

DONNA WESTBROOKS-MARTIN: Good morning. My name is Donna Westbrooks-Martin and I'm an education consultant in the PaTTAN Pittsburgh office. Welcome to the National Autism Conference. Before we get started with this morning's presentation, I'd like to go over just a few housekeeping items for you. Today we will have the exhibit hall open from 8:30 until five o'clock, and from 4:30 until six o'clock today we'll have a tribute to Jerry Shook, his legacy and contributions to evidence-based autism preventions in Pennsylvania and the world. So please plan to attend. Also, if you have any CEUs that he needs to check out, we will be doing that at the close of today in our registration area, right where you registered this morning. Okay.

So again, welcome this morning to our live audience and to those who are participating in today's publication via webcast. I'll go ahead and introduce this morning's presenter. Dr. Barbara Esch is a behavior analyst and speech pathologist with over 30 years' experience in behavioral interventions for individuals with developmental disabilities. She has worked in school, home, clinic, and hospital settings. Her workshops, training symposium, and research have been presented in the United States, York, and Australia, and focus on the use of behavioral procedures to approve speech-language and feeding skills for students of all ages with a wide variety of medical and educational diagnoses. Dr. Esch received her PhD in applied behavior analysis from Western Michigan University, and her MA in speech pathology from Michigan State University. She is the author of the Early Echoic Skills Assessment, part of the Verbal Behavior Milestones Assessment and Placement program, VB-MAPP. She is the founder and past chairperson of Speech Pathology Special Interests Group of the Association for Behavior Analysis International. Her research on behavioral treatments for early speech acquisition appears in the Analysis of Verbal Behavior and the Journal of Applied Behavior Analysis. Dr. Esch is co-owner of Esch Behavior Consultants, Inc., a consulting company specializing in behavioral treatments for individuals with severe communication delays. Please join me in welcoming Dr. Esch.

DR. BARBARA ESCH: Thank you, Donna. Thank you. Well, I'd like to thank the conference program committee, can you hear me okay in the back? Especially Mike Miklos, who many of you probably know, for inviting me to be here today. It's great to be participating with everybody here at the National Autism Conference here in State College. Before we get started, I will point out to you the number in the top right-hand corner of all of the slides. That number refers to whether -- the page of your handout, so this slide should appear on page one of the

handout. And there are three slides per page, so there should be three red number ones, meaning that we're still on page one of the handout. Now there are some of the numbers that are grey, and when you see a grey number, we're still on that page, but you do not have that slide in your handout. There are some extra slides that I wanted to use to sort of reiterate a point or whatever, and so I didn't want to burden the handouts with all of those and you don't really need them, but just to help you kind of follow along.

So before we get started, let me kind of find out who all of you are. How many speech pathologists are in the audience today? So a goodly number of us. And behavior analysts that don't have a speech path background? Okay. I'm assuming if you're a speech pathologist and you're here, you are either knowledgeable about verbal behavior and a behavioral approach to language assessment or at least you're very interested in that. And so that's what we're going to be talking about today. It turns out that this is really a discrepancy in how two different fields of study talk about language acquisition. This is not a skill-building workshop, it's an information talk. And what I hope to do is to talk about this issue of speech and language assessment and why it would benefit from a behavioral analysis in a way that maybe you haven't thought about before, or maybe it'll put the frosting on the cake for some of you that have been thinking about this, and to spark some further research, not only by researchers, but by clinicians, as well: some paper-writing, some case study publication, and so on and so forth, so that we can kind of move forward in the direction that I feel would benefit both of the fields in terms of how we talk about skill development and preliminarily skill assessment.

So it turns out that this is a translation -- not just a translation issue between the two fields. In other words, the field of speech pathology is not talking about language acquisition in a way that can be directly translated and understood by those with a behavior analytic background, and vice versa. If you are speaking from a behavior analytic background, you can't just take all of those words that you use to explain language acquisition and kind of translate it and say, well, what's the translation in the traditional speech path field for this particular issue? It's more than that. I think it's -- we're not just using different words for the same process. There's actually a basic difference in how these professional fields conceptualize and theorize the acquisition of verbal behavior, of language, if you will.

There's a real incongruence in how we explain speech and language skills, a difference in how we talk about where those language skills came from and what causes and maintains the

difficulties that the children that we work with or the adults that we work with are having. There's a real difference in talking about how we should assess those skills. That's the piece that we'll be looking at today. And most importantly, there's a difference in how we talk about how we use this assessment information to inform our treatment planning.

