of which a particular response (behavior) will produce a particular outcome.*

In Chapter 12, we introduce *discriminative stimulus*, the technical term for *occasion*, as behavior analysts use the word. So we will make no further use of this concept until that chapter.⁸ Just note that the *occasion* and the *before condition*⁹ are **not** the same thing.

We usually leave the before condition in the contingency diagram, even though it's not an official part of the definition of a behavioral contingency. We stress the before condition because it helps students distinguish between the various types of contingencies we'll be looking at in the remaining chapters.

⁸Our experience has been that introducing *occasion* in a formal way causes much more trouble than it's worth. However, we will be able to deal gracefully with nondiscriminated contingencies and pussyfoot around the discriminative stimulus in discriminated contingencies until we get to Chapter 12, where we can give the concept of discriminative stimulus the rigorous treatment it needs; then the students can use it correctly. We've found that introducing discriminative stimuli prematurely is asking for trouble.

By *nondiscriminated contingencies*, we mean those contingencies for which the response will produce the reinforcing outcome on almost any occasion. For example, almost always when you breathe, you will get air. We've found that many, if not most contingencies in everyday life are nondiscriminated; and a premature introduction of the concept of discriminative stimulus causes students to try to force a discriminative stimulus on every contingency, even when it doesn't fit. But we'll deal extensively with this later.

⁹For those of you familiar with the concept *establishing operation*, the before condition is also not necessarily the same as the establishing operation, except in the case of reflexive establishing operations, as you will see in Chapter 9.

By the way, we call these diagrams *contingency diagrams*. They include, at least, the **before condition**, the **behavior**, and the **after condition**. They're one of our most useful tools.

So you can see the contingency between the behavior and the reinforcer is the big deal. The reinforcer is **contingent** on the behavior; in other words, the reinforcer **depends** on the behavior, or the reinforcer is **caused by** the behavior. And that behavior-reinforcer contingency results in the reinforcement of the behavior; put another way, the behavior occurs more frequently. In turn, the reinforcement makes future occurrences of the behavior more frequent.

When *behavior analysts* talk about reinforcement contingencies, they mean the *contingent relation between the behavior and the outcome*. And the reinforcer is always the outcome. There are a couple of other dependencies, but they aren't what the behaviorists are referring to. In a sense, the behavior is contingent on the occasion, in that the behavior occurs more frequently when the proper occasion arises. And in a sense, the occurrence of future responses is dependent or contingent on past reinforcement of that response class. But, by custom, neither of those two types of contingencies is what behavior analysts emphasize when they talk about behavioral contingencies.

So it's true that improved performance depends on reinforcement. But we wouldn't say the behavioral contingency is between the reinforcement and the improved performance. However, we would say the behavioral contingency is between the behavior and the delivery of the reinforcer.

Now, to really understand a concept, you need to be familiar with nonexamples of the concept as well as examples. So let's take a look at a few noncontingent events. A *noncontingent event is an event that is not dependent on anything*. The kind of contingencies in which we are most interested are response contingencies, contingencies where the event is contingent on the response (caused by the behavior). So when we speak of noncontingent events, we mean events that aren't contingent on the response of interest.

In theory, at least, a parent's love should be noncontingent; that is, the parent should not make the love contingent on the child's behavior. On the other hand, the wise parent will provide approval only when the child is behaving well. So approval would be contingent.¹⁰

You might think rain is contingent on your going on picnics. But it probably is noncontingent. However, your going on picnics is contingent on its not raining. Or what about the child who sneezes right before the electricity failed and the lights went out all over New York City? The power failure was not contingent (dependent) on the sneeze. The lights would have gone out even if the child had held back the sneeze.

QUESTIONS

1. *Behavioral contingency*—define it and give an example.
2. Use some version of the verbal expression, *to be contingent*, in a nontrivial sentence. By trivial I mean like "I must use "to be contingent" in a sentence. In other words, I want you to use "to be contingent" in a way that shows you understand how to use the term correctly. For example, attention is contingent on Rod's crying.

SID'S ADVANCED SEMINAR IN BEHAVIOR ANALYSIS

Sid: OK, our first seminar went well, except I did all the talking. Of course, the chance to talk nonstop for 2 hours is a big reinforcer for me. But that may not be the best way for you to learn behavior analysis. I want you to learn how to think and talk like a behavior analyst. But if all you do is listen to me, then all you may learn is how to watch a behavior analyst think and how to listen to a behavior analyst talk. You learn what you do, at least if what you do gets reinforced. So I want you to start thinking and talking. Meanwhile, I'll keep thinking but do less talking. So who's first? Who wants to start thinking and talking like a behavior analyst?

¹⁰Incidentally, students sometimes raise the point that the teacher's approval isn't always a reinforcer, especially for older children when they're in front of their buddies. In that case, we would call the approval a *conditional reinforcer*—approval is a reinforcer **conditional upon** (depending on) the absence of the buddies. In other words the conditional reinforcer is the compound stimulus consisting of approval **and** all buddies absent.

Suddenly six sets of eyes looked everywhere but at Sid. Silence. Sixty seconds of aversive silence. A cough. More silence.

Sid: OK, let's put it this way: You've had a chance to read the first chapter of *Elementary Principles of Behavior*. What do you think about the concepts of *reinforcer* and *reinforcement*? Do you have any questions? Any comments?

Silence for another awkward 60 seconds.

Sid: OK, let's put it this way: We just did a 2-minute baseline. Now we'll intervene. You earn a point every time you recite, at least if you say something relevant. The points will all count toward your final grade. They add in with your weekly quizzes, term paper, and midterm and final exams. Now, any questions or comments?

Ten more seconds of silence. Max raised his hand.

Sid: Yes, Max?

Max: Is this behavioral intervention a reinforcement procedure?

Sid: Why don't you tell me?

Max: I think it is.

Sid: What's the behavior?

Max: Saying something relevant?

Sid: Right. And what's the reinforcer?

Max: The points.

Sid: You get 1 point! Next?

Joe: I don't think you should be so sure you've got a reinforcer.

Max: Why not?

Joe: You don't know for sure that your points are a reinforcer. To know if they're reinforcers, you'd have to show that our talking increases because of their contingent use.

Sid: Excellent objection. I'm only assuming I've got a reinforcer. And you've just earned one assumed reinforcer.

QUESTIONS

1. Give an example of an assumed reinforcement contingency in college teaching.
2. How can you tell if the points are reinforcers?

Example Behavioral Special Education THE NONCONTINGENT DELIVERY OF REINFORCERS

Skip Larson was the principal of Street School, an alternative high school for street kids, dropouts who spent most of their time hanging out. He and Mae were chatting.

Mae asked, "So how are things going at Street School these days?"

Comment: THESE ARE IMPORTANT BUT WE DON'T MAKE MUCH LATER USE OF THEM. SHOULD WE BAG THEM?

Skip answered, “Not bad, except we have a hell of an attendance problem. Trying to keep those kids in school’s like trying to keep water in a sieve.”

“You mean they walk out in the middle of school?”

“Yeah—if they show in the first place. We have about 30% attendance. The lowest in the district.”

