

# The Antecedent

by Capella Partnered with CARD



## WHAT'S COVERED

This lesson will explore the antecedent by defining and discussing the following:

1. Discriminative Stimulus ( $S^D$ )
2. Types of Discriminative Stimuli
  - a. Vocal Discriminative Stimuli
  - b. Visual Discriminative Stimuli
  - c. Combination of Vocal and Visual Discriminative Stimuli
3. Guidelines for  $S^D$ s
4. Motivating Operations (MOs) and Establishing Operations (EOs)

## 1. Discriminative Stimulus ( $S^D$ )

Before you learn the steps involved in the two categories of discrimination training, there are some definitions you need to know. These terms will be used regularly by other behavior technicians and by BCBAs. Therefore, you are expected to memorize and understand each of these definitions.

**Stimulus/stimuli** (singular/plural) is anything that one sees, hears, smells, tastes, or feels.

➞ **EXAMPLE** All of these are examples of stimuli: 2D photo of a cookie, an actual cookie, the smell of cookies baking.

$S^D$  stands for discriminative stimulus. What does this mean? The technical definition of **discriminative stimulus ( $S^D$ )** is a stimulus in the presence of which a particular response will be reinforced and in the absence of which that response will not be reinforced.

A stimulus is called a discriminative stimulus ( $S^D$ ) when it signals that a correct response to the stimulus will result in reinforcement. It is an instruction or cue to the patient that evokes a response. Keep in mind that  $S^D$ s are not just questions or instructions, but can also be nonvocal cues such as pointing or a sign indicating something such as a stop sign.

➞ **EXAMPLE** A red light cues you to stop at an intersection.

➞ **EXAMPLE** Someone waves, and you wave back.

➞ EXAMPLE “What is your name?” evokes your response, “Jesse.”

Something is said to have **stimulus control** when there is a change in the occurrences of behavior due to a particular stimulus.

## Video Transcription

[MUSIC PLAYING] How old are you?

Two.

Oh, wow. Two like this? He's trying.

Two.

So Harry, I'm going to go on a trip soon.

Cool, whereabouts?

I'm going to go to Tennessee-- well, kind of near Nashville for spring break.

Cool. Nashville is a very nice area.

Can I nice-- can I shake your hand?

Uh-huh.

What's your name?

I'm Cecilia.

Cecilia.

Nice to meet you. What's your name?

[INAUDIBLE]

[INAUDIBLE]. Nice to meet you.

Your name is-- was Cecilia.

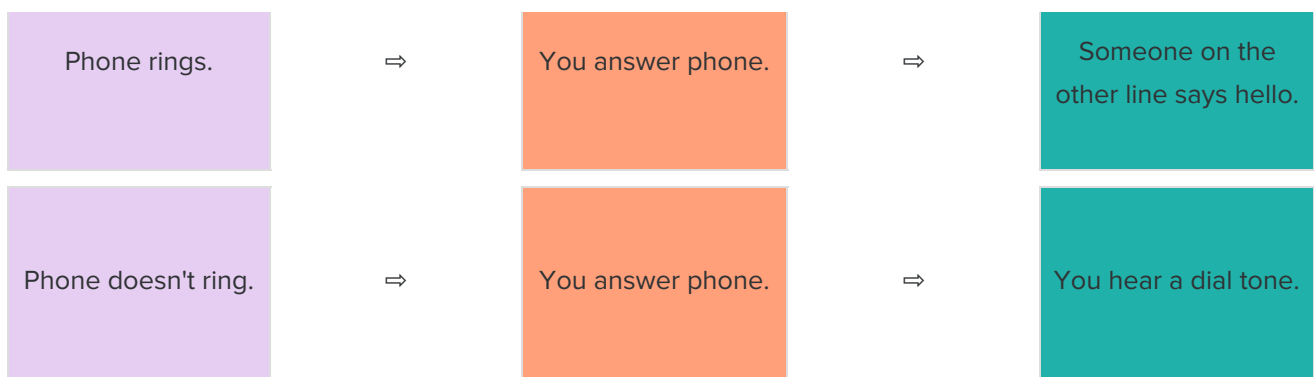
Cecilia. Good remembering. Thank you so much.

