ABA

Overview

Introduction to Applied Behavior analysis

Special Learning

ABA
Overview

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THE ABA Overview
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to reach toward a brighter future for all.

— **Karen Chung**, Founder and CEO,
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Chapter 1: *Overview of ABA*

If you are living or working with a child with developmental disabilities such as Autism Spectrum Disorder (ASD), chances are you have heard of ABA or Applied Behavior Analysis. But what is it really? Applied Behavior Analysis (ABA) is the science of improving socially significant behaviors based on scientifically recognized principles of learning. "Applied", as a characteristic of ABA, means that the focus is on behavior that improves the quality of life of the child and those around him or her. The goal is to change behavior so that the child can have a more fulfilling life. Although certain behaviors hold more value than others, depending on the family's goals, some generalized examples include asking for what you want, reading a book, and playing with friends and dressing oneself (Baer, D. et al, 1987).

At present, the most promising treatment for individuals with autism is behavior modification as derived from modern learning theory (Lovaas, 1987). ABA therapy is a scientific approach to the change of behavior; it encompasses a substantial amount of monitoring of individualized programs, collection of information and continuously measuring and evaluating the effectiveness of the strategies being employed.

ABA therapy is a scientific approach to change behavior.

Generally, methods used for managing behavior attempt to encourage desirable behaviors and eliminate or minimize unwanted ones. Therapy based on ABA focuses on doing exactly that. ABA is based on the theory that behavior is shaped by the consequences of the actions. Essentially, the consequences serve as the motivation for repeating the desired action in the future. We all learn through reinforcement and punishment contingencies. This is how we have all learned the behavior we have in our repertoire. Behavioral intervention utilizing the principles of ABA uses a systematic approach to teach a child how to discriminate and generalize the objects in his or her environment to enhance behavior (NICHD, 2007).

Interventions utilizing the principles of ABA are rooted in the careful and frequent observation and analysis of every behavior exhibited by the child. Each behavior is broken down into smaller elements, and new behaviors are taught one small element at a time; this method has proven to be highly effective when applied properly under the guidance of expert behavior analysts. ABA is a methodical and consistent teaching approach. Every intervention has three basic parts:

- The request that is made of the child (Antecedent – "A")

- The child's response (Target Behavior – "B")

- The way the adult reacts to the child's response (Consequence – "C")

Like any branch of science that has its own intimidating set of vocabularies, ABA can be daunting and confusing at first, but with the proper introduction, paced learning and learning tools such as this E-book, ABA can be your best friend in your journey with autism.

Chapter 2: *ABA History*

To understand ABA better, we need to go back to its roots, which can be traced to studies done by B.F. Skinner, an American psychologist and behaviorist considered the founder of behaviorism. His work began in the 1930s with his studies on animals. Upon achieving success, he theorized that the same basic principles could apply to humans as well. His work inspired further research by other scholars, which over the next few decades led to the creation of ABA as a specialized field of study.

At the time Skinner first developed his theories, autism was still unknown in the medical and psychiatric world. But less than a decade after he published his first work, Hans Asperger and Leo Kanner – working on opposite sides of the Atlantic and independently of each other – described the first known cases of what would later become known as Asperger Syndrome and Kanner's Autism (or classic autism), respectively. Unfortunately, Kanner mistakenly made the assumption that a lack of "maternal warmth" had caused the condition. As a result, over the next three decades, many early "behavioral specialists" thought that autism was caused by poor parenting, or an emotional disorder brought on by the common cold (APA, 2000). Mistakenly, neglect and other forms of abuse were thought to be the primary factor behind a child's "acting out".

> **B.F. Skinner** is considered the founder of behaviorism.

Meanwhile, the science of ABA was beginning to develop in universities across the United States, but no significant work was done with children with autism until clinical psychologist, O. Ivar Lovaas, Ph.D., began his research in the 1970's. Lovaas was the first researcher to propose the idea that autism is a treatable condition. In 1987, he published a study, concluding that children with autism can develop their performance, and in many cases, improve enough to migrate to formal classrooms. Lovaas' first step in identifying an effective intervention was to demonstrate and reduce the different inefficient approaches previously tried. He worked to break the disability down into smaller behavioral elements and develop behavior modification techniques.

