

BCBA/BCaBA 5th Edition Exam Review

Developing New Horizons Inc.

A. Philosophical Underpinnings

A-1 Identify the goals of behavior analysis as a science (i.e., description, prediction, control).

- The Goal of the science of behavior is to have thorough understanding of the phenomena under study → socially significant behavior.
- Science provides us with 3 levels of scientific understanding:

• **Description** 

• **Prediction** 

• **Control** 



Description

- **Description:** consists of a collection of facts about an observed event (**Behavior**) that can be quantified (**measured**), classified (**observed**) and examined (**relations**). [*Basically, an objective description of the observed events and their relations with other known facts*]
- Most basic level of understanding of the science of behavior analysis
 - A collection of facts that can be quantified
 - A collection of facts that can be classified
 - A collection of facts that can be examined
 - A systematic observation



Description

Example:

A parent *describes* their child's behavior to an analyst:

“My son Pete has tantrums when I play with his little sister and when I attend to him, he stops the tantrum. He also begins to scream every time I ask him to clean his room when his dad is not home.”

- To ensure we have a full description, what would be missing?

** The operational definition of a tantrum to ensure we can measure the behavior

For example: the tantrum consists of Pete screaming or crying



Description

References used and recommended Studies:

- Teaching Middle School Students with Learning Disabilities to Recruit Positive Teacher Attention (Alber, S. R., Heward, W. L., & Hippler, B. J. (1999).
- The effect of teacher coaching with performance feedback on behavior-specific praise in inclusion classrooms (Duchaine, E. L., Jolivette, K., & Fredrick, L. D. (2011).
- Early Childhood Teachers' Use of Specific Praise Statements with Young Children at Risk for Behavioral Disorders (Fullerton, Conroy, & Correa, 2009).



Prediction

- **Prediction:** In the presence of one event, another event occurs which creates a correlation and can be used to predict that one event will occur in the presence of the other with some specified probability based on repeated events.
- 2nd level of understanding of the science of behavior analysis.
 - 👉 Since researchers do not manipulate or control any variables, a correlational study cannot show whether one of the observed variables is the cause of changes in the other variable. Therefore, no such relationships should be assumed or inferred.



Prediction

- **Examples:**

- An RBT notices that each time the child asks for a snack and as soon as mom says “no”, the child begins to have a tantrum. The RBT can predict with a high degree of certainty that each time the child is told “no” when he asks for a snack, the child will likely have a tantrum.
- There will be more accidents on rainy days in South Florida.
- Mrs. Rogers notices that Jamie engages in an excessive frequency of out of seat behavior during math class. She tells the substitute teacher that will cover for her during math on another day to be very attentive to Jamie as he will be more likely to be out of his seat during that class.
- You grab an umbrella when you see the sky is cloudy.



Control

- **Control:** The ability to predict with a certain degree of confidence that change in one event (DV) is reliably produced by specific manipulations of other events (IV) and that change in the DV was unlikely to be the result of other extraneous factors (Confounding variables)
- Highest level of scientific understanding
- Functional Relation, Verification
 - 👉 • Functional Analysis



Control

- **Examples:**

- When you see a cop turn on the lights behind you, you will stop. And if there is a cop behind you with the lights off, you will not.
- In an ABAB you have achieved control if you demonstrate that when you introduce your intervention the behavior changes as desired and when it is removed the behavior returns to baseline.
- Teacher sends a student to time out for spitting in class but the behavior of spitting has not decreased. The BCBA conducts observations and then tells the teacher not to send him to time out which cause the behavior of spitting to immediately increase and noted that the behavior was occurring as a means to escape so the time out procedure was actually reinforcing the student.

QUIZ

- Billy, a BCBA works with a 3-year-old child named Ren, who is terrified of lightning. Whenever there is a thunderstorm Billy knows that day will be a challenging day with Ren. What level of scientific understanding is **MOST** likely being shown here?
 - A) Determinism
 - B) Prediction
 - C) Correlation
 - D) Control

QUIZ

- Which is **NOT** a scientific understanding of behavior analysis?
 - A) Description
 - B) Prediction
 - C) Empiricism
 - D) Control

QUIZ

- Tony woke up at 7:00am, got dressed, brushed his teeth, went downstairs, ate breakfast and went to school. What level of scientific understanding is **MOST** likely being shown here?
 - A) Description
 - B) Prediction
 - C) Correlation
 - D) Control