➞ EXAMPLE

Stimulus

Response

Consequence



In this example, the phone ringing goes from being a stimulus to a discriminative stimulus, or  $\mathfrak{D}$ , when you answer the phone and receive reinforcement for doing so (someone on the other line says hello) in the presence of the stimulus, which is the ringing.

Here are more examples of stimuli we establish as  $\mathfrak{S}^D$ s with our patients.

#### 🔗 EXAMPLE



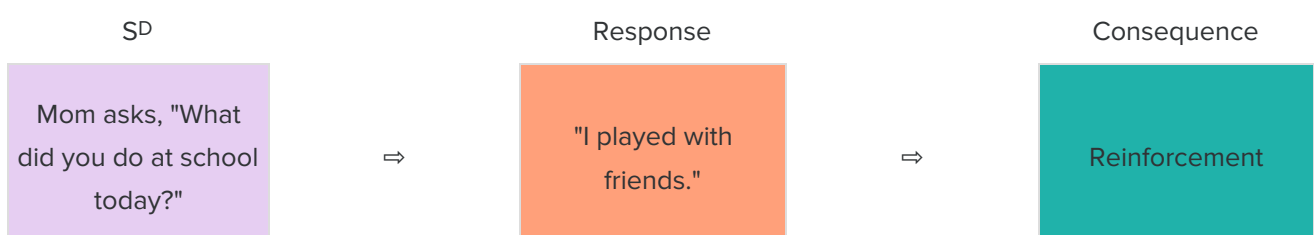
In this instance of a photo of a girl eating, note that an  $\mathfrak{D}$  does not have to be vocal. It can be something the patient sees, or smells, or tastes, or touches. In this case, we want to establish a picture of a girl eating as the  $\mathfrak{S}^D$  that evokes the response, "Eating," or "The girl is eating," or "She is eating."

#### 🔗 EXAMPLE



In this case of a picture of a dog in a book, we want to establish a picture of a dog as an  $\mathfrak{D}$  that evokes the response, "Dog," or "It's a dog," or "I see a dog."

#### 🔗 EXAMPLE



In this last scenario, where Mom asks, “What did you do at school today?”, we want to establish the question, “What did you do at school today?” as an  $S^D$  that evokes a response about what the teen did at school on a given day.



#### THINK ABOUT IT

Come up with your own example of an  $S^D$ .



#### TERMS TO KNOW

##### **Stimulus/Stimuli (singular/plural)**

Anything that one sees, hears, smells, tastes, or feels

##### **Discriminative Stimulus ( $S^D$ )**

A stimulus in the presence of which a particular response will be reinforced and in the absence of which that response will not be reinforced

##### **Stimulus Control**

A change in the occurrences of behavior due to a particular stimulus

## 2. Types of Discriminative Stimuli

Most of the stimuli and discriminative stimuli ( $S^D$ s) we present are either vocal  $S^D$ s, visual  $S^D$ s, or a combination of vocal and visual.

### **2a. Vocal Discriminative Stimuli**

A vocal stimulus is anything we say to someone.

➞ EXAMPLE “What does a cow say?”

➞ EXAMPLE “Tell me something that is red.”

#### **Video Transcription**

[WAVE SOUND] What do you hear?

I hear a wave.

Very good. It is a wave. Do you want to look at it?

[WAVE SOUND]

### **2b. Visual Discriminative Stimuli**

A visual stimulus or  $S^D$  is anything someone sees. Typically developing individuals frequently label objects, actions, and activities they see going on around them. We present visual  $S^D$ s because we want our patients to

learn to do the same.

↪ EXAMPLE A toy cow, picture of a cow, real cow, etc. We might hold up a toy cow as the  $\mathcal{S}^D$  for the patient to expressively label the cow, that is, to say, "Cow."

↪ EXAMPLE A red apple, green apple, sliced apple, etc.

## Video Transcription

You have a cut. What did you cut it on?

Oh, that was a good question. You know what I hurt it on? I was in the kitchen. Listen. Are you listening? I was in the kitchen and I was cutting an apple, and I accidentally cut my finger.