From his research he developed the Lovaas Method, and supplied clinical evidence that the behavior of children with autism can be modified through teaching techniques that alter environmental consequences (Lovaas Center, 2010).

Since its inception in 1987, the use of ABA-based interventions with children has grown significantly, and has been identified as one of the most efficient and successful treatments for autism. In 1993, a replication of the original Lovaas study showed that the children with autism in the 1987 study retained the skills they learned without the aid of additional intervention (McEachin et al, 1993). ABA is mainly concerned with the collection of authentic measurement and objective evaluation of observed behavior; the data is used to continuously modify the individualized teaching curriculum to continue to generate positive outcomes. Through the application of behavior analytic interventions, developing the minds of children can be achieved even when the causes for developmental delay are not known.

Chapter 3: *Who Can Benefit From ABA?*

The use of interventions based on ABA for children with autism dates back to the early 1970s, when behavior analysts began working with children with autism and other behavioral disorders. They developed techniques that can be used in different settings such as classrooms and homes, as well as in center-based, one-on-one settings to teach individuals various skills such as looking, listening and imitating.

ABA is a science of behavior. Regardless of any delays in development, we all attain a certain degree of learning through the principles of ABA as we go through life. We have all learned through reinforcement and punishment, so in a sense we have all benefited from the basic tenants of ABA. However, interventions based on ABA take those basic principles and structures into an orderly and highly systematic approach that uses the feedback derived from observational data to constantly refine the individual's specific program of intervention to his or her particular strengths and weaknesses.

Over the past decades, ABA has become recognized as the treatment of choice for autism spectrum disorders.

It is important to note that behavioral interventions based on the principles of ABA are not beneficial exclusively to children with autism. Any person with more individualized learning needs (such as those with identified learning disabilities) can also benefit from behavioral intervention services.

The Efficacy of Applied Behavior Analysis (ABA)

ABA is known to be a safe and efficient treatment for autism, and is supported by several states and scientific organizations, including the following:

The 2001 U.S. Surgeon General's Report on Mental Health stated:

> *"Among the many methods available for treatment and education of people with Autism, Applied Behavior Analysis (ABA) has become widely accepted as an effective treatment. Thirty years of research demonstrated the efficacy of applied behavioral methods in reducing inappropriate behavior and in increasing communication, learning, and appropriate social behavior.*[1] *"*

The New York State Department of Health assessed interventions for children ages 0-3 with autism, recommending that:

> *"Behavioral interventions for reducing maladaptive behaviors should be used for young children with autism when such behaviors interfere with the child's learning or socialization or present a hazard to the child or others.*[2] *"*

The Maine Administrators of Services for Children with Disabilities noted in their report that:

> *"There is a wealth of validated and peer-reviewed studies supporting the efficacy of ABA methods to improve and sustain socially significant behaviors in every domain, in individuals with autism. Importantly, results reported include 'meaningful' outcomes such as increased social skills, communication skills, academic performance, and overall cognitive functioning. These reflect clinically-significant quality of life improvements. While studies varied as to the magnitude of gains, all have demonstrated long term retention of gains made.*[3] *"*

The National Research Council's 2001 report on Educating Children with Autism acknowledged that:

> *"There is now a large body of empirical support for more contemporary behavioral approaches using naturalistic teaching methods that demonstrate efficacy for teaching not only speech and language, but also communication.*[4] *"*

Chapter 4: *What to Expect*

ABA interventions performed with a high level of competency usually yield positive outcomes in children with autism. But it is important to keep in mind that every child with autism is different, even though many manifest similar difficulties. Thus the particular interventions used and the rate of progress will vary for each child. ABA programs address a wide variety of skill areas, but the concentration is always on the individual learner. Since unique variables such as the learner's chronological age, specific behavioral profile, and cognitive development are considered as programming goals are developed, behavioral intervention goals vary from child to child (Schreibman, 2000).

ABA-based behavioral intervention programs can be provided by a variety of different entities including, but not limited to, private companies, schools, local government agencies and collaborating partnerships and foundations. In addition, behavioral intervention can be provided in the home, by a team of behavioral instructors supervised by a behavior consultant.