“What do their parents say?”

“Darn little, if they say anything at all. They’re as hard to get a hold of as the kids. Some kids don’t seem to have parents. Any ideas?”

“I’m not sure. You’ve got a tough one, all right,” Mae paused a moment, to give the impression that she was thinking, before she started giving the advice she had given so often before to other principals and teachers. “I’m not sure, but I think you have to make Street School the best game in town, the most reinforcing place these kids can find. It’s got to beat the street.”

“Yes, but they’ve got to work in school. It can’t be all fun.”

Mae thought, another yes-but guy; but she said, “You’ve got a good point there. Still, you might need to flood your school with reinforcers.”

“Yes, but I’ve heard you say noncontingent reinforcers don’t work.”

“True,” Mae said, “if the reinforcers are not contingent on specific behaviors at school you won’t get much learning. But if you simply fill your school with free reinforcers, reinforcers that are not contingent on studying, they still will be contingent on one crucial behavior.” Mae paused, to give Skip a chance to ask, “What’s that?”

“Going to school,” Mae replied. “Creating a generally reinforcing environment should reinforce entering that environment. And being a generally reinforcing person should reinforce interacting with that person.” Mae smiled, an act that reinforced Skip’s interacting with her, though both were unaware of the reinforcement taking place before their eyes.

“So, we should make sure that even a poor student contacts plenty of reinforcers in school. That way, the kid will need less coercion to get him or her to come to school..”

“I think you’re right, Skip.”

Now Skip smiled—at least for Skip, a smile indicates that he just received a reinforcer.

Mae went on, “But, of course, the more we also manage to make those reinforcers contingent on studying, the more frequently we will reinforce studying and the more the poor student will learn.”

“And the more the kid will change from a loser into a winner.”

This is an example of the **environmental-quality general rule**—you can increase the frequency of entering a setting by putting more reinforcers in that setting, but you will have to make

some reinforcers contingent on productive behavior if you want to increase productivity in that setting.

We make a big deal of the fallacy of environmental quality, because we think it’s a loser, not because it’s a winner. Most people change the environmental quality with the false notion that it will increase productivity, not with the correct notion that all it will do is increase the frequency of entering a setting. The problem is that such people don’t understand the principle of reinforcement—the need for making reinforcers **contingent** on the behavior they want to increase. This general rule is not a basic one in behavior analysis; it’s mainly something you should know about so you can avoid being confused by it.

(By the way, when we critique the notion of *environmental quality*, we’re using the phrase in a different way than those concerned with the protection of our environment. We too think a clean, healthy, well-preserved environment is crucial to the salvation of humanity.)

Comment: THIS IS NOT A FALLACY, BUT THE WHOLE THING NEEDS TO BE REWORKED.

Example
Organizational Behavior Management¹¹
THE NONCONTINGENT DELIVERY
OF REINFORCERS

Dorra Dollar (President of Monster Machines, Inc.): Productivity is down 25% in the last quarter. How can we expect good Americans to buy our cars if we don't manufacture them?

Before long, we'll all be driving foreign cars if we keep going at this rate. Now's the time for you high-priced consultants to earn your keep. Give me a hand with this one.

Harry Human (Representative from Sensitive Souls, Inc.): Well, frankly, Ms. Dollar, who could work in this icky factory? It's so gray and cold. You need to add many rich warm colors. And add music. Yes, some peppy music to make the workers want to work. And company picnics where they can get to know you better.

Dorra Dollar: Sounds good to me. Now let's hear from the new kid. What do you call yourself? A behavior analyst? Well, what do you think of Harry's proposal.

You (Representative from Behavior Analysts, Unincorporated—your first day on the job since graduating from the university last week):

1. (Please fill in the blank with your response to Dorra's question. Indicate what's wrong with Harry Human's suggestion—how it is a case of a misunderstanding of the environmental quality general rule, and show how your use of contingent reinforcers would increase productivity.)

Dorra Dollar: The most brilliant, yet tactful, critique I've ever heard. Would you consider heading our Department of Human Resources? Of course we'll double your current salary.

Harry Human: I've got to hand it to you kid, you sure know your stuff.

You: Gee, thanks. I owe it all to my diligent study of *Elementary Principles of Behavior*.

Harry Human: Where can I get a copy of that book?

QUESTION

1. *The general rule of environmental quality*—give a couple of examples.

¹¹We tend to use interchangeably the terminology *organizational behavior management (OBM)* and *behavioral industrial/ organizational (behavioral I/O)*.

THE DELIVERY OF REINFORCERS
BEFORE THE BEHAVIOR

Remember the reinforcement principle? *A response will occur more frequently in the future if a reinforcer or an increase in a reinforcer has immediately followed it in the past.* Check out that word *followed*. Remember it, and it'll save you grief. The reinforcer must follow the response for reinforcement to occur.

Is "thanks" a reinforcer? Might be. Does thanking in advance reinforce the behavior thanked? No way. The reinforcer must follow the behavior, not precede it.

THE BRIBE

The sleazy, middle-aged man pulled an envelope out of his pocket and slipped it into the hand of the tall, lean, young woman. Then he spoke without looking her in the eye and without removing the cigarette from the corner of his mouth. His left eyebrow twitched as he said, "The odds are 5 to 1 in favor of your team's winning the NCAA volleyball championship. Mr. Big has bet much money on your team's losing. So here's \$10,000 for you to throw the game."

Reinforcement? No. Because, the \$10,000 comes before the despicable act, not right after it.

Bribery? Yes. Bribery is the use of a reinforcer, often (but not always) given in advance, for the performance of an illegal or immoral act.

But advanced payment for a good deed isn't bribery. For example, paying someone \$20 before she mows your lawn isn't reinforcement, because it occurs before the act. But it isn't bribery either, because lawn mowing is neither illegal nor immoral.

And payment after an evil deed is bribery. For example, Evil Ernie could pay someone after the person helped him cheat on an exam.

We make a big deal of bribery because critics often accuse behavior analysts of using bribery. Such critics aren't thinking too clearly. True, bribery involves reinforcers. True, the behavior analysts' reinforcement uses reinforcers. But that doesn't make reinforcement the same as bribery. Along the same line, our critics get paid for their work, and, no doubt, that pay is a reinforcer. But that doesn't make their pay for their work the same as bribery. Here's the crucial moral distinction: On the one hand, bribery involves reinforcers for immoral or **illegal** deeds; on the other hand, the behavior analysts' use of reinforcement and most pay for work involves reinforcers for **good** deeds.

Note that we usually assume money is a reinforcer even when it's not being used in a reinforcement procedure. For example, giving money in advance of the behavior isn't reinforcement for that behavior, but the money is probably a reinforcer. That means we could use the money to reinforce behavior if we made that money contingent on some behavior.

They "Should Ought" to Want to Do It: Now here's what may be part of the confusion: In our culture, many people have a sort of

Comment: CITE TWO EXAMPLES OF REINFORCEMENT IN THE PREVIOUS DESCRIPTION OF YOUR FIRST DAY ON THE JOB.

simple-minded, false morality, whereby they don't want to give someone a reinforcer for doing something they think the person should do without that added reinforcer.