### 2c. Combination of Vocal and Visual Discriminative Stimuli

Combining a visual and vocal  $\mathcal{S}^D$  means we ask the patient a question or say something to the patient (this is the vocal part) and show them a picture or object (this is the visual part) at the same time.

↪ EXAMPLE Holding up a toy cow (visual) and asking "What is this?" (vocal)

↪ EXAMPLE Pointing to a picture of a boy sleeping (visual) and asking "What is he doing?" (vocal)

## Video Transcription

What does this say?

Kitchen.

You're right. Good job.

Thank you.

## 3. Guidelines for $\mathcal{S}^D$ s

There are six guidelines that should be followed for presenting  $\mathcal{S}^D$ s:

1. *Have the patient's attention before you present the  $\mathcal{S}^D$ .*

The Wrong Way	The Right Way
The patient is playing with a toy truck, not looking at you, and you present the $\mathcal{S}^D$ , "What is the boy doing?" while you point to a picture in a book of a boy taking a bath.	You ensure the patient is looking at you (and you'll learn techniques for gaining the patient's attention later), then present the $\mathcal{S}^D$ .

This is important because if you fail to gain the patient's attention, they are unlikely to respond and you are setting them up for failure.

## Video Transcription

OK, last one. You gotta look. Right here.

[MUMBLES]

Blue.

[MUMBLES]

[TOKEN DROPS]

Yay!

Yay!

[APPLAUSE]

Smart girl!

So good!

### 2. Avoid presenting the patient's name with the $\mathcal{P}$ .

The Wrong Way	The Right Way
All of your $\mathcal{S}\mathcal{D}$ s sound like this: “DeShawn, come here,” “DeShawn, sit down,” “DeShawn, look?,” “DeShawn, do this?,” “DeShawn, what color is an egg?,” etc.	Present your $\mathcal{S}\mathcal{D}$ s without saying the patient's name before each. It's okay to call the patient's name, but this should be to gain the patient's attention.

So, in the example with DeShawn, if he wasn't looking at the behavior technician and they wanted to get his attention, they might have said, “DeShawn,” and when he looked, she would have reinforced the eye contact and then gone on to present her other  $\mathcal{S}\mathcal{D}$ s.

Keep in mind that the name may become an extraneous variable that the patient comes to “ignore” so that when you call the patient's name to gain their attention, they will not respond.

Or, the patient may start to respond only when their name is at the start of the  $\mathcal{P}$ . When we are speaking with typically developing individuals one on one, we do not need to call their names to get them to answer us. We do this with individuals with ASD because it may be harder to get their attention. However, if we call their names before the presentation of each  $\mathcal{S}\mathcal{D}$ , we are compensating for their poorer attention, rather than teaching them to attend to us.



It's okay to sometimes use the patient's name with the  $\mathcal{S}\mathcal{D}$ , but when we find ourselves doing this frequently, it usually means the patient is not making eye contact with us and we are trying to compensate by calling the

patient's name. If you experience this, you should speak with your patient's BCBA about other ways to gain the patient's attention.

3. *Avoid repeating SDs without giving consequences.*

The Wrong Way	The Right Way
You want Fionn to come to where you are in a room. You say, "Come here," and Fionn doesn't respond. You say, "Come here," again and Fionn still doesn't respond. You say, "Come here," a third time and Fionn still does not respond.	You want Fionn to come to where you are in a room. You say, "Come here," and Fionn doesn't respond. You then either go get him and walk him over to you then give a consequence, or you tell him, "No," then repeat your SD.

This is the correct way because the patient will not respond consistently. We want the patient to learn that every time we present an SD, a response is expected.

## Video Transcription

Stand up.

Stand up.

That's good! Nice job. Here's one sticker. OK, ready? Clap hands.

Clap hands.

Almost, bud. Try again, OK. Try again.

Ready? Clap hands.

Clap hands.

Oh, almost, kiddo. We're going to try again, OK. This is clap hands. [CLAPS] Can you do it? Do this. Like that, yeah. OK, ready?