Commonly, several tutors, a senior tutor/supervisor, a psychologist, case manager, and a behavior analyst consultant form a team to implement ABA programs. Tutors, or behavior therapists/paraprofessionals, are trained by the consultants in implementing the curriculum and lesson plans and are closely supervised. Although it is preferable that the tutors (behavior therapists) possess prior experience and knowledge in ABA, the reality is that this is often unlikely due to the overall market shortage. To overcome this deficit, parents and behavior consultants often provide initial and ongoing ABA training to these caregivers.

In general, ABA programs involve:

- Evaluating the skills and difficulties of the child.

- Determining goals and objectives (e.g., learning how to say 'hello'.)

- Assessing behavior frequency.

- Planning and implementing a program that teaches the preferred behavior.

- Continuously measuring the required skills to ensure that the program is effective.

- Continuously providing program enhancement, making corrective actions when needed.

Each ABA program is individualized to cater to a child's specific needs. Every aspect should address a child's skills, interests, preferences and family situations. With that in mind, the interventions used for one child with autism will not necessarily be the same ones used for another child *even if that child has the same symptoms*. Still, the following should be considered in each and every professional behavioral intervention program (Green, G., et al):

- Intervention programs should be developed and monitored by qualified, well-trained behavior analysts.

- Non-behavior analysts, including parents, can implement the program as long as they have been properly trained in the methodology and are working under the guidance of a behavior analyst.

- Initial treatment goals should be identified by first observing the child's needs and then adjusting the treatment plan to the preferences of the child's family.

- Different combinations of strategies should be experimented with to identify which interventions are most beneficial to the child.

- To ensure continuity and consistency, parents and family members should be properly trained in cases when the professional intervention team is not working with the child.

- There should be regular meetings between family members and the intervention team.

- Appropriate behaviors should be encouraged while targeted undesirable behaviors should be eliminated.

- There should be consistency in the interventions done each week and for the duration of the program.

- The child's progress should be carefully tracked and frequently reviewed in order to adjust the interventions used. Collecting and analyzing data allows professional behavior analysts to evaluate the effectiveness of the interventions applied.

Your child is the most important aspect of the program. Always keep in mind that everything should revolve around his or her progress and needs. A successful behavioral intervention program will help children with autism and other developmental disabilities acquire lifelong skills, reach their full potential, aid in the complete integration and inclusion into society, have meaningful relationships, and flourish in any environment.

Chapter 5: *Applied Behavior Analysis Basics*

Some of the most effective ways to teach your child is by using Behavioral Interventions based on ABA principles. These are implemented by teaching one step-by-step lesson, followed by successive lessons based on the previous lesson. During lessons, the child is guided by the parent or teacher to get the desired response, improving that response a little more in each subsequent lesson. ABA interventions have been shown to be effective in improving academics, speech, language and socially appropriate behavior.

Science and Philosophy of ABA

Applied Behavior Analysis is a science that applies the principles of behavior to improve or modify socially significant behaviors. As we mentioned in chapter 2, ABA is based on the theory of behaviorism, which was first developed by B.F Skinner. The theory of behaviorism holds that behavior is shaped by consequences in the environment, and that consequences serve as motivation for repeating the action.

An example of this is the application of positive reinforcement: A boy gets good grades on his report card so his mother lets him get ice cream, his favorite treat, after school. The ice cream serves as a positive reinforcement that may increase the likelihood that the boy will get good grades in the future.

Principles of ABA

ABA-based therapy follows some basic principles and methodologies that have been shown to be effective in children diagnosed with autism. Since there is no common treatment plan that works for every child, ABA therapy uses a variety of different techniques early in the child's development with frequent customization to implement methods that work best for each child throughout their progression. Rigorous data collection and analysis serve to monitor the success of the program.

Reinforcement

The principle of reinforcement is a very important aspect of ABA. Reinforcement is something that occurs after a behavior and **increases** the probability of a behavior occurring again.

There are two types of reinforcement: Positive reinforcement and negative reinforcement.

Positive reinforcement is the *addition* of a stimulus following the occurrence of a behavior to increase the probability of the behavior occurring in the future. It is a way of motivating your child to do the same desirable act repeatedly until he or she eventually keeps up the behavior without reinforcement. An example of positive reinforcement is as follows:

A	B	C
Your child sees a cupcake	Child: "Can I have a cupcake?"	You give your child a cupcake

Asking for the cupcake is an example of reinforcing the behavior. Now that your child has learned how to gain access to the cupcake, he or she will ask for it in the future.

