



Autism Q&A Fact Sheet

Autism Q&A:

What is Applied Behavior Analysis

Applied Behavior Analysis (ABA) is a scientific approach to understanding behavior. ABA refers to a set of principles that focus on how behaviors change, or are affected by the environment, as well as how learning takes place. The term behavior refers to skills and actions needed to talk, play, and live. While these principles impact everyone each day, they can be applied systematically through interventions to help individuals learn and apply new skills in their daily lives.

ABA requires the implementation of established principles of learning, behavioral strategies, and environmental modifications to improve and teach new behaviors. In practice, implementation must be systematic so teachers can identify how behavior can be changed and understand how learning occurred. The ultimate goal of ABA is to establish and enhance socially important behaviors. Such behaviors can include academic, social, communication, and daily living skills; essentially, any skill that will enhance the independence and/or quality of life for the individual.

QUESTION: How are Applied Behavior Analysis Principles and methods used?

ANSWER

The principles and methods of ABA can be used to support individuals in at least five ways.

- ABA can be used to increase behaviors, such as attending to a speaker or greeting a peer.
- The principles and methods can be used to teach a student new skills, including using a spoon and learning addition.
- ABA can be used to maintain behaviors, for example, reading sight words that were learned previously.

- ABA principles and methods can be used to help a student generalize or transfer behavior from one situation or response to another. For instance, a student may learn to generalize completing assignments in the resource room to completing them in the general education classroom.
- ABA can be used to reduce interfering or challenging behaviors.

Understanding what is meant by ABA is increased if each term is defined individually: Applied, Behavior, and Analysis.

QUESTION: What does the word “Applied” mean?

ANSWER

ABA interventions deal with behaviors of demonstrated social significance -- behaviors that are important! When implementing ABA interventions, teachers are targeting behaviors that are essential to the person. For example, learning to cross a street safely may be critical for a person who has a new job in the city, while learning to order lunch in the cafeteria may be critical for someone else. The range of behavior issues addressed by ABA is broad and deep.

The following list illustrates the scope of possible behaviors:

- Teaching social skills,
- Generalizing reading sight words in different texts,
- Teaching toileting skills,
- Teaching appropriate break room behavior,
- Teaching the bed time routine,
- Increasing requesting of desired objects,
- Generalizing conversational skills to colleagues in the work place, and
- Teaching how to ride a bus.

QUESTION: What does the word “Behavior” mean?

ANSWER

In order to understand ABA, it is critical to understand what is meant by behavior. Behavior is anything a person does. Behavior is measurable and observable. Often behavior is thought of in negative terms, for example, screaming or hitting. However, behavior applies to all kinds of positive actions and skills too, including greeting a peer, performing a math problem, signing a letter, asking a question, and so on.

When behavior is discussed in the context of ABA, it is generally considered in three different contexts:

- Behaviors that are to be maintained over time, such as a child who has learned to brush his teeth or the adolescent who has learned to manage a check book.
- Behaviors that should be increased. For the person who is unable to request something to eat or interact with a peer, teaching these skills is a priority.
- Behaviors that need to be decreased. Obviously, a parent wants to see a child spending less time screaming or having a tantrum, in this case, the parent would also want to see positive behaviors increase, such as communicating or asking for help.

QUESTION: What does the word “Analysis” mean?

ANSWER

Through the use of clear definitions for behavior and systematic delivery of interventions, reliable relationships between interventions and behavior can be established. There is also a need for a reliable collection of data, as well as analysis of these data to determine if behaviors are changing. Through analysis, teachers can determine if behaviors are increasing or decreasing, as well as the rate of the change. This allows objective decisions to be made about future interventions.

The following components are needed to ensure analysis can be completed:

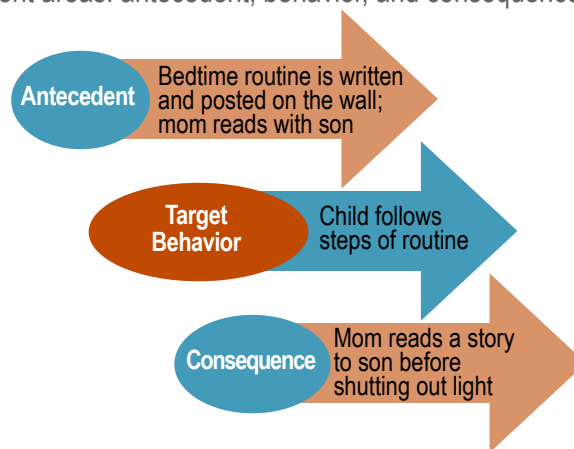
- Specific intervention goals and objectives,
- A well-defined plan including the strategies used to meet the goals and objectives,
- Ongoing data collection to show the intervention was actually responsible for the behavior gains, and
- A plan to ensure the generalization and maintenance of treatment gains.