So we have the traditional approach to talking about language acquisition, and we have a behavioral approach to talking about language acquisition. And I'm going to be going back and forth today to talk about these two different interpretations of speech and language skills. I will tell you, Donna and I were talking beforehand. This is not easy stuff. It's difficult, and it's hard even if you want to understand it. It's difficult because of what I just explained. It's not simply a translation issue, and it took me more than a couple of years of really reading a lot and trying to figure out, what are those behavior analysts really saying? How do I -- what do I do with that? How do I make that be different or usable information for me in what I do as a speech pathologist? And now as a behavior analyst who primarily works with that hat on and the background that I have in language acquisition, it has taken some time to be able to come up with a way I think of sort of analyzing, well what is it that traditional language approach talks about? What is it that they -- what are they about? Why do we talk this way and what do we do with this? So it may be confusing to try to reconcile these two discussions, and that's hopefully what we will begin to do today.

So I'm going to kind of go back and forth to kind of weave what I think is a picture for you, and there's a lot of redundancy in this talk. If you already know everything there is to know about verbal behavior, you have a very, very strong repertoire in that area, you might find the redundancy more than you would need, but not everybody is at that point. And I know from my own background, even though I could tell you what a mand and a tact were and talk fairly knowledgeably about behavior analysis in general and verbal behavior in particular, I still had difficulty trying to sort of go between these two areas. And so if you feel as though, gosh, I think I heard that earlier today, but is she now talking about something different? Probably not. It's probably just an effort that I'm making through some amount of experience to try to re-explain it in different ways so that if you hear it more than once and you hear it in different ways, one of those may resonate with you more than another.

So what should assessment do? Well, in my opinion, it should do one thing: it should tell us what to do in treatment. It should lead to a treatment approach. And so when we assess, we

can assess language skills, and then we assess other skills as well. If we are a soccer coach, we don't assess language skills. We assess other skills. If we're a speech pathologist or behavior analyst working to try to help someone acquire communication skills, we assess language skills, but we also may assess some other skills. Why do we want to find an efficient, effective assessment method? And that's what we'll be talking about today. What's efficient and what's effective?

Well, let's take a look at our timeframe with our learner. If this is the trajectory for a typically developing child in a school setting, he starts at the point on the left and progresses at some rate to the point on the right. If this is our learner with a communication delay and that learner learns at the same rate that the other child does, there will still be a gap at the end of our instructional access period of time. More typically, this is what we see. We see a slower rate of acquisition with many of our children, and so the gap simply widens. So what is our task? Well, this is our task. Our task is to teach so that children we're working with learn faster, at a faster rate, than a typically developing learner. That's a pretty heavy responsibility, and we have no time to waste. We have to select our treatments to be the right treatments, the fastest-working treatments, and the ones that are the most durable.

So let's talk about the purpose of traditional speech and language assessment. Traditional speech and language assessment, the purpose is not clearly articulated in a way that informs treatment. So here's an example. These are some quotes from a well-known textbook on aphasia, which is the speech and language disability that occurs after a stroke, for example, or other injury to the brain. Effective rehabilitation of frontal lobe dysfunctions hinges wholly on what we know about frontal lobe function. So what is that saying? That's saying that we can't fix it if we don't know what caused it. It disregards any influence of the environment and places the hope for fixing the dysfunction on being able to identify frontal lobe function, which is, of course, in the brain. So what are we as teachers to do if we don't know about frontal lobe function? Does that mean that we can't fix a frontal lobe dysfunction?

Another quote: the purpose of naming assessment is to specify the mechanisms that are responsible, the mechanisms that are responsible for the naming impairment, as well as those mechanisms that are spared. Well, by the mechanism, I take that to mean some part in the brain, not environmental events or actions. Those aren't exactly the kinds of mechanisms that are being referred to here. Another quote: the purpose of naming assessment is to reveal the

cognitive bases and the lexical characteristics of naming failure. And then it goes on to say that this will help us in our treatments. This information allows the clinician to select rational treatment interventions and stimulate to most directly impact on the communication issues.

So this is -- these are three statements of the purpose of assessment that do not clearly lead us to treatment, something that is within our realm. So that's kind of at odds because the primary purpose of speech and language assessment is to give us some direction for treatment. Why else would we assess? Well, there are other reasons to assess, like we have to have information for an IEP, for example, a yearly plan, or for other reasons. But the primary goal is to give us some direction for treatment. So our job is to describe errors that occur on tests that we give, and those errors will be organized in such a way on the assessment as to give us some direction and tell us what to do.