Parents don't want to give their kids special treats for being good because kids should ought to want to be good without the treat. Teachers don't want to give their students special privileges for doing well on quizzes because students should ought to want to do well on quizzes without the special privilege contingency. And employers don't want to give their workers time off from work for meeting production goals because the workers should ought to want to meet the goals without the time off contingency.

This is a false morality because using reinforcers in these sorts of contingent ways can only make life better for everyone. No one gets hurt. Refusing to do it is cutting off your nose to spite your face. Nonetheless, many people object. And when they do so, they often say I don't want to **bribe** my kids, my students, my workers. But we think they're just confusing their own cultural prejudices with bribery. (By the way, we borrowed the phrase *they should ought to want to do it* from Robert Mager, one of the most prominent teachers of performance management in the field.)

QUESTION

1. Give two examples that at first glance might appear to be reinforcement but are not because the apparent reinforcer comes before the response.

Example of Reinforcement *Behavioral Child and Family Counseling* **BUBBLE GUM AND BOWEL MOVEMENTS—PART I¹²**

Soon after Dawn arrived at her office in the psychology clinic, she got a phone call.

"This is Dr. Baker. Can I help you?" she said.

"Yes, Dr. Baker, this is Dr. Mario Acosta from the children's wing of University Hospital. I've got a problem—a 3-year-old boy, Todd. For the last year he's been averaging only one bowel movement per week; sometimes he goes for 10 days without a bowel movement; he claims it hurts."

I'd think it would after a week, Dawn thought.

"We've done all the exams in the book, including a barium enema X ray."

Dawn flinched; she had gone through that procedure herself—not something she wanted to try again.

¹²Based on Tomlinson, J. R. (1970). Bowel retention. *Journal of Behavior Therapy and Experimental Psychiatry*, 1, 83—85.

"The exams found nothing. We've changed his diet several times; only helps for a week or so. The poor kid is hurting, and we've done all we can. Would you look at him?"

The next day Dawn talked to Todd and his mother. She thought about her little boy as the mother described the discomfort Todd suffered. Then she thought of Sid and how he would laugh at the simple-minded solution she was mulling over. If a behavior isn't occurring often enough, what can you do? Well, you can try to reinforce that behavior. Reinforce bowel movements? Sounds crazy. Let's hope it doesn't sound crazy to Todd's mother.

After talking more, Dawn said, "Here's what I'd like you to do. I'd like you to give Todd a reinforcer each time he has a bowel movement. I think that will help him. Within a few weeks, he should be having a bowel movement almost every day." She tried to sound more confident than she was.

"Are you serious, Dr. Baker? I don't see how a reward can help Toddie with his natural biological processes."

"No guarantees, but it's our best first bet. Besides, Dr. Acosta said he'd prescribe a mild laxative to reduce the pain. Also, the laxative will help Todd have some bowel movements so you will be able to use the reinforcers."

"What should I use as a reinforcer, Doctor?" While the mother asked her question, Todd pulled on her sleeve and mumbled something Dawn couldn't hear. The mother reached in her purse, pulled out a piece of bubble gum, unwrapped it, and gave it to her son—a well-practiced ritual.

Dawn said, "Bubble gum."

"Oh, I'm sorry," the mother said. "How rude I am. Would you like a piece of bubble gum, Doctor?"

"No, thank you. I meant use bubble gum as the reinforcer."

Todd's mother did use Dawn's procedure and the bubble-gum reinforcer. She gave Todd a piece of gum immediately after each bowel movement, but not before.

Dawn's simple intervention worked! If you want a behavior to occur more frequently, reinforce it. During the 2nd week, Todd had six bowel movements. He was a proud young man—a young man in control. From the 4th week on, he had six or seven bowel movements each week.

Each week, except one, Todd spent the fourteenth week with his grandmother, but his parents had forgotten to tell her about the bubble-gum intervention. So Todd fell to a humiliating and painful two bowel movements that week. Then he returned home to his bubble-gum contingency, and he became his old 6- or 7-per-week self again.

Todd's mother confessed a side benefit of the bubble-gum contingency: "Dr. Baker, I didn't tell you, but Todd and I hadn't been getting along too well. I used to nag at him about his bowel movements and force him to sit on the stool for long periods of time. All without success. And my temper got short at times. But

now we're getting along just great. It's fun to be a mother again. I like giving him his reinforcer."

Todd was happy, his mother and father were happy, his grandmother was happy, Dawn was happy. Everyone was happy, except Sid. "Fine, now you've got a 3-year-old kid addicted to bubble gum? A bubble-gum monkey on his back. Will his mother have to go to college with him to deliver the bubble gum after each little success?"

Sometimes Dawn wished Sid were less of a wet blanket; but, as usual, he had a good point mixed in with his sarcasm. Now what should she do? Future chapters, dear reader, will tell.

QUESTION

1. Suppose you had a child with severe problems of bowel retention. How could you use the principle of reinforcement to help the child? Describe:
 - a. the behavior
 - b. the contingency
 - c. the reinforcer
 - d. the expected results

Example of Reinforcement *Behavioral School Psychology* **POVERTY'S CHILDREN—PART I¹³**

Mae's father, the Reverend E. L. Robinson, had programmed a set of values deep into Mae's soul. She should always give 10%, a tithe, to the church and more to the black community. Nothing is lower than black folks who forget where they had come from. You have the blessing of a fine education. You have the blessing of a fine job. Now you've got to give some of that back to where you came from, and Mae knew he did not mean back to her parents.

Reverend Robinson had retired from the pulpit, but he hadn't stopped preaching. Every Sunday night, when Mae called home, she got a sermon. He didn't exactly ask her what she had done for the black community that week, but he might as well have.

So Mae couldn't refuse when some friends from her sorority asked her if they could use one of her classrooms as a preschool for 15 children from low-income families, especially when she found out they were black children. Not only did she find the space, but she also found some money to run the program. And she herself helped supervise.

Her friends enrolled fifteen 4- and 5-year-old children in the preschool. Then Mae's staff went through the ritual of giving the children the Peabody Picture Vocabulary Test. And they got the results Mae knew they would. The children scored an average of

79, 21 points below the national average. This meant terrible language skills, of course. Poverty almost forces you to have weak formal language skills. If you're poor and you're 4 or 5 years old, you hardly have a chance, at least not in school.

Even though Mae knew how the tests would turn out, hearing the results depressed her. She hated psychological tests. They didn't help people. They just pigeonholed victims. Then the authorities would have an excuse for failing to teach the children.

When Mae talked to Juke about the results, he reminded her that the tests were culturally biased. For example, these white-oriented tests didn't measure the rich, expressive language her black children had.

True, but the tests did predict how a poor black child would do in school. With a score of 79, they had terrible formal language skills and would most likely fail in school.

Juke also reminded her that IQ tests measure learned behavior, not some innate intelligence.

True.

Then all Mae had to do was to teach her 15 children what they would need to know so they could succeed in school. Wasn't she the best behavior analyst in the school system? So what if everyone else had failed in trying to help kids like these. Not many people who really cared about black children knew as much about behavior analysis as she did. She could do it.