QUESTION: What are the basic principles of ABA?

ANSWER

The basic principles of ABA consist of environmental variables that impact behavior. These variables are antecedents and consequences. Antecedents are events that happen right before the behavior, and a consequence is the event following the behavior. The figure below demonstrates the behavior change contingency and provides an example. It is through systematic application of antecedents and consequences that target behavior will maintain, increase, or decrease -- this is how learning will occur!

A comprehensive ABA plan needs to address all the component areas: antecedent, behavior, and consequence.



QUESTION: How can antecedents be used to impact behavior?

ANSWER

There is always an antecedent to a behavior, whether its a positive behavior to be increased or a negative behavior to be decreased. Antecedents are important to understand as they help the learner know what to do. For example, when John, a 16 year old with ASD, is shown a picture of the family van, he knows to put his shoes on and get in the car.

There are many ways to alter antecedents to impact learning. The most important way to target antecedents is by directly adapting instruction and student tasks so the student will have success. For example, Ty has a difficult time responding to multiple word sentences so one word instruction will be used instead of sentences. James gets overwhelmed when he does not know what he is supposed to do in his reading assignment. Therefore, directions are presented to him using picture cards.

The environment or instructional materials can also be altered when considering antecedents. This addresses cir-

cumstances that set the stage for a behavior. The following examples illustrate how manipulating the environment and/or instructional materials can change behavior.

- Jake has difficulty completing a writing task in a collaborative work group, so he is paired with one peer instead of a group of his peers.
- Joni has difficulty with math; therefore, she completes her math problems in the morning when she is at her best.
- When Skyler works on reading comprehension, she is asked to match a picture to the sentence that she just read; her peers are asked to answer a multiple choice question.

QUESTION: How can consequences be used to impact behavior?

ANSWER

How behavior is affected by the consequences that follow is a crucial element in all aspects of ABA. There are limitations to what can be changed before a behavior occurs, but the most control that teachers have is over how they respond to a behavior. Is attention the consequence? Is praise delivered as the consequence? Is the person allowed to “get out of” an activity?

The most effective consequence is the use of reinforcement to reinforce appropriate behaviors. The term reinforcement is often assumed to refer to things that an individual likes to do or a preferred object. However, in ABA, reinforcement goes further than this. Reinforcement is defined as something that, when provided after a behavior, increases the future frequency of that behavior. In other words, reinforcement must result in a behavior change!

ABA breaks reinforcement down into positive and negative reinforcement. Positive reinforcement is defined as an event in which the addition of something the person likes (praise, money, food, or toys) increases the frequency of the target behavior in the future. For example, Joey shares his toy with his little brother and his mom tells him how nice he is and gives him a treat. In the future, Joey shares his toy with his little brother more often.

Negative reinforcement is defined as the removal of something aversive or “negative” to increase the future frequency of that behavior. For example, Ms. Wiley gives homework every day; however, yesterday, each student turned their homework in on time so Ms. Wiley does not give homework today. In this case, the negative occurrence of daily homework was removed to reinforce turning in homework.

Is it likely Ms. Wiley’s class will turn their homework in more frequently now?

Another consequence is punishment. Punishment is providing something following a behavior that decreases the frequency of the target behavior in the future. Punishment is not recommended as it often has a negative impact on the individual and yields change that is not long lasting. In some cases, when using punishment to decrease future occurrences of a behavior something is added that is aversive or not liked such as yelling or social disapproval. Many of us have been exposed to this form of punishment. Examples include a verbal reprimand or a speeding ticket. Other punishment might entail removing or taking away something enjoyed to decrease future behavior. Loss of computer time and being grounded for the weekend are two examples of this type of punishment.

QUESTION: Who can benefit from ABA?