So traditional speech and language tests are based on the assumption that language is the function of linguistic processes, linguistic processes and structural entities. Well, let's take a look at that. This is exactly how we talk about what's going on with language. We talk about places in our brain that sort of control these things, expressive language, receptive language, syntax, grammar, and so on. This is so pervasive that it almost makes sense to us. We see and hear people talking like this every day. They don't have the concept of hammer, or they don't have the chair concept yet. They misuse pronouns because their pronoun concept is not right. But interestingly, non-language skills are not typically described in these mentalistic terms. They're generally assumed to be a function of the person's environment and the person's body resources. These -- if we superimpose these hypothetical constructs onto non-language skills, they wouldn't make any sense to us at all because we're not talking about language. But we don't say, someone has a raising-their-hand concept problem. That's why they don't raise their hand. Or they didn't jump well. They have a jumping concept problem. If a football player doesn't catch well, we don't say he has a poor catching concept. To explain that problem, we say that he needs more practice catching the ball.

So why do we do this? We don't ascribe these non-language skills as being cognitive because we can clearly see the environmental reasons for these errors. We would say she used the wrong word, but we wouldn't say she used the wrong walk. Why not? Because we can clearly identify the environmental reasons for the wrong walk, and it's more difficult to determine, well what are the environmental reasons for the wrong word occurring?

I think we tend to describe language skills differently because we don't pay attention to the environmental contexts that surround language responses in the same way that we do with non-language responses. This is the environmental context for this error in walking. The cabinet door was open, she bumped into the drawer, and her knee hurts. That's it. A very clear A-B-C analysis of what happened there. The same -- if we have an intact reach skill or intact reach concept, what does that really mean environmentally? The can was visible, you extend your arm, and your fingers touch the can. That's what maintains the behavior of reaching toward a can. Antecedently, the can was visible. Consequently, that's what reinforces the reach in that direction and to that extent.

So because of their linguistic focus, traditional speech and language assessments describe errors in linguistic terminology. They have a linguistic focus. That's how -- that's what you're going to get as a result of administering a standardized speech and language test. So linguistic terminology like grammar, syntax, semantics, structural terminology like nouns and verbs and pronouns and prepositions and so on -- here's some examples of how traditional speech and language assessments describe the deficits that it tests. So these are linguistic and structural terms that every speech pathologist has to learn. You all are nodding your heads, yes, and familiar with those. So let's take a look at relational vocabulary. A test of relational vocabulary, for those of you that don't have a background in this -- for example, shoes and socks are said to have a function relation, that is, they function to cover your feet. Pig and cat have a concept relation. They are both part of the concept animal. And so if you can't name some animals, you have a relational vocabulary problem with the concept animal.

So this is -- we'll talk more about this profile later of an article that my colleagues and I published, but this is a very common test that we're all familiar with, speech pathologists are: the clinical evaluation of language fundamentals, the CELF. And these are the sub-tests on that assessment. This is a standardized language assessment. And the relational vocabulary sub-test on this particular test are identified under the category called word classes. Word classes I for younger kids, and word classes II for older children. And relational vocabulary skill, not on this test in the -- this description is not contained in this test, but relational vocabulary is described as the ability to understand relationships between words that share a variety of functional and conceptual relationships, to interpret or conceptualize or organize information to create meaning. So what you should begin to ask yourself is, yes, if I understand relational vocabulary

problems, how do I help my learner organize his information to create meaning? What do you do in the treatment setting to make that happen? How are you going to help your learner make connections between words, as it says? It's hard to know what you're supposed to do. It's hard to even know what the skill consists of without some examples. And when you do get examples, what do you do if the relational vocabulary is a concept relational vocabulary problem like pig and cat versus a function relational vocabulary problem like shoes and socks? Do you work on everything or do you just work on one or the other? Or are there more? There are more.

So these words don't pinpoint what to do for treatment, and why does that matter? This risks inefficiency and ineffectiveness, longer treatment times and non-durable outcomes. And that's a problem for us as clinicians. So what would you do with this type of error? You say, point to your nose, and she points to her elbow. Does that mean she doesn't have the nose concept, so should you work on nose concept or body part concept? Does it mean she has a receptive language deficit because she didn't follow your instruction? And so what do you choose? Do you improve receptive language overall? What should you work on? What if you looked at it a little more closely and here she is pointing to the elephant's nose on the Band-Aid? So maybe it's a pronoun problem. If you are going to take a look at linguistic issues, then there's a difficulty in terms of leading to treatment.