Thank God for Juke. She would do it.

That night, Mae couldn't sleep. The test showed that these children have terrible language skills. And the national statistics show that if you have terrible language skills, you're likely to fail in school. (Fifty percent of the black students in Detroit never make it through high school.) If you're poor and black, you hardly have a chance. (Forty-five percent of the black children in the United States live in poverty, with family incomes of less than \$10,000 per year.) If you're poor and black and you fail in school, you're likely not to find a good job, or any job. (The unemployment rate is more than twice as high for blacks as for whites.) If you don't find a job, you're more likely to die a violent death before you're 30. (Forty-eight black males and eight white males per 100,000 were homicide victims.) You're more likely to do time in prison. (Though blacks were only 12% of the population, they were 46% of the people arrested for violent crimes.) You're more likely to try heroin. Your children are more likely to die before they're old enough to enter preschool. (Eighteen out of 1,000 black infants died, in comparison with 8 out of 1,000 white infants.) And your children who do survive? They're likely to end as more victims in the statistics of black poverty. Also your grandchildren after them. And your great grandchildren too.

Mae knew these horrible statistics by heart. And she knew they didn't apply to middle-class blacks like herself. They applied to the 45% of the black children who were victims of poverty. They applied to her 15 children. She also knew this sounded melodramatic, like something out of a soap opera, but it was true. All the

¹³Based on Hart, B. M., & Risley, T. R. (1968). Establishing use of descriptive adjectives in the spontaneous speech of disadvantaged preschool children. *Journal of Applied Behavior Analysis, 1*, 109-120.

data on poverty and race said so, and she'd seen too much of it to deny the statistics. She knew that poverty wasn't a direct cause of these problems, but the conditions so often associated with poverty were. She had to change some of those conditions.

Only Mae could save those 15 children and the generations that would follow them. Mae tried to tell herself that she exaggerated, but she knew these particular statistics didn't lie. And she knew that if she didn't help these particular 15 children, no one would. Only she could help these children get the skills they needed to pull themselves out of poverty and poverty's fate. These thoughts frightened her, but they also made her high. This was life with a purpose!

The next day Mae and the preschool teachers started a program to help the children. What were their language skill deficits? After a few observations, the teachers concluded that the children rarely used adjectives. They might say *car*, but not *red car*; they might say *ball*, but not *big ball*. They didn't use color names, size, shape, or numbers.

So what should the teachers do? Try reinforcement—what else! Using adjectives is behavior. If behavior doesn't occur often enough, reinforce it. Each time a teacher heard a child correctly using an adjective with a noun (*red car*), the teacher would smile at the child and offer an approving comment. The teachers used this reinforcement procedure throughout the 3-hour session every morning, during breakfast, structured time, and free play—wall-to-wall reinforcement of adjectives.

And what happened? Nothing! Twenty-eight class sessions. Nothing. A dismal three or four adjectives per hour. Nothing.

Should we conclude that the children were genetically inferior, as some racists argue? That they were too dumb to learn? Mae knew that wasn't true. Should we conclude that reinforcement didn't work with these children? Mae knew that wasn't true; reinforce-

ment works with all God's creatures. Should we conclude that the teachers' approval wasn't a reinforcer? Perhaps, but Mae didn't think so; she'd never known anyone for whom approval wasn't a big reinforcer. Then what should we conclude? Mae wasn't sure.

She and the teachers talked it over. Maybe the children didn't have the words in their vocabulary, in their repertoire. And even if they could say the words, maybe they couldn't use them correctly. Even if they could say *car*, maybe they couldn't say *two cars*, *red car*, *small car*, *long car*, at least not at the right time. Hard to believe, but maybe.

For the time being, they would conclude that the children's baseline rate (preintervention rate) of using adjectives correctly was too low for reinforcement to have much effect. Maybe the frequency of using adjectives was too low to provide enough occasions for reinforcement. The children had to respond correctly at least sometimes so the teachers could reinforce those responses frequently enough to produce an effect. So maybe they hadn't had wall-to-wall reinforcement.

Poverty had won this round, but Mae, the teachers, and her 15 children hadn't quit fighting. You'll read more about their noble battle with poverty in a later chapter.

QUESTIONS

1. How does poverty relate to language skills and IQ scores? Language skills and success in school? Success in school and employment? Employment and a halfway decent life for yourself? Employment and a halfway decent life for your children, for your grandchildren, for your great grandchildren?
2. After an initial failure to improve behavior with a reinforcement procedure, what should we *not* conclude about the person's genetic quality, intelligence, ability to learn, ability to have behavior reinforced?

BASIC ENRICHMENT

In the Skinner Box *Experimental Analysis of Behavior* **REINFORCEMENT WITH WATER**

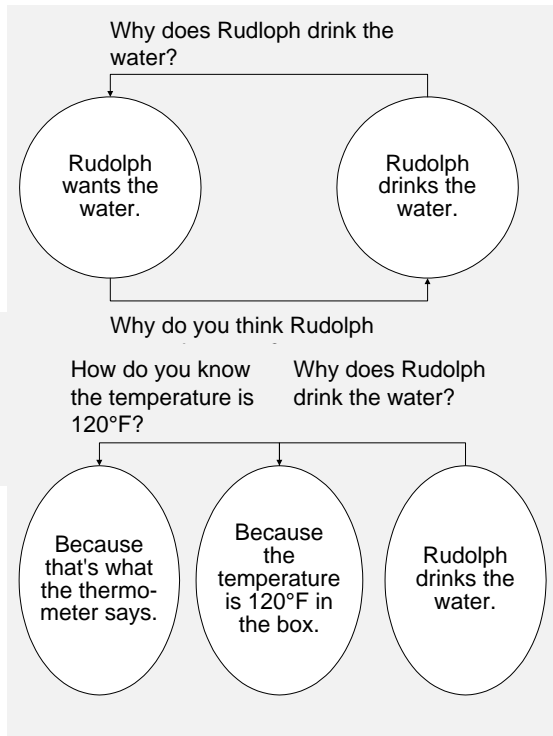
You're looking through a small window at a white laboratory rat (Rudolph) in a rat-sized room—about 1 foot square. Three inches from the floor, a small lever sticks out of the side of a wall. There is a dime-sized hole in the floor, beneath the lever. The rat presses the lever downward with its forepaws. You hear the click of a tiny water dipper as it comes to the hole. The dipper is large enough to hold only one drop of water. The rat also hears the click and is off the lever and onto the cup in a flash, licking it dry. Then it raises back up to the lever, presses it again, and the whole cycle repeats itself. You're witnessing reinforcement of the lever-press response by the presentation of a reinforcer (the drop of water).

This drama is taking place in a Skinner box. (Douglas Ellson was the first to invent this test chamber, and Burrhus Frederick Skinner

made it the most famous apparatus in the history of psychology. Skinner preferred to call this apparatus an experimental space, but we'll stick with the simpler and more popular name, for two reasons: First, more people will know what we mean, and second, it's easier to say.)