QUIZ

- What are the scientific understanding of behavior analysis?
 - A) Description, Correlation, Prediction
 - B) Prediction, Control, Verification
 - C) Correlation, Experimentation, Control
 - D) Control, Description, Prediction

QUIZ

- When you use cookies as a reinforcer, Karen's target behaviors increase but when you use candy her target behavior decreases. Therefore, you start using cookies to continue to increase Karen's target behavior. What level of scientific understanding is **MOST** likely being shown here?
 - A) Description
 - B) Prediction
 - C) Correlation
 - D) Control

QUIZ

- A systematic observation that can be quantified and classified.
 - A) Prediction
 - B) Control
 - C) Determinism
 - D) Description

A-2 Explain the philosophical assumptions underlying the science of behavior analysis (e.g., selectionism, determinism, empiricism, parsimony, pragmatism).

- In order to agree on scientific data and findings, we must first accept a set of assumptions or rules that we all agree the universe/world is governed by. Without these philosophical assumptions, we do not have a foundation to base of scientific evidence on. These assumptions are:
 - Selectionism
 - Determinism
 - Empiricism
 - Parsimony
 - Pragmatism
 - Experimentation
 - Replication
 - Philosophic Doubt

Determinism

- The universe is an orderly place in which all phenomena occur as the result of other events. Not in every instance do we know what causes the behavior (what are the antecedents or MO's) but we understand that there is a reason behind the behavior.
- Cause and Effect
- If/Then Statements
- **Example:**
 - You drink an aspirin when you have a headache.
 - You scratch your head when you feel an itch.
 - You scream when you get startled.

Empiricism

- Objective observation and measurement of events in our environment. Using information gathered ONLY from our 5 senses.
- Rejects notions out of our senses like “mystical powers” or “gut feeling”
- Objectivity means free of individual biases, prejudices, and private opinions. FACTS



Occurrence vs nonoccurrence (in behavior plans we would put example vs nonexamples)

- **Example:**

- You want to know how long your client’s tantrums last. You use a stopwatch to record duration. This measures the occurrence vs non-occurrence of a behavior. It has a beginning and an end.
- A tantrum described as a child screaming when ever he screams the same syllable for a period of 3 seconds or longer but not when he is talking loudly.

Parsimony

- First rule out the simplest explanations before considering the more complex causes of behavior.
- Don't over think concepts and explanations only use enough elements to explain the behavior or event.
- **Example:**
 - You grabbed an umbrella because it's raining outside
 - You arrive at your workplace and as you're walking past your boss you say, "Good morning" he does not reply and keeps going. You assume he didn't hear you. This is the simplest explanation, the most parsimonious one.

Selectionism

- All life evolves because of selection regarding function. This is the evolution of behavior (Phylogeny vs Ontogeny)
- Ontogeny evolution of an organism based on individual experiences with contingencies that result in punishment or reinforcement.
- **Example:**
 - Watching YouTube.
 - Working for a paycheck.
 - Remaining in your seat until called upon in a classroom.

Selectionism

- Phylogeny: is the natural selection of the species behaviors (reflexes, “instinct”. Generally associated with respondent behavior.
- Based on natural selection.
- Animals will develop certain behaviors based on their environment and the food availability.
- **Example:**
 - Some birds develop sharp beaks like the Macaw to crack nuts or reach the sweet pulp inside fruits.
 - Susan screams and her heart races when she was startled by a dog who she was petting and then bit her.

Cultural Selectionism

- **Cultural Selectionism:** is the passing of certain behaviors from one group to another for the sake of group survival.
- **Example:** Teaching how to prepare certain foods or how to create medicine for their specific set of diseases in their region.
- 🙌 to differentiate phylogeny and ontogeny remember that both Ontogeny and Operant begin with the letter “O” so they are both learned. That means that Phylogeny is respondent, unlearned.

Experimentation

- An experiment involves a controlled comparison of a specific aspect of the phenomenon being studied (the dependent variable) across two or more distinct conditions.
 - In each condition, only one factor at a time (the independent variable) varies while all other factors remain constant.
- When events are noticed to vary together or happen closely in time, it suggests a potential functional relationship, although other factors could influence the observed outcomes.
 - To explore this relationship further, an experiment (or a series of experiments) must be conducted.
 - In these experiments, suspected causal factors are deliberately controlled and manipulated while closely observing their effects on the studied event.