Negative reinforcement is the removal of a stimulus following the occurrence of a behavior, to increase the probability of the behavior being repeated in the future. For example, you order French fries for a child and they come with a side of ketchup on the plate. The child doesn't like ketchup on her plate and begins crying for you to remove it.

A	B	C
Your child sees ketchup on the plate.	Child cries.	You remove the ketchup.

You remove the ketchup and the crying behavior stops. The act of removing the ketchup stopped the crying behavior. However, the likelihood of the crying behavior occurring in the future has increased. The child's crying was negatively reinforced by you removing the ketchup.

One key to remember is that the words "positive" and "negative" within this context do not refer to emotions like "happy" vs. "sad" or "good" vs. "bad", but rather, refer to the addition or subtraction of a stimulus. It is important to note that behaviorists prefer to evaluate behavior in a non-judgmental fashion and generally avoid terms like "good" and "bad." Instead, they use terms like "appropriate" and "functional" as it applies to types of behavior they want to see increased. Terms like "maladaptive" or "problem" are used to describe behaviors they want to see decreased.

Differential Reinforcement

Differential reinforcement is the technique of combining positive and negative reinforcement to effect behavior change more rapidly by reinforcing only the appropriate response (or behavior you wish to increase) and applying extinction to all other responses. Differential reinforcement is simply providing reinforcement (positive or negative) for a behavior you want to see increase, and withholding reinforcement from a behavior you do not want to see increase. For example, you ask your child to brush her teeth before going to bed every night. She brushes her teeth, as you've asked, and you reward her by giving her 10 extra minutes to play her favorite game before she goes to bed for the night. On evenings that she does not brush her teeth as you've asked, you do not reward her with 10 extra minutes to play, and she is to go straight to bed.

Differential Reinforcement of Other Behaviors (DRO)

DRO is also known as omission training procedure. DRO is a procedure during which a person receives reinforcement for the absence of a target behavior, following the passage of a predetermined interval. For example, a parent might reward a child for doing anything *besides* picking his nose: "Jimmy, you have been sitting in your chair and drawing for over 10 minutes without picking your nose. You may have 10 minutes of play time now."

Like many techniques utilized when applying behavioral intervention, DRO can be done in multiple ways. Here are a few examples using different variations of DRO:

1. Reinforcement can be made contingent on the non-occurrence of the targeted inappropriate behavior throughout a specified period of time. Reinforcement is given only after no instances of the target behavior occur during the entire interval. For example, a teenager is asked to baby-sit his little sister and some of her friends while his parents are away. His sister is playing loudly with her friends in the next room as the teen tries do his homework. He goes to the kids and says, "Let's play the quiet game. If you guys can go 20 minutes without making a sound, I will order us pizza as a reward. However, we can only have pizza for dinner if you guys earn it." The kids agree and the teen goes back to his homework; 20 minutes soon pass and the kids have been just as quiet as the teen had hoped, so he returns to them to let them know they had earned pizza.

   In this case, the little girl and her friends were rewarded for the absence of talking or other vocal sounds, but could only gain access to the reward if they had been quiet for the entire 20 minute period of time.

2. In many instances, it may be wise to provide reinforcement during smaller intervals of time within a larger overall period. An example might be giving little treats such as a glass of juice or a piece of candy several times during a child's therapy session for doing something being asked of him or her rather than waiting until the end of the session. An example would be handing a child 2 pieces of his favorite candy for every 10-minute period of time that passes without the child standing up from his seat.
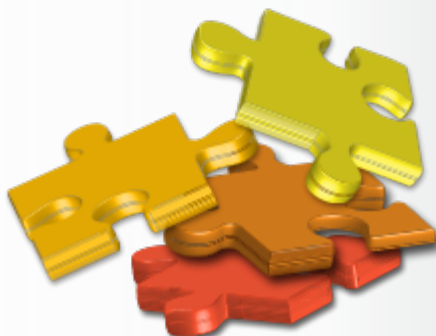
3. The therapist or teacher may want to use DRO for completing specified academic work. An example would be when a student is required to finish his schoolwork without protesting the work. For each activity he completes without a protest, he earns 1 star token; when he earns 5 star tokens, he earns 10 minutes of free play. If he protests during an activity, he will not earn his star token, and will have to complete the work his teacher has given and wait until the next task begins for the opportunity to earn another star token.