Here's a test item from a popular standardized language test that many speech pathologists give all the time. Which one is little? The correct answer is to point to the baby. So what if the child can do that? You say, which one is little?, and they point to the baby. But then you ask them later in the test, what's the opposite of big?, and they don't say little. What -- there are several things that might occur to you to work. You could work on opposites, you could work on adjectives, you could work on general expressive skills. These are other items from another language test. On this one, the item was, what is he doing? And the child says running, so the past-present progressive verb question, given a picture. But they failed, say a sentence with the word running. Now they just said running there and the teacher says, I'll get you started. He likes to run, so he is -- and there's no response. Can they not say running? No, we know that's not the issue. They just said it right there. Why did that error occur? How are you going to analyze that? What are you going to do with that? A lot of different intervention options -- noun-verb sentence construction, verb tense, receptive skills, and so on.

Here's another one. Which one is little? Well, this one's like the elephant with, tell me the opposite of big, and we don't get little, but they obviously were able to answer another question about little. Another example: say rhyming words. This is an actual item from a speech and language test. Fun, bun, ton, done, say another one. The child says, sun. Great. Now find the one that rhymes with fun. And you're showing them pictures of all of these things. And there's no response. They do not point to sun. How will you analyze that if you're talking a linguistic problem? More importantly, what does your intervention -- what should be selected?

So if I want to assess your repertoire with respect to cats, what information do I need? A traditional speech and language test would report your cat-related topographies, that is all the different answers that you could give related to cats, within a context that may be a little bit difficult to parlay into a treatment plan. These tests are not designed to evoke -- to find out what evokes your whole cat repertoire. They're designed to describe whether your language system is in place or not. Is your grammar, is your syntax, your semantics and phonology, are those in place? With the assumptions that if those systems are in place, you'll be able to talk about cats. And because of this design focus, this linguistic structural design focus to our standardized speech and language tests, if the tests reveal that you make errors on cat-type questions, they would lead you to the conclusion that it has less to do with your cat-related learning history than with your deficit linguistic structures.

So let's look at this a little bit further. This is items from a traditional assessment. These are some of the ways that a typical error might be described, but again, we're not really sure what to do. So they failed these items, point to cat, and that's described on the exam, on the assessment, as a receptive language deficit. What animal says meow? Is a cat an animal? They don't have the animal or the cat concept. This is how we are marking it on the answer form. These are our available options. What word rhymes with cat? If they can't do that, say catfish without saying fish -- if they can't do that, we are labeling that a phonological awareness deficit. And then we need to find treatments for those.

So let's take a look at one example. Is a cat an animal? If they get it wrong, we say they don't have the animal concept, possibly the cat concept. So if the treatment isn't really clear, that is we can identify what the -- that they made the error, these are some things that we might do in treatment. Excuse me. And I've probably done all of these before I was able to sort of analyze it a little bit differently. We might have them point to a lot of animals. We have them

name pictures of animals, including cats. We might have them label animals in a mixed array, label cats in a mixed array of animals. We might play with toy animals, and we might even have a cat in there and talk about them. We might have them sorting animal pictures from non-animal pictures or answering yes and no to, is a goat an animal? Is a chair an animal? Is a pig an animal? And so on and so forth. Or we might read animal books with them. But none of those are going to be useful in getting this response corrected in an efficient, durable way. The child may indeed learn from doing all of these sorts of things, but again, if our trajectory for learning has to be faster and more efficient than a typically developing child, we've got to bring our A game. We don't have any time to waste. And so we need to figure out, should we be doing all of these other things? What's the fastest way from here to there?

So that's answering a question about cat. What if we want the child to write the word cat on a test? So let's take a look at what is probably required here from a traditional perspective. This is a linguistic model for producing a written word. The focus here is not on the behavior of writing, but rather on proposing hypothetical constructs to explain how to produce this word. So it's a difficulty if you appeal to one hypothetical construct to explain another hypothetical construct. For example, a child is dyslexic because he has a poorly developed phonological process. You're sort of chasing your tail if you talk like that. The problem is that even if these constructs or these supposed agents were shown to exist, we don't have ready access to them. Where is your phonological process? How do you get access to that so you can fix it and bring about some behavior change? And more importantly, we're liable if we're focusing on this to disregard what we could be paying attention to. So writing the word cat is the instruction. Write the word cat, and after going through these various processes supposedly taking place in the brain, the written word will be produced. In other words, you'll end up with cat.