Pragmatism

- Assessing how useful an explanation is by the results it yields.
- A primary criterion by which the value of findings are judged.
- Based on practicality more than theories.
- Doing what works and not what does not work.
- **Example:** You are providing therapy via telehealth to a family who needs help managing their child's behavior at home and in school. When you provide praise to the family you put both thumbs up and smile for positive reinforcement. In 30 days, the weekly telehealth sessions will be in person. A pragmatic consideration would be the extent to which your praise without the two thumbs up and smiles would continue to function as reinforcement. *(not simpler - more practical)*

Experimentation

- Basic strategy of most sciences.
- Requires manipulating one or more independent variable to see the effects on the dependent variable to demonstrate a functional relation.
- All variables (except the DV) must be controlled.

Example: You have a client who has difficulty with transitions from one activity to another and typically engages in covering his ears or putting his head down. You introduce an activity schedule board to prepare him for transitions. His behavior immediately decreases when using the activity schedule board. When you remove the activity schedule board his behavior immediately increases again. *The manipulation of the IV is having a functional effect on the DV.*

Replication

- Replicating a study or experiment multiple times to verify the reliability and validity of the findings.
- Replication allows researchers and practitioners to confirm whether the results of an intervention are consistent and generalizable across different settings, populations, and conditions. It helps establish the reliability and validity of findings in ABA research and ensures that interventions are based on sound empirical evidence.
- More replication increases validity.

Replication

- **Example:** let's consider a study investigating the effectiveness of a behavior intervention aimed at reducing tantrums in children with autism. The initial study might involve implementing a specific behavior plan for a group of children and observing a significant reduction in tantrum behavior over a six-week period.
- To ensure the reliability of these findings, replication is necessary. The study would be repeated with a new group of children with similar characteristics and conditions. If the same behavior intervention consistently leads to a reduction in tantrums across multiple replications of the study, it strengthens the confidence in the effectiveness of the intervention.

Philosophic Doubt

- Always question the findings, results, and what is perceived to be the truth.
- Embracing philosophical doubt entails maintaining an exceptionally open and critical mindset towards all matters consistently.
- **Example:** You have a client who has difficulty with transitions from one activity to another and typically engages in covering his ears or putting his head down. You introduce an activity schedule board to prepare him for transitions. His behavior immediately decreases when using the activity schedule board. When you remove the activity schedule board his behavior immediately increases again. You continuously question whether the activities he is transitioning to are the one's decreasing the behavior or whether it is the actual activity board. So now you decide to change the order of the activities.

QUIZ

- A Teacher notices that one of her students frequently disrupts the class by getting out of their seat and wandering around. Verbal reminders to stay seated have been ineffective in addressing this behavior. To address the issue, you decide to implement a token economy system where the student earns tokens for remaining seated and following classroom rules. The tokens can be exchanged for rewards at the end of the week. Throughout the week, you continue to monitor the student's behavior and record any instances of disruption. Based on your observations, you find that the student's disruptive behavior has significantly decreased after implementing the token economy. This suggests that the introduction of the token economy system (IV) has had a positive effect on reducing disruptive behavior (DV) in the classroom. This is an example of:
 - A) Parsimony
 - B) Selectionism
 - C) Determinism
 - D) Experimentation

QUIZ

- Mike is a BCBA who supervises an RBT on a case. The client's caregiver has recently told the RBT that the client is engaging in SIB which is a novel behavior out of nowhere. The RBT seeks support from Mike since it seems strange that the SIB happens out of the blue. Mike decides to conduct an assessment to get the function of the SIB. What is **MOST** likely being demonstrated here?
 - A) Parsimony
 - B) Selectionism
 - C) Determinism
 - D) Empiricism

QUIZ

- Terry is a BCaBA working with his BCBA supervisor on a case. They have been implementing an intervention for 2 months now and the behavior has decreased almost 85% from baseline using a DRA procedure. Terry's supervisor is relocated and a new BCBA is assigned to the case. The new BCBA asks Terry if he wants to try another intervention instead of DRA because it has more research behind it. Terry discusses with the BCBA that DRA is working and shows the data progress that illustrates the success of the intervention. What is Terry **MOST** likely demonstrating?
 - A) Parsimony
 - B) Selectionism
 - C) Pragmatism
 - D) Empiricism