If you ever get a chance to work with a rat in a Skinner box, grab it. Reading about reinforcement is like reading about sex. It's not bad, but it hardly compares to the real thing. Nowhere else can you see the process of reinforcement so clearly and so powerfully as in the Skinner box—the microscope of behavior analysis. We aren't saying you'll come to prefer the Skinner box to sex. But we are saying you'll become a true believer when you see the effects of reinforcement, as you give the rat a drop of water each time the rat presses the lever.

Professor Skinner and those who joined him did all the original research in behavior analysis, using rats and then pigeons in Skinner boxes. He started this research in the early 1930s. Even



1. *Skinner box*—give an example of its use. In the example, describe:
 - (1) the apparatus
 - (2) the procedure
 - (3) the results

General Rule AVOID CIRCULAR REASONING

Here's another way to express the problem. Why does Rudolph drink the water? Because he wants it. How do you know he wants the water. Because he drinks it. Why does he drink the water? Because he wants it. How do you . . . and around and around in a circular reasoning pattern resembling Rudolph chasing his own tail.

In other words, this attempt at an explanation looks like an explanation, but it ain't. It looks like we've added some new information, when we say *Rudolph wants the water*. But that only gives us a false sense of understanding. To say *Rudolph wants the water* doesn't tell us anything we don't already know; it just tells us that Rudolph is drinking the water. That's circular reasoning.

What would be a noncircular explanation? Rudolph drinks the water because the temperature in his box is 120° Fahrenheit. That's new information. How do you know the temperature is 120°? That's what the thermometer reads. (We don't say, *because Rudolph drinks the water*; that would be circular.)

today, most of the basic research in behavior analysis takes place in the Skinner box, though the experiments have grown to a complexity and subtlety that you could hardly imagine from a simple rat in a simple box.

We introduce you to the Skinner box because it gives us a simple situation where we can look at the basic principles of behavior. We will touch bases with it throughout the book. For the time being, you've seen how reinforcement works in the Skinner box: The rat is deprived of water for a few hours. Then each time it presses the lever, it gets a drop of water. And so it presses the lever frequently (several times a minute).

The water is contingent on Rudolph's lever press, but we wouldn't normally say his lever press is contingent on the water.

*D*Concept

The error of reification

- To call a process or activity a thing.

A *Skinner box* is a test chamber with a response device and a source of reinforcers. (Of course, some of us think the whole world is just one big Skinner box. Others find that thought very disturbing—or very disturbed.)

QUESTION

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So whenever you're talkin' technical, don't use *want*, because it probably means you're caught in the horrible trap of circular reasoning.

Circular reasoning occurs when the only proof you have is the existence of the thing you're trying to prove.

Avoid circular reasoning!

QUESTION

1. What's the name for the kind of reasoning involved with terms like *want*?
2. Diagram an example of circular reasoning.

CIRCULAR REASONING AND THE ERROR OF REIFICATION

I think the major problem with psychology is the high frequency with which psychologists and psychiatrists invent explanations for behavioral (psychological) problems. And they always seem to commit the **error of reification** when they invent these explanations.

DConcept
Subjective

- The observation,
- measurement,
- or criteria for measurement
- are **not** assessable to more than one person.

For example, why does she act so strangely (**an activity**)? Easy, because she has a mental illness (**a thing**). And how do you know she has a mental illness? You've got it: because she acts so strangely.

I call this type of reification *circular reification*—inferring an internal entity which is just a label for the behavior.¹⁴ And we'd justify our inferred personality disturbance by pointing to the behavior as the symptom that proves the existence of the under-

DConcept
Objective

- The observation,
- measurement,
- or criteria for measurement
- are accessible to any competent observer.

lying personality disorder.

Almost always when you hear professional psychologists use the term personality, they are committing the serious error of reification. Why does she act in a dysfunctional manner? Because she has a dysfunctional personality. Why does he get drunk and drive fast without his seat belt? Because he has a thrill-seeking personality.

And psychologists have invented a major industry (intellectual and personality testing) based on circular reifications. Why does he act so dumb (activity)? Because he has a low IQ (inferred thing).

QUESTIONS

1. *The error of reification*—define it and give an example.

¹⁴I think there is also a second type of reification, which I call *process reification*—inferring an internal entity which is just a label for a controlling process (typically contingencies). In other words, traditional psychologists infer an internal entity rather than deal directly with the behavioral contingencies that are really controlling the behavior. *Why did Johnny act so selfishly? Because his id is strong and his superego and ego are underdeveloped.* Freud perceptively identified three types of control processes, roughly those involving contingencies with unlearned reinforcers and aversive conditions, those involving moral and religious outcomes, and those involving the learned reinforcers and aversive outcomes associated with being logically correct or incorrect. Then he fell into our culture's reification trap by inferring things called *id*, *superego*, and *ego*. That's an example of process reification, which may be a subcategory of circular reification.

2. Show how the error of reification is an example of circular reasoning.

OBJECTIVITY VS. SUBJECTIVITY

IN THE CLASSROOM

Have you ever turned in a term paper for one of your courses and gotten it back only to receive a *C* and not known why you hadn't gotten an *A*? On the other hand, have you ever taken a math exam and known when you turned it in that you would deserve and receive a *C*?

What's the difference? The grading for the essay was **subjective**; you didn't know your teacher's grading criteria; so you didn't know how to evaluate the quality of your essay.

An important disadvantage of subjective measures is that independent observers can **not** reliably agree on the measurement; so you and your professor may not agree that you earned only a *C* on your essay.

Your teacher measured the quality of your essay with criteria only the teacher had; and even if the teacher had tried he or she would not have been able to list the grading criteria for you.

But your math teacher measured the quality of your math exam using clear-cut, **objective** criteria; and you were painfully aware of those criteria (i.e., whether you had gotten each problem correct).

An important advantage of objective measures is that independent observers can reliably agree on the measurement; so you and your professor can reliably agree, though perhaps with reluctance on your part, that you earned only a *C* on your math exam.

IN SCIENCE

Science is based on objective measures and observations; therefore the science of behavior analysis is based on objective measures and observations. Objective measures allow independent observers to reliably agree on their observations and measurements. This reliable agreement is called *interobserver reliability*. Objectivity and high interobserver reliability are why science in general is such a powerful tool for understanding the nature of the world and how the world works. Objectivity and high interobserver reliability are also why behavior analysis is such a powerful tool for understanding the nature of the psychological world and how that world works.

In the 19th century, psychologists broke away from the discipline of philosophy and struggled to turn psychology into a natural science. But, unfortunately, they had difficulty shedding their history of subjectivism. Though they established an experimental laboratory, they failed to abandon subjectivity. Instead, they attempted to measure the subjective experiences of their experimental subjects. These 19th-century experimental psychologist would present a stimuli to there experimental subjects and ask the subjects to report on the resulting inner, subjective feelings, sensations, and perceptions. But each subject's inner experiences could be observed only by that subject. And, because of this subjectivity, the early experimental psychologists could not achieve interobserver reliability. And because they could not achieve in-

terobserver reliability, they could not develop the base of reliable data necessary for a science.