So here's the instruction again: write cat. And so you hear the word cat. It goes through your semantics system and it -- because you're not going to be speaking it, we bypass the phonological lexicon. We go over to the orthographic lexicon, the graphemic output buffer, the allographic realization, and finally we end up with the word cat. So you probably recognize that that top part are antecedent events in the environment. You hear a word or you see a word. And the bottom part is the consequent stimuli or events in the environment that happen at the end after some response is produced. So all of this other stuff that's in the middle, behavior

analysts would not need to talk about that. That's in some other realm called hypothetical constructs. Presumably it occurs someplace in the brain, but we don't know where that is. And so if we don't know what it is or where it is, we don't have access to it. If we don't have access to it, we can't really assess it with our tools that we have here at this point.

And more importantly, there is no treatment based on a linguistic approach or explanation for language acquisition. We don't have -- they don't exist. We don't have linguistic treatments. We have linguistic categories. We say, I'm going to work on nouns and verbs, or I'm going to work on syntax. So where's the linguistic treatment for that? And what most speech pathologists that I've talked with in various workshops and so on readily do and are happy to say they do, is tap into the field of behavior analysis using prompting, prompt fading, reinforcement, and so on and so forth, whether or not they have any knowledge of a mand, a tact, an echoic, an intraverbal, autoclitics and so on. They're quite familiar with prompting and reinforcement, but that did not come from the field of linguistics.

So if linguistic terminology doesn't pinpoint our treatment goals, what alternative assessment does offer treatment direction? Well, let's take a look. We have two different kinds of behavior here, speech and language behavior and non-language behavior, and we have two different environments that are responsible for those behaviors. One of those environments is internal, and it consists of our physical self inside our skin. And I guess we could count our skin, also. Blood, brain, biochemistry, nerves, muscles and bones, and so on. And then there's an external environment outside our skin, everything else that impacts on that body, that we access through our senses. We see it, hear it, feel it, taste it, smell it. Now for non-language behavior, we're very comfortable saying that your ability to run, for example, or your ability to pound a hammer skillfully, for example, is greatly influenced by that internal environment. What's the physical package that you have to work with? We're also very comfortable talking about the external environment that evokes skillful hammering or soccer-kicking and so on and so forth. Were you close enough to the ball? How fast were you going? What was the wind condition like? What were the instructions? And so on so forth.

For speech and language behavior, we're also very comfortable talking about the internal environment that certainly is the control center for much of what we do. If we had no internal environment to provide us with those resources, of course, we would not be able to function at all. But from a traditional assessment of speech and language, this external

environment is disregarded in assessment. But something takes its place. That sort of no man's land of hypothetical constructs is proposed and assessed in standardized speech and language assessments. Linguistics structure, structural processes, language processors, syntactic structures are some examples. I'm sure all of you are familiar with the term auditory processing problem. It's a problem because your auditory processing system is not working correctly. Those are things that all of us probably spent a good bit of time memorizing those sorts of things.

This sort of middle area may not be useful for what we are trying to, whoops -- for what we're trying to do. I would suggest that, and will give you some examples, for moving down the road faster with an assessment of the before and after events. Everyone would agree that speech and language is -- consists of responses. The first step is in recognizing that when someone is using language, they are responding. They're not using a word. They are making a response that we call a word. And responses are behaviors, so what's different about the approach is a traditional approach says that these responses are a function of those hypothetical constructs. That's why you're making those responses, and some of them are right, and some of them are wrong. If you get it wrong, you got it wrong because something is not quite right in one of your hypothetical constructs, like semantics, syntactics, and so on and so forth.

A behavioral explanation, on the other hand, would require the context to be identified. Language is the function of environmental events, and those events consist of before events and after events related to those responses. And what do we do with those responses? We observe them, assess them, change them. We plan treatment from the responses that are made. So instead of saying that Joe knows a lot of animals and so he must have the animal concept, we would take a look at, what do we mean by knowing a lot of animals? We mean that he has a lot of skills with respect to animals. He can make a lot of animal-related responses, and this is the key sort of division between how we talk about things from a traditional perspective and how we talk them from a behavioral perspective.

The explanation for the response is in the environment. He can ask for animals when he wants them. He can label animals. He can repeat the names of animals. He can match animal pictures. He can point to animals and so on. He can have conversations about animals. This is his animal repertoire, and now that's what we mean when we say, he has an animal concept. If he can only do one of those things, he can only ask for an animal, or what if he can only point to

animals? He has a very weak animal repertoire. That's described as not having the animal concept. But what if we can teach him to do all of these things? Did the concept improve? The skill repertoire broadened, is what happened.