QUIZ

- Adrienne is a recently certified BCBA. Her first client is a child who engages in property destruction. She is receiving weekly supervision and training. The agency has a dedicated support team for new Analyst. One day while scrolling through Facebook she sees a post by a mom who has a child with almost identical behaviors as her client. Adrienne decides to try out the same intervention as the mom on Facebook and it has similar positive results. Without a second thought, she implements the intervention with her client. Did the BCBA do the right thing?
 - A) Yes, the intervention is successful and has a history of working with another client
 - B) No, the intervention implemented has no empirical data and thus violating empiricism
 - C) Yes, the intervention was implemented by a BCBA who knows how to apply interventions based on her studies for the BCBA exam
 - D) No, the intervention being implemented has no empirical data and thus violating Selectionism

QUIZ

- Humans have evolved from walking on their hands and feet to walking on two feet in an upright position. This is a result of?
 - A) Ontogeny
 - B) Phylogeny
 - C) Homo Sapien
 - D) Parsimony

QUIZ

- Susan is a BCBA reading research on the use of a Differential Reinforcement of Lower rates (DRL) and she is skeptical about the results of this study. What assumption is she making?
 - A) Determinism
 - B) Philosophic Doubt
 - C) Experimentation
 - D) Parsimony

QUIZ

- Joan is a BCBA that has written the topographical definition of her client's behavior, taken baseline data of this behavior, and used a reversal design to assess it's efficacy. Which assumption is best illustrated?
 - A) Determinism
 - B) Philosophic Doubt
 - C) Empiricism
 - D) Parsimony

A-3 Describe and explain behavior from the perspective of radical behaviorism.

- **Radical Behaviorism:** the inclusion of both private events (feeling, thoughts) and public events (those that are observable) and that both follow the same basic principles of behaviors.
- Understanding all human behavior
- Attributed to B.F Skinner
- Private Events are influenced by the same kinds of variables as overt behaviors (Reinforcement and Punishment)
- He added the three-term contingency in radical behaviorism (ABC)

Methodological Behaviorism

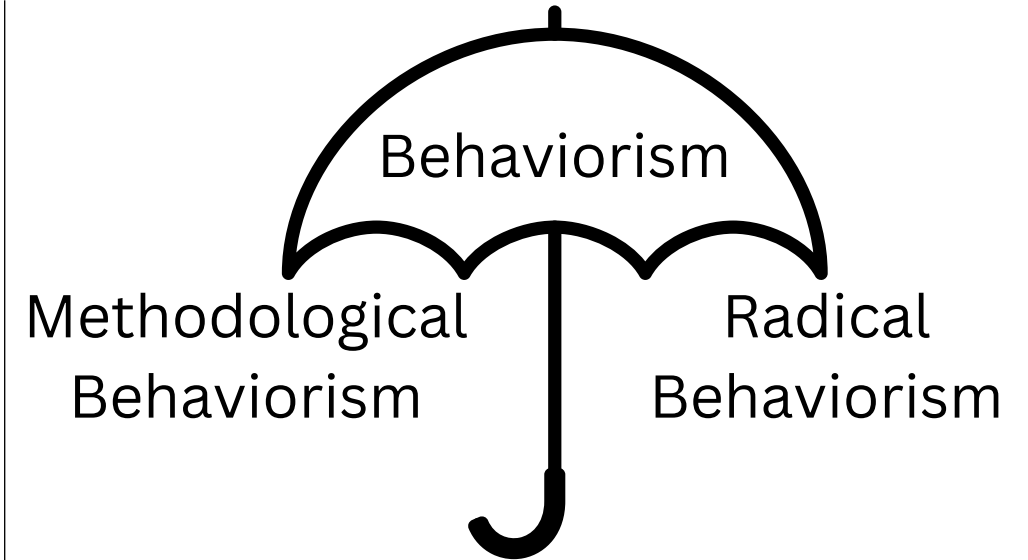
- Acknowledge the existence of mental events but do not consider them in the analysis of behavior (Skinner, 1974).
- The methodological behaviorists' emphasis solely on observable phenomena, while disregarding internal processes, limits the scope of knowledge in human behavior and inhibits progress in the field of behavioral science.
- This narrow approach to behaviorism fails to address crucial aspects necessary for a comprehensive understanding of behavior.
- **Example:** If a client is crying, a methodological behaviorist does not consider emotions and feelings.

A-4 Distinguish among behaviorism, the experimental analysis of behavior, applied behavior analysis, and professional practice guided by the science of behavior analysis.