4. *Change target SD only when BCBA instructs you to do so*

The Wrong Way	The Right Way
The BCBA has asked everyone to teach Angel to expressively label 3D objects. He cannot label anything yet. The SD is "What's this?," while showing Angel an object like a shoe. One behavior technician decides to use a picture of a shoe while everyone else uses a real shoe.	Everyone uses the same example of a shoe when presenting the SD. After the patient has acquired the expressive label, "Shoe," your BCBA will instruct you to begin varying the shoe presented, and to mix presentation of real shoes with pictures of shoes, doll shoes, etc.

It will slow the patient's progress if every behavior technician works on their own target in a program.

5. *Initially, SDs should be clear and concise.*

The Wrong Way	The Right Way
Hanna is just learning to respond to, “Come here,” and you say to her, “Hanna, can you come over here and sit down please?”	You say, “Come here.”

Please note that “initially” is underlined. After our patients have learned beginning level language skills, vocal SDs or instructions must become more complex and less concise. As such, for a patient further along in their program, “Can you please come over here and sit down?” would be an appropriate way to present an SD.



You will not have to make these decisions alone; your BCBA will tell you how complex your instructions should be for a given client.



Consider why this is important. Imagine you are learning a new language and you want to learn to ask for an apple. Which way will you learn more quickly? A) “Look at this, we call this an apple. Repeat after me.” or B) “Apple.”

## Video Transcription

Going to try again.

Here. Put with same.

Put same here.

That's right! That's the same. Good job.

6. *The patient should respond only after the entire SD is presented.*

The Wrong Way	The Right Way
You are teaching the patient to respond to the vocal SD, “Touch car,” when there are three objects in front of the patient (a car, a shoe, and an apple, for example). You begin your SD and say, “Touch,” and before you can finish, the patient touches the car.	The patient begins to respond only after you have finished presenting the SD, “Touch car.”

This is important because if the patient responds before the SD is completed, they are not responding to the SD. Therefore, the patient is not learning what it is we are intending to teach.

## Video Transcription

Toys. Hold on, buddy.

Vehicle.



I know. Hold on. Ready? Say, "I'm ready."

I'm ready.

OK. Give me a vehicle.

This is a vehicle.

Good job! What is it?

Vehicle.

Nice! Good job, kiddo.

[EXCITED NOISE]

Hold on, hold on. Ready? Say, "I'm ready."

Ready.

OK. Give me animal. Good job! What is it?

Animal.

Good job!

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## 4. Motivating Operations (MOs) and Establishing Operations (EOs)

The other aspect of the antecedent we will cover in this training is the motivating operation, or MO. In some cases, the antecedent in a discrete trial may include a condition or physical state that motivates the patient to respond to an  $\mathcal{S}^D$  or even to respond when no  $\mathcal{S}^D$  is present. An MO can also make a person less motivated to respond because they are satiated and are not feeling deprived of something.

By definition, a **motivating operation (MO)** is a condition or physical state that alters the effectiveness of a reinforcer by making the reinforcer either more reinforcing (establishing operation, or EO) or less reinforcing (abolishing operation, or AO). It can evoke responses that produce that item or activity.

Motivating operations that are EOs involve a state of deprivation, meaning when one is deprived of a reinforcer or hasn't gotten it in a while, the reinforcer's effectiveness is increased:

- Food (hungry state)
- Drink (thirsty state)
- Rest (state of fatigue)

Motivating operations that are AOs involve a state of satiation, meaning when one has just had access to a reinforcer, the reinforcer's effectiveness is decreased:

- Feeling full
- Recent access to a reinforcer

➞ **EXAMPLE** If someone is very hungry, then food is likely to be a reinforcer (the person is said to be in a state of deprivation). However, if someone just ate lunch and is full (person is in a state of satiation), then food is not likely to be a reinforcer.

➞ **EXAMPLE** If someone is eating salty foods, then a beverage is likely to be a reinforcer (deprivation). If someone just drank a glass of water, then a beverage is not likely to be a reinforcer (satiation).