So one can ask oneself, do we need to talk about concepts if we're talking about skills and skill acquisition? And so on assessments, that's exactly what we want to do. This is an example of a behavioral speech and language assessment, the VB-MAPP. How many of you are familiar with the VB-MAPP? Okay, so some know. The VB-MAPP is a developmentally sequenced assessment of skills that are acquired by a typically developing child by the age of 48 months. And level one, those are all of the skills that were a good bit of the speech and language and some other related skills like play skills and so on that would be acquired by a typically developing 18-month-old child. And level two, by 30 months, level three, by 48 months or four years old. And the language skills on this are assessed. You can see them on the left-hand side. Many of those language skills are -- many of them are language skills, and those language skills are described in terms of Skinner's verbal operants: mands, tacts, mands requesting, tacts labeling, those are quick words for them, echoic is repeating, intraverbal skills, conversation skills. So the MAPP yields treatment direction, and it aligns with information from typical developmental scales.

So our task is to figure out some priorities for filling in these empty spaces on the assessment, to select what to teach and in what order so we can move this child forward to having the basic skills that he needs in order to learn without one-to-one assistance. And you can see that all of these skills that we earlier discussed in terms of concept are in fact assessed behaviorally on this example. This is one behavioral speech and language assessment, skills assessment. And so our goal, of course, is to identify, pinpoint those targets in those various skill areas and move the child forward as quickly as possible.

So this looks like a strange question in the middle of our discussion. What does pickle mean? And probably all of you are imagining what a pickle looks like. So the right answer, of course, is -- you probably have figured it out by now. It all depends. It all depends on context. And if I asked you, do you have the concept of pickle? Everybody would say, sure, I know what a pickle is. But what is your pickle repertoire? How broad is your repertoire with respect to pickles? Can you do, for example -- let me just sort of back up. Can you do all of these things with respect to pickles? Can you have conversations about them? Can certainly label them. Can

you match pickles? Can you ask questions about pickles? Maybe more than, is this dill or is this wheat, or bread and butter or grandmothers? You can certainly repeat it if I said, everybody say pickle. Can you point to lots of different pickles and things related to pickles like pickle crocks and so on and so forth? I don't know about imitating a pickle or playing or having leisure skills. Certainly making pickles would be an adult leisure skill with respect to pickles.

So here's one context for pickle, but that's not the only context for pickle. This is another pickle context, as in they are in a pickle. So the context in which you would talk about pickle and cucumber are very different than -- is very different than the context where you would talk about pickle and a predicament. Not the same context, but if you can't do both of those things, then would we say that you have sort of a weak pickle repertoire? I don't know. Maybe. But I would be more comfortable saying you have a weak pickle repertoire than saying that you have a weak pickle concept because I could teach this repertoire, and I'm not sure how to teach the concept. It's a fuzzy word that doesn't empower me as a clinician to know what to do about that.

Here's another context, context one, for safe. But here's a completely different context for safe, as Mr. Mouse is probably very glad that he is because that's a sure thing and he's not going to be around for very long if he's not safe. You could, of course, discuss these different contexts and probably a lot of other contexts, but with respect to the word safe. The word run is a word that in the English language has probably, I don't know -- I think I heard one time 16 to 20 different meanings, and probably many more than that. There are lots of different meanings for the word run. What do we mean by the word mean? Well, what do we mean when we say, they don't get the meaning of cat, for example, or pickle, or run, or safe? That's kind of not the right question. Meaning is in the context, and so a word means whatever the context is. Here's the way to ask that question. Under what conditions does a person say cat or safe or pickle? Under what conditions? Now you know what to do about it if you're teaching it. So what does the response cat mean? Well, it's not informative without the context.

So let's take a look at four different contexts. This, for those of you who are speech pathologists that don't have much of a behavior analytic background, now we're moving into sort of the nuts and bolts of, how would you take this meaning or concept and talk about it like a behavior analyst would in order to assess all of the different contexts or functions? And that's what I showed you on the VB-MAPP, and we'll take a look at some other examples in a bit.

So what does cat mean? Well, you can see that we have these four different responses in the middle. What we're going to build is a learn unit of antecedent, response, consequence, or antecedent, behavior, consequence, or A-B-C, all different learn units. And you can see that the response cat is not very interesting. When I get called in on consults, frequently a parent or a teacher will say, my child knows his animals. And I say, well what can he do with respect to animals? Well, he can name them when he sees them. So he can say horse when he sees a horse. So that's good. That's certainly one skill. What else can he do with respect to horse? Well, that's what he can do with respect to horse. So now we have a -- sort of a weak horse repertoire. If that's all you can do, you're not very empowered language-wise. You don't have very many other contexts in which you can say horse. So I'm not very impressed by, for example, the fact that a child can say cat. Your question -- if somebody says, yeah, he can say horse or cat, your question should be, under what conditions can he say that word? Can he say it if you say, tell me an animal that has paws and a tail and fur and says meow? Now will that person say cat? Or can they only say cat if you say, what's this and hold up a picture? And they say cat.