- Behaviorism
- Experimental Analysis of Behavior (EAB)
- Applied Behavior Analysis (ABA)
- Practice Guided by the Science of Behavior Analysis

Behaviorism

- The philosophy of the science of behavior.
- John Watson was the first to describe behaviorism with the Stimulus-Response model known as S-R psychology.
- It began with Pavlov in classical conditioning with his experiment with dogs (stimulus – stimulus pairing [S-S pairing])
- Skinner continued to develop this with radical behaviorism.



Experimental Analysis of Behavior (EAB)

- Research of behavior in a controlled setting. (Think Skinner's box)
- Studies humans or nonhumans (simply studies behavior of organisms).
- Experimental Analysis of Behavior (EAB) does not assess the social significance or applicability of behavior.
- While it establishes a robust scientific groundwork for applying behavioral principles beyond controlled settings, it does not constitute applied research on its own.

Applied Behavior Analysis (ABA)

- ABA is a scientific approach to understanding and changing behavior.
- It involves systematically applying interventions based on principles of behavior to improve socially significant behaviors.
- ABA aims to increase socially significant behaviors while decreasing behaviors that are harmful or interfere with learning or daily functioning.
- ABA uses the methods of EAB and applies it to persons which improves their quality of life.

Practice Guided by the Science of Behavior Analysis

- Anyone that implements behavior principles but are not necessarily BCBA's or BCaBA's or BCBA-Ds
 - For example: teachers, parents, or any other practitioner that implements behavior principles.
- Principles of behavior can be applied to real world situations to help people, in a wide array of contexts and by a variety of different interventionists.

QUIZ

- The assumption that thoughts and feelings are also behaviors and adhere to the laws of behavior is known as:
 - A) Determinism
 - B) Radical Behaviorism
 - C) Selectionism
 - D) Methodological Behaviorism

QUIZ

- Jaime is a BCBA who currently lives in Key West, FL and has been offered a job in Toronto, Canada. She is concerned about the change but is excited for this new opportunity and accepts. When she arrives in Toronto, she notices that during winter she prefers to stay home and only leaves her house to go the grocery store which is not typical of her. Her change in behavior due to weather conditions mainly exemplifies which concept?
 - A) Determinism
 - B) Radical Behaviorism
 - C) Selectionism
 - D) Methodological Behaviorism

A-5 Describe and define the dimensions of applied behavior analysis (Baer, Wolf, & Risley, 1968).

- A trick to remember these is the Acronym “BAT CAGE”
 - **B**ehavioral: The behavior of interest is observable and measurable, making it easy to track and measure progress.
 - **A**nalytic: The intervention plan must demonstrate a clear cause-and-effect relationship between the behavior and the intervention.
 - **T**echnological: Described in enough detail to be replicated
 - **C**onceptually Systematic: Use evidenced based interventions
 - **A**ppplied: Socially Significant
 - **G**enerality: Lasting across settings, people and behaviors.
 - **E**ffective: The intervention plan must be shown to produce meaningful and significant improvements

Behavioral

Behavioral: This dimension talks about the behavior of concern and that it is measurable.

Example: in a study evaluating the effects of a program to teach school children to get along with one another, an applied behavior analyst would directly observe and measure clearly defined classes of interactions between and among the children.

Analytic

- A study in applied behavior analysis is analytical when the experimenter has demonstrated a functional relation between the manipulated events and a reliable change in some measurable dimension of the targeted behavior.
- In other words, the experimenter must be able to control the occurrence and nonoccurrence of the behavior.
- BELIEVABILITY: has the researcher achieved experimental control to demonstrate a reliable functional relation?
- **Example:** Imagine a school has noticed a significant increase in disruptive behaviors during recess, particularly in the form of pushing and shoving on the playground (Baseline). The school administration decides to implement an (intervention) to reduce these behaviors and improve student safety during recess. When the (intervention) is in place the pushing/shoving behaviors are reduced. When the (intervention) is (withdrawn) the pushing/shoving behaviors return to (baseline). The intervention is reintroduced, and the behaviors again are reduced. **A functional relation has been demonstrated (there is control over the behavior)**

Technological

- Defines procedures clearly and in detail so they are REPLICABLE. **TOPOGRAPHY**
- A study in behavior analysis is technological when all of its operative procedures are identified and described with sufficient detail and clarity “such that a reader has a fair chance of replicating that application with the same results” (Baer et al., 1987, p. 320)
- A good check of the technological adequacy of a procedural description is to have a person trained in ABA carefully read the description and then act out the procedure in detail.
- Writing a technological treatment means that another practitioner can follow your treatment plan exactly as written and yield similar results.
- **Example:** A behavior plan must have procedures written in such a technological manner that two or more persons will implement it in the exact same way.