Fortunately, 20th-century, experimental psychologist emancipated psychology from the tradition of subjectivity and concentrated on the objective measurement of psychological phenomena, thereby bringing psychology into the prestigious fraternity of the natural

**What you see is what you get.
Or maybe what you see is what he's got.**

sciences.

IN APPLICATIONS

Unfortunately, applied psychology (e.g., clinical, counseling, educational, and organizational psychology) generally has failed to follow the lead of experimental psychology. Subjectivism still dominates the measurement and evaluation of real-world practice

*D*Concept Medical model myth

- An erroneous view of human behavior—
- that behavior is always a mere symptom of
- an underlying psychological condition.

and intervention, especially in clinical/counseling practice, public schools, and business organizations, even though some university research in those areas uses objective measures. Therefore, most practice by most psychologist in most applied settings is based on subjective impression rather than scientific proof.

Unfortunately, as a result, there is little reliable evidence that most psychologists in most applied settings are actually helping anyone. And usually, no benefits are found, when the benefits of the psychologists' help are objectively measured and evaluated. This may seem harsh, but the subjective practice of most 21st-century psychologists is so far behind the objective practice of most 21st-century physicians that contemporary psychological practice is more comparable to the primitive, ineffective practice of early 18th-century physicians.

Fortunately, there is a little light in the darkness. That light emanates from the experimental analysis of behavior and applied behavior analysis. The experimental analysis of behavior shares the objective measurement system of general experimental psychology—not surprising. What is surprising is that applied behavior analysis has remained firmly rooted in the objective measurement system of the experimental analysis of behavior, from which it sprang, whereas subjective, applied psychology never had a close relation with objective experimental psychology. As a result applied behavior analysis has generated a wealth of effective interventions designed to help people lead better lives, interventions that have been objectively, scientifically proven to be effective and helpful, whereas traditional applied psychology has only generated practices that seem very plausible but usually fail to stand up to objective evaluation.

Moral: Just because a psychological intervention makes a lot of sense and sounds good, don't believe it until you see an objective evaluation.]

Concept MEDICAL MODEL MYTH

We behavior analysts are always battling the **medical model myth**. Here's how traditional psychologists apply the medical model to psychology: They say undesirable behavior is a symptom. And they say the symptom suggests some underlying psychological disease, just as a fever might suggest an infection. So, according to the medical model, Eric's tantrums suggest a more profound underlying psychological problem, perhaps insecurity. We behavior analysts don't trust such interpretations. Instead, we suspect Eric's tantrums are learned behavior reinforced by their immediate consequences—for example, his parents' attention. Behavioral research shows that problem behavior is usually not a symptom of the big deal; it is the big deal.

This doesn't mean behavioral problems don't sometimes result from underlying biological problems—for example, brain injury or Down's syndrome. Still, traditional psychologists misuse the medical model by guessing about or inventing underlying psychological causes for observable behavior. Then these psychologists end up caring more about their invented causes than about the actual problem—the behavior.

The medical model suggests that the behavior is of little importance in its own right. We behavior analysts disagree.

By the way, we're using *model* more or less to mean a representation. In the present context, a medical disease would be a model of a psychological problem, somewhat as a toy airplane would be a model of a real one.

Understand that traditional psychologists who use a medical model don't mean that taking medicine will cure the problem. Instead, they are just guessing that some hidden, deeper, underlying psychological problem causes the obvious behavior problem. The behavior problem is just a symptom of the underlying psychological problem. Behavior analysts think most uses of the medical model in psychology are wrong; it's generally a model to avoid.

QUESTION

1. *Medical model myth*—define it and give examples

MEDICAL MODEL MYTH¹⁵

¹⁵The *medical model myth* is a hard concept to come to grips with. It would probably take a couple of chapters to really get it under control because there are so many gray areas and hard-to-decide areas. And we can't afford to devote two chapters just to this topic. However, it is such an important topic that we hoped this brief introduction would be better than none.

Comment: **IN THE SKINNER BOX**

Two psychology students, Sue and Tom, observe Rudolph the rat in the Skinner box. For one minute they record each time Rudolph presses the lever by making a tally mark on a piece of paper. Incidentally, this method of recording Rudolph's behavior is called direct observation. A direct observation is one that is personally seen or heard by the observer and immediately recorded, in contrast to recording someone else's subjective introspection about their private feelings and thoughts. Interobserver Tally Sheet ... [1]

Comment: To show the difference between objective and subjective observations, let's look at a situation in which an employee, Tim, is frequently late to meetings.

An objective observation of the situation would be to say, "Tim has been late to 5 out of 6 meetings." Any person observing Tim entering these meeting with access to a clock, would agree with this observation. A subjective observation of this situation would be to say, "Tim is disrespectful of other peoples' time." Several different observers may not agree with this observation.

The main difference between objective and subjective observations lies in the extent to which each can produce a high inter-observer reliability.

*D*Concept

Inter-observer Reliability

- A measure of the degree of agreement in
- (data tallies) observations made by two or more observers.

Students say the medical model is a tough concept, so let's look at other examples.

Passive Aggression

A professor once complained about a graduate assistant he was working with. He said, "That guy is passive-aggressive."

"Why do you say that?" I asked.

The professor replied, "Well, he agrees to do tasks I ask him to do. But then he doesn't do them. He's passively aggressing against me because he doesn't like me."

Here's an alternate interpretation, more behavioral: The professor's approval is a powerful reinforcer, and it certainly reinforces the assistant's agreeing to do the tasks. But without clear-cut deadlines, even that powerful reinforcer will fail to control the assistant's behavior—that old devil, procrastination, will take over. The spirit is willing, but the flesh is weak.

Now this isn't just a meaningless academic debate between two professors. The medical model would have us try to correct the hypothesized, deep, underlying problem; this particular medical model would have us try to convince the assistant that the professor is really a good guy and not someone he should try to hurt.

We've had more success with a behavioral approach: For her doctoral dissertation, Barb Fulton¹⁶ did an experiment, the results of which support a behavioral approach. She measured her assistants' task completion during baseline in which she used a traditional approach of assigning tasks orally and not following up when the assistants didn't complete the tasks. While intervening, she held weekly meetings. There she assigned tasks in writing, gave due dates, and checked that they'd completed the tasks assigned the previous week. Her results are shown in the graph below.

Will be using a lot of graphs like this throughout the book, so it's important that you know how to read them. Usually the measure of the results we obtain is shown on the vertical axis and our interventions on the horizontal axis. If you look at the graph of Barb's data you see there were two approaches—the traditional and the behavioral. Now what results did the traditional approach produce? Note that the bar for the traditional approach goes up to about 50% on the vertical axis. So assistants completed about 50% of their tasks when Barb used the traditional approach. In the same way, you can see that they completed almost 100% of their tasks with the behavioral approach. In other words, Barb's behavioral approach was almost twice as effective as the traditional approach.

Fear of success

¹⁶Fulton, B. J., & Malott, R. W. (1981-1982). The structured meeting system: A procedure for improving the completion of nonrecurring tasks. *Journal of Organizational Behavior Management*, 3(4), 7-18.