ANSWER

The principles of ABA are present daily in all our lives. Behaviors are shaped or altered based on the antecedents and consequences that a person encounters. For example, if a barking dog keeps someone in the neighborhood awake at night, the person will likely learn to shut the window before going to bed. This is an example of an antecedent that affected behavior. If an employee receives a bonus for doing a good job, he or she is likely to work harder. This is an example of how a consequence may shape behavior. Environmental variables such as these are constantly at play, often impacting learning and behavior.

QUESTION: Where and by whom is ABA used?

ANSWER

The interventions that have been developed using the principles of ABA are used in every walk of life and every profession. Different types of people use ABA in their jobs and in their lives. Parents, teachers, psychologists, managers, and a wide variety of others use these principles in education, weight loss, animal training, gerontology, industrial safety, advertising, medical procedures, marketing, automobile safety, sports, and a host of other fields and activities. Applied Behavior Analysis is used in both general and special education classrooms. For example, teachers use ABA to manage classroom behavior, teach group reading skills, and help the class memorize multiplication facts.

These principles have also been studied and developed to be used with special groups of individuals in recent years,

including those with ASD. ABA techniques can be especially useful in teaching behaviors to children with ASD who may not “pick up” these behaviors on their own as quickly as other children might. A wide variety of ABA techniques have been developed for building useful skills in learners of all ages. These techniques can be used in both structured situations, such as formal classroom instruction and in more natural everyday situations, such as play or mealtime. They are used to develop basic skills like attending, listening, and imitating, as well as complex skills like reading, conversing, and taking the perspective of others.

QUESTION: What are some of the teaching strategies used in ABA?

ANSWER

Teachers, parents, and behavior specialists have many tools in their tool boxes. ABA includes many strategies and procedures that can be helpful. Some of the most frequently used include prompting, shaping, task analysis, functional behavior analysis/assessment, antecedent interventions, and functional communication training.

Please visit the VCU-ACE website for additional resources on teaching strategies: www.vcuautismcenter.org

QUESTION: Is Discrete Trial Training the same as ABA?

ANSWER

There is confusion around the terms Discrete Trial Training (DTT) and ABA. DTT is one of many teaching procedures used within ABA. However, these terms are NOT synonymous. Instead, DTT is a teaching strategy based in the principles of ABA that focuses on skill acquisition and is useful when teaching early learning skills such as receptive instructions or imitation, or when the learner needs skills broken down into small, learnable parts.

There are four main components to discrete trial training: instruction, response, consequence, and the inter trial interval. First, the teacher gives an instruction. Second, the student responds. If it is a new skill, a prompt may be given by the teacher between the instruction and response to help the student respond correctly. The student’s response is evaluated as correct or incorrect and based on this determination, a consequence is delivered. If correct, positive reinforce-

ment is provided. If incorrect, the teacher will provide a correction procedure. This completes the discrete learning trial and the teacher then waits for a determined period of time (e.g., 5 seconds) before continuing with the next trial. If the teacher needs to design a learning program that breaks each component down into the simplest possible terms and plans to teach each item individually, then he or she might choose to use discrete trial training.

SUMMARY

Applied behavior analysis is a science in which interventions are taken from existing research and applied to improve behavior in socially significant ways. ABA is a way to approach behavior that will maximize positive outcomes. Simply put, ABA requires constructing intervention strategies that define the antecedents and consequences that will result in the increase of positive skills and the decrease of problem behaviors. Decisions regarding the effectiveness of the intervention are based on data collected. Based on the data analysis, the parent or interventionist may choose to continue with the intervention or change the intervention to produce positive outcomes for the individual.

REFERENCES

- Catania, C. (2007) Learning, Fourth Interim Edition. Cornwall-on-Hudson, NY: Sloan Publishing.
- Cooper, J., Heron, T., & Heward, W. (2007) Applied Behavior Analysis, Second Edition. Upper Saddle River, NJ: Pearson Prentice Hall.
- Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. *Journal of Consulting and Clinical Psychology*, 55(1), 3-9.
- Simpson, R. L. (1999). Early intervention with children with autism: The search for best practices. *Journal of the Association for Persons with Severe Handicaps*, 24, 218-221.
- Simpson, R. L. (2001). ABA and students with autism spectrum disorders: Issues and considerations for effective practice. *Focus on Autism and Other Developmental Disabilities*, 16(2), 68-71.

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