Conceptually Systematic

- Using ABA principles.
- This dimension emphasizes the importance of understanding the underlying principles of behavior and using them to develop effective interventions.
- Interventions used must be based on Principles of Behavior (i.e., Reinforcement, Punishment, Extinction)
- **Example:** A behavior plan that uses “yoga” as an intervention is violating the conceptually systematic dimension of ABA because this is not based on Behavior Principles.

Applied

- Improves everyday life of clients.
- Improves SOCIALLY SIGNIFICANT BEHAVIORS
- To meet this criterion, the researcher or practitioner must select behaviors to change that are socially significant for participants: social, language, academic, daily living, self-care, vocational, and/or recreation and leisure behaviors that improve the day-to-day life experience of the participants and/or affect their significant others (parents, teachers, peers, employers) in such a way that they behave more positively with and toward the participant.
- **Example:** A BCBA implementing a “laundry program” on a child that is 6 years-old is violating the applied dimension of ABA because this is not socially significant for this age group. However, if the client was older and learning independent living skills than this would be appropriate.

Effective

- Improves behavior in a practical manner, not simply making a change that is statistically significant.
- How much a given behavior of a given subject needs to change for the improvement to be considered socially important is a practical question.
- The behavior change program is demonstrated to be effective in producing significant behavior change.
- The intervention plan must be shown to produce meaningful and significant improvements in the targeted behaviors.
- **Example:** A BCBA implementing a skills program is frequently reviewing the data to ensure that the intervention is increasing this skill at a reasonable pace and the data is not stale. Making sure the intervention is effective at all times!

Generality

- The behavior change program produces behavior changes that generalize across settings, people, and behaviors.
- Extends behavior change across time, settings, or other behaviors. AKA: Generalization
- Demonstrates maintenance and generalization of the behavior.
- The behavior change lasts over time and occurs in more than one environment with different people.
- **Example:** A child with developmental delays learns to follow instructions for putting away toys during therapy sessions. The therapist makes sure that the child can generalize this skill to follow instructions for putting away toys at home and in other environments, such as daycare or school. This ensures that the child can use this skill in different situations, with different people, and at different times.

QUIZ

- A company has called you in because worker productivity has been down as of 6 months ago. You begin to review records, talk to employees and managers to assess the situation better. You decide to implement an intervention and productivity doubles almost immediately. You implement your intervention at another company with nearly the same result. You decide to publish your work. Other BCBA's begin replicating your plan with similar success and stating how easy it was to follow. When it comes to how easy it was to replicate, it's a testament to what dimension of ABA?
- A) Technological
- B) Conceptually Systematic
- C) Generality
- D) Behavioral

QUIZ

- In a clinical setting, a child with ASD attending a therapy center has been displaying an increased agitation and aggression during therapy sessions that require writing or grabbing items since visiting the doctor 3 days ago. To investigate further, the RBT and BCBA decide to conduct a series of observation sessions to systematically analyze the antecedents and consequences of the child's behavior. During one of the sessions the dad mentions the child is on a new medication which affects his motor skills. What did the BCBA fail to do?
- A) The BCBA did not fail to do anything as she was Systematically analyzing ABC's of behavior
- B) The BCBA failed to use parsimonious thinking
- C) The BCBA did not fail to do anything the RBT was the one who did not implement the right intervention
- D) The BCBA failed to carry out a task analysis prior to her observations

QUIZ

- Danny a BCBA, is working with his RBT and their client. The client just turned 17 and he wants to start working at a local store. They begin by teaching him how to use a cash register, how to scan a variety of items (shirt, toys, cups, food etc), how to input the items in the register, how to collect payment and give back change. Once this was mastered at home, they went to the local Walmart, Target and TJ Max to learn how to use their registers. Which dimension of behavior analysis is Danny using?
 - A) Empiricism
 - B) Generality
 - C) Conceptually Systematic
 - D) Behavioral

QUIZ

- Mark a BCBA creates an intervention for his client Amy on learning how to do laundry. The goal is that Amy won't be walking around with smelly clothes to her job or when she goes out with friends. Which dimension of behavior analysis is shown here?
 - A) Applied
 - B) Analytic
 - C) Conceptually Systematic
 - D) Behavioral

References

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