Consider the woman who often fails to get her homework done in time to hand it in. Some traditional psychologists might use the medical model to say her failure to hand in her homework is a mere symptom of the underlying cause—an unconscious fear of success. The woman fears that she will lose her feminine charm if she becomes a successful scholar. The guys won't like her. She won't get that prince charming her parents programmed her to pursue.

Here's an alternate view, a behavioral view, of course: Doing almost anything else is more reinforcing and less effortful than doing her homework. So she does everything but her homework.

Most people use the medical model when they explain human behavior. But usually a simpler, behavioral interpretation is more accurate and will help us intervene to better effect.

Other Examples

Why do people smoke cigarettes? Because they have an underlying death wish? Give us a break. How about because smoking has reinforcing chemical effects?

Why does Eric have temper tantrums? Because he has low self-esteem? So much time has been wasted in the futile attempt to improve people's performance by improving their self-esteem that it's a human tragedy, thanks to this misuse of the medical model. Eric has temper tantrums because they are reinforced with attention.

Why does "schizophrenic girl" act one way sometimes and another way other times? Because she has a split personality? No, because sometimes acting one way produces reinforcers and other times acting another way produces the reinforcers.

Prescience

As the science of medicine was developing, it had to battle a superstitious model: Why is that person ill? Because she has evil spirits inside her. How shall we cure her illness? Exorcise the evil spirits. Today the practice of medicine based on science has largely replaced the practice based on superstition.

Psychology has the same problem. As the science of psychology develops, it is having to do battle with a misapplied medical model: Why is the person acting inappropriately? Because she has a mental illness inside her. How shall we help her act appropriately? Cure her mental illness. Today the practice of psychology based on science is struggling to replace the practice based on the misapplied medical model.

Root Causes

Does the medical model address the root causes of psychological problems, and the behavioral model address just the superficial symptoms of the problems? No. The medical model invents fictional cause, and the behavioral model addresses actual cause. It's just that the actual causes of our behavior are often (in some senses) much simpler than a psychodynamic (type of medical model) view of psychology would lead us to think. In other words, we don't smoke cigarettes because we are fixated on our genital

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stage of infantile development, especially not if we are females; instead, we smoke because smoking behavior is reinforced by the outcome. Granted, figuring out just what those reinforcers are isn't always that simple.

QUESTION

1. Medical model—give examples of how it differs from the behavioral view.

Hint: When reading examples, be sure you know what they are examples of. Know the title of the chapter you're reading and know the title of the section you're reading, and know how the examples relate to the section headings and chapter titles.

CIRCULAR REASONING AND THE MEDICAL MODEL MYTH

It turns out that what's wrong with most of the medical model applications in psychology is that they're based on circular reasoning.

Why does Eric tantrum? Because he's insecure (underlying psychological condition). How do you know he's insecure? Because he tantrums (a symptom). Circular reasoning.

Why is there this behavior problem? According to the medical model, it's because of an underlying psychological problem. How do you know there's this underlying psychological problem? Because there's the behavior problem that is a symptom of that underlying psychological problem. Circular reasoning.

Why doesn't the grad assistant do the tasks he's agreed to do? Because of his underlying psychological problem of passive aggressivity. How do you know he's passive aggressive? Because his failure to do what he agreed to do is a symptom of his passive aggressivity. Circular reasoning.¹⁷

QUESTION

1. How is the wrong use of the medical model an example of circular reasoning? Please give an example.

HOW TO TALK ABOUT BEHAVIOR

Often people really screw things up when they use everyday language and everyday approaches in a scientific context. Here's an example of what not to say: *Rudolph the rat pressed the lever because he expected to get a drink of water.* What's wrong with that? *Expected* is what's wrong, for two reasons: First, you don't

¹⁷I think all instances of the medical model myth are instances of circular reasoning, but not all instances of circular reasoning are instances of the medical model myth. For example, saying *Rudolph drinks water because he wants it* is circular but probably not an example of the medical model myth. Although we don't explicitly say so in our definition, the medical model myth probably best applies to inappropriate behavior or some sort of assumed inappropriate cause.

know what the rat expects; you're making an unjustified inference (guess). Furthermore, your guess is just another example of the error of circular reasoning: Rudolph pressed the lever because he expected water, and you know that he expected water because he pressed the lever, and so on—around and around.

Second, the verb *to expect* describes a pretty complex activity, when you stop to think about it. Probably expecting something involves language skill (verbal behavior). And we have no reason to think rats can talk or even think (as most thinking is probably based on language).

So what should you do? Keep it simple; talk about only what you know. *The rat pressed the lever because that response has produced a drop of water in the past.* Keep it simple.

The same with *knows*. Don't say *the rat knows it will get a drop of water.* More circular reasoning.

And the same with *thinks*. An unjustified circular inference of activity that's probably a little too much for Rudolph.

For example, why does Sid scratch himself? Because he thinks scratching will stop his itch? Really? *Hey, Sid, did you know you were scratching yourself in a private part of your body, when you were standing in front of your class lecturing? Oh, my gosh no! Was I really? How embarrassing.* See, in this example, not only did Sid not think his scratching would relieve his itch, he didn't even think he was scratching. Of course, the relief from the itch probably reinforced Sid's scratching in the past, and that's why he's doing it now; but that happens automatically, even though Sid isn't even thinking about it. So we can't even assume Sid, let alone Rudolph the Rat knows, expects, or thinks the reinforcer will follow his response. And that's true, even though the occurrence of past reinforcers has reinforced that response and is why Sid or the rat is currently responding.

Along the same line, don't say, *Rudolph the rat figured out that he would get a drink of water if he pressed the lever.* That implies that Rudolph has language and has thought through the problem, solved it, and now can state the rule describing the contingency to himself. No way. And the same goes for the nonverbal autistic child.

Also stay away from *learned that*, as in *Mr. R. learned that his lever press would produce a drop of water.*

Also, don't say, *Rudolph pressed the lever in order to get the drop of water.* Don't even say, *Rudolph pressed the lever to get the water.* Why not? Because that implies a certain intentionality, as though Rudolph has figured out what to do and is doing it because he knows what he'll get for doing it. The same goes for nonverbal human beings. Don't say, *Rod cries to get attention.* Rod just cries because that behavior has been reinforced. Along the same lines, don't say, *Rod's trying to get attention by crying.*

And don't say, *Rudolph makes the connection between his lever press and the reinforcer.* Don't even say, *It's important to deliver the reinforcer immediately because then it's easier for Rudolph to make the connection between his lever press and the reinforcer.* Why not? Well pretty much the same as the others. It sort of im-

plies Rudolph is a thinking, verbal organism. And, if you're serious about it, it's circular. At the very least, it adds nothing. And, as

DGeneral Rule The don't say rule	
○ With nonverbal organisms, don't say	<ul style="list-style-type: none"> • <i>expects</i> • <i>knows</i> • <i>thinks</i> • <i>figures out</i> • <i>in order to</i> (or <i>so that</i> he, she, or it could . . .) • <i>trying to</i> • <i>makes the connection</i> • <i>associates</i> • <i>learns that</i> • <i>imagines</i> • <i>understands.</i>
○ With any organisms, don't say <i>wants</i> .	

always, the same goes for nonverbal human beings.