From a traditional perspective, we would assess that in speech and language traditional assessments, standardized assessments, and say, they can name cat but they have conceptual problems on other items having to do with cat. Well, our job is to pin that down. What are we talking about? We're talking about context. So here's one context or one function. Somebody says, say cat, and the person says cat. And that's maintained by general social approval or responses. Yeah, that's right. Another function is that you can say cat when you see one, like the little child that says, mommy, airplane, or somebody who smells fire in the theater and its smoke and yells, fire, partly wanting to have folks get out of there, but also -- have you ever walked into a room and said, oh, popcorn, or coffee? Maybe you don't want it necessarily, but you're able to identify it, to label it, to tact it. Tacting, as in contact, with your environment. Tacting something that's impacting your senses. That's not language.

You might also answer cat if somebody says, what's your favorite animal? So here we have language or verbal behavior on the -- this person's part, and a language or verbal response over here, but they don't match, as opposed to this one. That's verbal behavior and that's verbal behavior, but they do match. We call that echoic. If they don't match, we call that intraverbal. What's your name? George. Intraverbal. And then of course there's another function that we're all very, very glad that we can emit. We want it, we say it, and in order to train it, the verbal

community trains us by giving us that very, very early on. And this is called in verbal behavior a mand, like demand or command. These are very bare-bones explanations for elementary verbal operants that Skinner discussed, but I'll give you a few other examples of these.

So we have one response form: unremarkable, not very interesting, not helpful to know that the child can say cat. What's helpful is to know under what condition, in what context. What do we call these? We call these response functions. So just to give you another example with cookie, you want a cookie, you say cookie, you get a cookie. Sometimes you don't get a cookie, but again, the verbal community needs to train this early on so that we, under conditions of being motivated to ask for something, we say it and it's reinforced by access to the specific item. And that's called a mand in verbal behavior. And it's the first skill that we teach children with communication deficits. Why? It gets them hooked on language very, very quickly. It teaches them, when you open your mouth or when you sign or when you select a picture or, not writing at that age, but if they were to write, any verbal response? Very, very powerful. It works, and it works quickly. So mand training has to work very, very fast, early mand training, but as we'll see later, it's almost never assessed on traditional speech and language assessments.

So a tact is a non-verbal stimulus in the environment that you see, hear, smell, taste, or touch, non-language stimulus. You say it and that skill, that function, is maintained by general social reinforcement. All of these are maintained by social reinforcement except the first one, which is maintained by access to the specific item.

So another look at this, the conditions that evoke a language response. You want it? A response under that condition is called a mand. Something that impacts your senses, a response that you make based on that antecedent is called a tact. Verbal information that doesn't match your response -- when you make a response to some verbal stimulus, that your response doesn't match the stimulus, that's called an intraverbal. And if it does match, that's called an echoic.

So if I say, what's your name?, and you say, what's your name?, that would be labeled an echoic. If I say, what's your name?, and you say, Sue, that would be labeled -- that would be called an intraverbal skill. Even if your name isn't Sue -- if I say, for example, to a child, how old are you?, and he says three and I know he's four, it's still an intraverbal skill. It's a wrong intraverbal, but it's an intraverbal response.

Intraverbals, as you can probably tell, are -- it's a huge area because there are so many of these that can evoke a response. For example, how many things could I say that you would respond cookie? What does Keebler make? There's one. Chocolate chip? There's two. Milk and? Cookie. There's three, and so on and so forth. Name something we put sprinkles on? What do we bake in the oven on a cookie sheet? And so what did you eat when you got home from school this afternoon? Cookie. So on and so forth. So varied that it's difficult to assess it completely, and I don't know that we ever do. But we can assess it much more clearly than what we're doing right now.

I'm going to skip this slide because it's just like the others, and I think we're coming up on a break in about five or ten minutes if I'm correct. So we'll finish up this section and then I think we'll take a break. So imagine that this is the context, the universe, of everything that you will ever say, or your learner will ever say. What we want to do as assessors of language and teachers of language is to assess a sample of your repertoire. We can't assess everything, so we want to assess a sample of your repertoire. So here's some examples. I want to know, what can you do with respect to music, pizza, swing? Those are nouns, if you want to talk about linguistic structural labels for those words or those responses, but it doesn't have to be that way. I also want to know what you can do with respect to words like push, a verb, or adjectives like green or cold, or prepositions like with or on. I want to know what you can do with respect to a sample of words or topographies or responses. And I want to know specifically, can you do that under the context of wanting it?