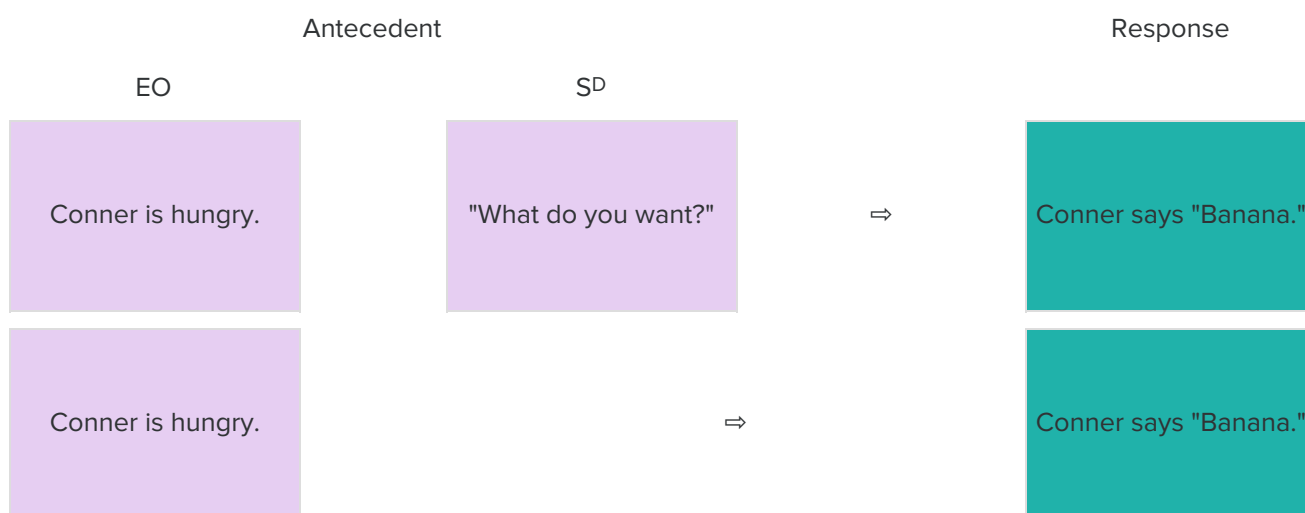
➞ **EXAMPLE** If someone is tired (state of fatigue), then jumping on the trampoline is unlikely to be a reinforcer.

➞ **EXAMPLE** If someone is hot, then a fan blowing in their face is more likely to be a reinforcer than when the person is cold.

Your BCBA might ask you to contrive an EO to make a specific item more reinforcing to encourage the patient to give a particular response.

➞ **EXAMPLE** Consider the case in which Conner is hungry. Hunger or deprivation from food is the EO. When someone provides the SD "What do you want?", Conner's motivation to reply by saying he wants a banana is increased because access to a banana is highly reinforcing.

In fact, Conner may be so motivated by the opportunity to receive a banana that the EO itself may evoke the response, "Banana," and the behavior technician may not need to ask Conner what he wants. In this case, the antecedent leading to asking for a banana is not an SD but is an EO.

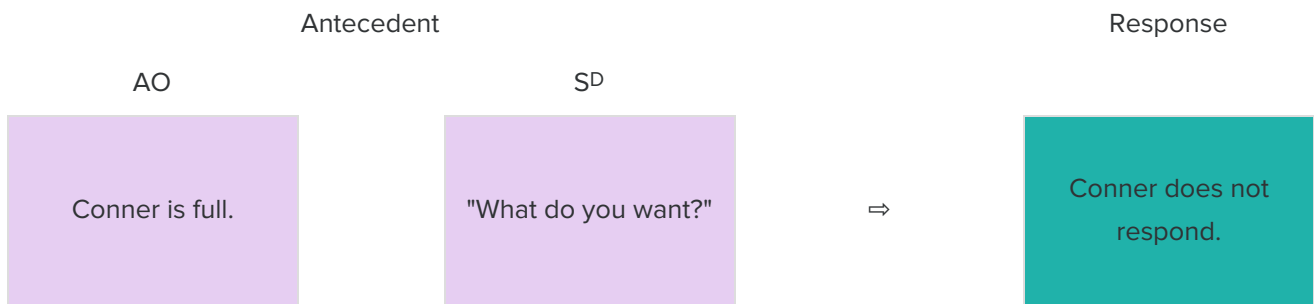


## Video Transcription

Can I please play-- Can I please get-- go get an iPad?