Same goes with *associates*, as in *Rudolph associates the lever press with the water*.

As we suggested before, you can say, *Rudolph presses the lever now, because that response has been reinforced in the past*. Simple, clean, elegant, no nonsense, no unjustified inferences.

Same with *wants*. Don't say *the rat wants a drop of water*. Just say what you know: *The rat has had no water to drink for several hours and the temperature is real hot*.

This applies not only to Rudolph the Rat but also to your pet guppy, Rover, and the 6-month-old child crying in the apartment next door. None have language. None expect, know, or think. Of course the 6-month old child will learn to speak and will learn to think and expect and will come to know. But not yet. As a matter of fact, often you can't make these inferences about any particular behavior of a verbal human being either, as Sid's scratching demonstrates.

Prohibition, prohibition, prohibition. Give us a break. What can we say? Well, we can say our set of prohibitions is more than a mere, abstract, intellectual nicety. All those taboo words get in the road of your really understanding what's going on. And correctly understanding can be important. Suppose you're working with a nonverbal mentally handicapped child, as many of you may be doing at some point. And suppose the child has some self-destructive behavior that's really dangerous, like gouging his own eyes. Or suppose he really needs to learn to do something, such as talk, for instance. You need to figure out what contingen-

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cies are controlling his behavior or failing to control his behavior. And then you need to design contingencies that will help him acquire a healthy repertoire. Discussing his problem in terms of knows, thinks, wants, and so on, will just slow you down and may prevent your helping the child at all. We're talking serious stuff here.

All these extra words represent the error of circular reasoning and reifications, the major sins of psychologists.

However, once children learn to talk, they have the tools to *expect*, *know*, and *think*. But the analysis of those behaviors is so complex and so controversial, we won't even begin to touch on them until the last few chapters of this book. In the meantime, wash out your mouth with soap whenever you use *expect*, *know*, *think*, or any of the following similar sorts of expressions like *figures out*, *in order to*, *trying to*, *makes the connection*, *imagines*, *associates*, *learns that*, or *understands*, with a nonverbal human being or nonhuman animal, and *wants* with anybody, at least when doing behavioral analyses. That leads us to our **don't say rule**.¹⁸

QUESTIONS

1. What are the 12 verbs and expressions you shouldn't use with nonhuman animals and nonverbal human beings?
2. Give an example of how each can be misused.
3. Give an example of how to say the same thing without having to wash your mouth out with soap.

REINFORCE BEHAVIOR, NOT PEOPLE

Dawn doesn't reinforce Sid. Instead, she might unintentionally reinforce his pouting. She also might reinforce his smiling by smiling back at him. We often lose focus when we talk about reinforcing people rather than some specific class of responses, like pouting or smiling. For example, even in behaviorally based classrooms, teachers who talk about reinforcing the child may end up giving noncontingent reinforcers and thus fail to reinforce appropriate behavior. The secret to understanding how the behavioral world works is always to focus on the contingency—not the behavior by itself, not the reinforcer by itself, but the contingency. So stay sharp, don't lose focus. A deal? Using *reinforce* correctly will put you ahead of 95% of the professional behavior analysts. Keep an eye on your professor and see how sharp he or she stays. Keep an eye on us, too. And don't reinforce any of us when we don't deserve it. Right?

Comment: I'm not sure this is a very good example.

¹⁸Old Spike Jones record (probably older than you are): Phone rings. Guy picks it up. Listens, while commenting, *You don't say. . . . You don't say! . . . You don't say.* Hangs up. Other guy asks, *Who was it?* First guy replies, *He didn't say.* That ought to teach you not to read footnotes.

2

- The phase of an experiment or intervention
- where the behavior is measured
- in the absence of an intervention.

A more general version of this rule is *reinforce behavior, not organisms*. In other words, we also don't reinforce rats, pigeons, monkey's etc., just their behavior; but *organisms* sounds so pompous.

QUESTION

1. We just snuck a tiny joke in the last couple of sentences; so tiny that only 15% of our students got it. *Hint*: We violated our own rule. OK? Now, please explain it.

*Compare and Contrast***REINFORCER VS. REINFORCEMENT**

What's wrong with this sentence? *The shocked look on his sister's face was the reinforcement for his telling the dirty joke*. *Hint*: The word *reinforcement* is wrong. So what word should you use? *Reinforcer*. The shocked look is a *reinforcer*, not a *reinforcement*. Remember: The *reinforcer* is the stimulus or event (or thing) that will increase the likelihood of responses it immediately follows. The sister's looking shocked is the event that reinforced telling the dirty joke.

Then how does *reinforcement* fit into the picture? *Reinforcement* describes the whole scene. *Reinforcement* is what took place.

Remember: **Reinforcement** is the process or procedure of reinforcing a response. *Reinforcement* occurred as the boy told the dirty joke and his sister's mouth fell open, her head jerked back, her face turned red, and her whole body stiffened. Of course, we'll only know for sure that reinforcement occurred, if the boy increases his frequency of shocking behavior.

In other words, we can use *reinforcement* to describe that a reinforcer followed a response and now that response occurs more frequently. *Reinforcement* refers to the whole process; and *reinforcer* refers to one component in that process.

Many people, even pros, say *reinforcement* when they should say *reinforcer*. But that's no excuse for you. Be sharp.

Reinforcer = thing, event, change of conditions

Reinforcement = the delivery of the reinforcer and the resulting change in behavior

QUESTIONS

1. What is the difference between *reinforcer* and *reinforcement*?
2. Correctly use *reinforcer* and *reinforcement* in the same sentence.

BASELINE

A couple sections back we said Barb Fulton measured her assistants' task completion, during **baseline** where she used a traditional approach. So what's baseline?

QUESTION

1. *Baseline*--define it and give an example.

In the Skinner Box

Two psychology students, Sue and Tom, observe Rudolph the rat in the Skinner box. For one minute they record each time Rudolph presses the lever by making a tally mark on a piece of paper. Incidentally, this method of recording Rudolph's behavior is called direct observation. A direct observation is one that is personally seen or heard by the observer and immediately recorded, in contrast to recording someone else's subjective introspection about their private feelings and thoughts.

Interobserver Tally Sheet

	10 se c	20 se c	30 se c	40 se c	50 se c	60 se c
Su e	lll	lll l	lll	ll	lll l	l
T o m	lll	lll l	lll	ll	lll l	l

(the marks in each column are tallies.)

The inter-observer reliability measures the number of times both students agreed that Rudolph pressed the lever. In this case, they agreed 100% of the time

Next, Sue and Tom are asked to make a tally mark each time Rudolph appears to be frustrated. They do this for 1 minute.

	10	20	30	40	50	60
Su e	l		ll	l		
T o m		ll		l		ll

In this case, the inter-observer reliability is low, 11%. The criteria for measurement are not objective, but subjective. The criteria are not the same for Sue and Tom