I want to train that. I want to assess that and train it as a mand. Do you want that cookie with chocolate or without? With or without? With. Now with is a mand. That's how I might assess that. Do you want that ketchup on the hot dog or off the hot dog? Now it's a mand if they respond, on. And so on. What do you want to play next? Swing. What do you want me to do in the swing -- do when you're in the swing? Push. Push me. We're assessing mands and teaching mands. And now my job is to find out with respect to this sample of words, and we usually, typically, clinically would select maybe 150 to 300 sample words. I usually have teachers and parents make a list of the things in categories that you think are the most relevant to your child's life. What does he see and hear and touch on a daily basis? Chair, tooth brush, cookie, mommy, daddy, fluffy, and so on. Bed pillows, socks, shoes, and so on and so forth. What kinds

of things does this child encounter that he or she needs to talk about on a regular basis? And so here are some examples.

I also want to assess, can they say those things when I say them? Because often, what we do when parents or teachers tell us, oh yeah, he can -- he knows cat. He knows pizza. What does he know? What can he do with respect to pizza? He can say it when I say it. Can he ask for it when he wants one? Can he label it when he sees it? And can he talk about it when I ask questions, or when I make comments, can he keep the conversation going? So within the universe of language skills, of everything that this child would ever need to say, we can't assess it all, but we can assess a representative sample and then assess within the function, within the context, and assess broadly across relevant contexts like mands, tacts, echoics, intraverbal skills, and pinpoint where's the weakness. What do we need to do to help this child move forward?

We're sampling the same topography across all different functions, all different contexts. And as we'll see later, unfortunately with traditional speech and language assessments, because they're not organized in this way, we might get a lot of information about the child's ability to name these things, but his intraverbal skills, which are not labeled intraverbal skills, might not be about the same things. So if I have the word car, for example, and I want to know across the behavioral repertoire, across the skill set, can he match? Can he point to? Can he ask? Can he label? Can he repeat? Can he point to it by feature or function or class or category? Can he label it by feature, function, or class? What color is this one? How does this one feel? And can he talk about it by feature, function, and class? The broad skill area -- I might not know more than that he can label it, for example. So I don't know -- I don't have the information I need to plan a cohesive language training program if my assessment isn't arranged to provide me or to yield that kind of information.

More importantly, what if he can name it but he can't do anything else? He can't talk about a truck. He can name a truck, but if I say, can you tell me another vehicle? Not a car, not a train, but name another one. Can he say truck? You would all be able to do that in short order. So your truck repertoire includes that intraverbal skill. By category, name some vehicles. But what if he can't do that? What do I need to do? Well, I'll give you an example in a bit on another slide of how we can use these transfer techniques to move from one skill area to another in our treatment program. So it's vital that we know, can he tact it but not give an intraverbal response for it? I need to know that because if he can, he can tact it, I can use that tact as a prompt to

transfer the skill and bring it under intraverbal stimulus control. And now I've got two for one. I started out with him only being able to label a truck when he sees it, but if he can do that, I can take that as a prompt and put it at the end of the part that doesn't work. Name a vehicle, and I know that this will evoke a correct response. And then I can simply fade that out. Very powerful treatment intervention that comes from behavior analysis.

Do -- we need to break at what time? Okay. All right. So our -- let me just -- okay, we'll be right on track to do that. So in summary for this first part, words are learned in A-B-C units, which you've seen, antecedent, behavior, consequence, and there are different types of those units, different functions. We have an echoic function where the antecedent isn't -- is verbal, and the response matches it. We call that echoic. We have an intraverbal function where the antecedent is verbal and the response does not match it point to point. What's your name? Joe. We have a mand function where the antecedent are motivating operations, motivating conditions, and under those conditions, I say it or emit a verbal response. I can write it or sign it. And the consequence for that is the specific item reinforces that response, access to that specific item or situation. And we have a tact function where the antecedent is non-verbal, non-language, something I see, hear, smell, taste, or touch that's not language. And that evokes a verbal response on my part. Airplane. Mouse. Or coffee. And now it's time for that.

And so we would say that meaning is defined by these verbal functions. That's we mean by, what does something mean? It means how it's used, the context that it's used in. And so with that, let's take a 15-minute break, and we'll meet back here at 10:30.