Yeah, sure. Thanks for asking.

➡ **EXAMPLE** In the following case, Conner is full because he just ate lunch. Now, the behavior technician is trying to get him to say that he wants a banana. The behavior technician asks him what he wants and he is unmotivated to respond, so he says nothing. This is an example of a banana losing its effectiveness as a reinforcer.



### Video Transcription

M-- Mickey.

Mickey?

[EXCLAIMS]

Wow. Do you want the Mickey book or the Thomas book? Which one? Jack Riley.

[MUMBLES]

Hey, you. Which one? Thomas book, or Mickey book? No. Which one, Jack Riley? No? Do you want the guitar?

"Tar".

"Tar?" Yeah, OK. All right, that's OK.

Yeah.



#### THINK ABOUT IT

What could you do if you know you are going to try to teach a patient to respond to “What do you want?”

You may be asked to “contrive” or “capture” an EO in order to teach various skills.

➡ **EXAMPLE** You are working on colors with Claudia and she is painting a picture of a tree. Move the green paint out of reach. Because she needs the green paint to finish her painting, she will be more likely to ask you for the specific color.

### Video Transcription

Who is upside down?

[LIGHT LAUGHTER]

Who is upside down?

[LIGHT LAUGHTER]

Who is upside down?

[LIGHT LAUGHTER]

Touch your head.

[STRONG LAUGHTER]

Touch your ears.

[STRONG LAUGHTER]

I got you again. Ah, you're so easy.

[LIGHT LAUGHTER]

Touch your nose.

[STRONG LAUGHTER]

Touch your eyes.

[STRONG LAUGHTER]

I've got you!

Today, Jack Riley is really playful, but isn't interested in playing with any of his toys. He's more interested in social games. So what Jessica does is integrate his lessons in the play, such as body parts.

Touch your head.

[STRONG LAUGHTER]

## Video Transcription

So here's the stuff to set the table. Can you set the table for us?

Sure.

Great. Thank you.

Oh, we're missing a plate. Could I have a plate?

Sure

An extra plate.

Yeah. Here you go.

Thank you.

Keep going.

All right. You did it. Thank you.

You're welcome.

Your BCBA will specify what type of antecedent –  $S^D$  or MO – you are using or contriving for each skill being taught.



#### TERM TO KNOW

### Motivating Operation (MO)

A condition or physical state that alters the effectiveness of a reinforcer by making the reinforcer either more reinforcing (establishing operation, or EO) or less (abolishing operation, or AO) reinforcing



#### SUMMARY

In this lesson, you learned about some key terms for the antecedent that are important to know within the context of discrimination training. A stimulus (plural: stimuli) is anything that one sees, hears, smells, tastes, or feels. You learned that a **discriminative stimulus ( $S^D$ )** is a stimulus in the presence of which a particular response will be reinforced and in the absence of which that response will not be reinforced. You also reviewed the six **guidelines for  $S^D$ s**. Lastly, you learned about **motivating operations (MOs) and establishing operations (EOs)**. Motivating operations refer to a condition or physical state that alters the effectiveness of a reinforcer. MOs do this by making the reinforcer either more reinforcing, in the case of an establishing operation (EO), which involves a state of deprivation like thirst, hunger, or fatigue, or less reinforcing, in the case of an abolishing operation (AO), involving a state of satiation like feeling full.



#### TERMS TO KNOW

### Discriminative Stimulus ( $S^D$ )

A stimulus in the presence of which a particular response will be reinforced and in the absence of which that

response will not be reinforced

**Motivating Operation (MO)**

A condition or physical state that alters the effectiveness of a reinforcer by making the reinforcer either more (establishing operation or EO) or less (abolishing operation or AO) reinforcing

**Stimulus/Stimuli (singular/plural)**

Anything that one sees, hears, smells, tastes, or feels