Differential Reinforcement of Alternate Behaviors (DRA)

DRA is the reinforcement of behaviors which serve as alternatives to inappropriate behavior, especially alternative means of communication. The goal is to teach the child a socially acceptable response in which the child gains access to the reward. For example your child could be taught to present his therapist with a picture card for a break from an activity instead of throwing a tantrum to escape an activity he doesn't enjoy. "Harold, here is a break card. If you feel frustrated or mad while we are working, you may trade in a break card, and I will give you a 3-minute break. During your break, you may sit quietly, but you may not play with your toys. When your break is over, we will come back to work."

Differential Reinforcement of Incompatible Behaviors (DRI)

DRI is the reinforcement of behaviors which are incompatible with a targeted inappropriate behavior; in other words the reinforcement of a behavior that cannot be physically engaged in at the same time with the targeted inappropriate behavior. An example would be, the child is constantly getting out of her seat during class. She could be rewarded for staying in her seat. "Samantha, here is the rule: stay in your seat. If you stay in your seat for 15 minutes, you can earn 5 minutes to draw with your crayons."

Differential Reinforcement of Lesser Rates of Behavior (DRL)

DRL is the reinforcing of periods of time in which the child exhibits the behavior at a predetermined lesser rate. An example might be if the child stands up in class too often. After observing his behavior the teacher determines that he stands up at least ten times in an hour, so she offers reinforcement if he can stand up no more than five times in an hour:

"Jeffrey, you stand up in class too many times and it is disrupting to the other students. Let's try this: Right now you stand up ten or more times during one class. If you can stand up only five times during the next class you will earn ten extra minutes of computer time this afternoon. But if you stand up six times or seven times you won't earn the extra computer time. Do you understand?"

Extinction

Extinction means to withhold reinforcement for previously reinforced behavior. It refers to stopping an event that follows a problem behavior, resulting in a decrease in the behavior. The use of extinction is called extinguishing a behavior.

An example of extinction is as follows: A parent makes vegetables for dinner. Her child does not like vegetables and throws a tantrum. Her normal response in the past is to take the vegetables away and tell her child that he or she does not have to eat them; thus negatively reinforcing the tantrum behavior. The child stops the tantrum and gets what he or she wants. In this situation the child is reinforced for having the tantrum.

To apply extinction, the parent or caregiver no longer removes the vegetables even if the child starts a tantrum. The act is no longer reinforcing the behavior. This will soon let the child realize that throwing a tantrum is not an appropriate behavior and is not the way to get what he or she desires.

A Special Note on Extinction Bursts

Usually when extinction is first implemented for a targeted inappropriate behavior, there will be an increase in the undesirable behavior known as an *extinction burst*. A common expression among behaviorists is, "The behavior will get worse before it gets better." It is important when implementing extinction to be prepared for the likelihood of an extinction burst and not be sidetracked by it.

Over time the targeted behavior should diminish if the person implementing it is persistent and consistent in its application until the targeted behavior is achieved.

For example, a child regularly hits people to get their attention. It is decided that extinction will be applied to this hitting behavior, and when the child hits someone to gain attention, the individual will not pay attention to him. As extinction is first applied, the child may hit people more often or with greater force to gain attention, but as this behavior no longer provides him access to what he wants due to extinction efforts, the child learns over time that another way to get attention is to refrain from the hitting behavior. Because it can initially appear that things have gotten worse and not better, it is critical that extinction be applied with consistency and much patience.

Punishment

Punishment is defined as either the addition or subtraction of a stimulus following the occurrence of a behavior, to **decrease** the probability that the behavior will occur in the future. It is important to note that in behavioral intervention strategies, punishment does not mean spanking, scolding, cruelty or harsh attitudes. These are never part of a good intervention program and should never be used with a child. Great care and discretion should be taken when implementing punishment so that only the behavior is discouraged, not the child. Behavior analysts do not implement punishment procedures unless reinforcement procedures have been proven to be ineffective or when a child displays dangerous or harmful behavior. In practice, time out and response cost are the most widely used procedures of negative punishment. Like reinforcement, there exist both positive and negative punishment procedures.

A Special Note on Response Cost

Response Cost is the contingent removal of a specific amount of available reinforcement following the occurrence of a target behavior. It is like a tax or a fine on behavior. For example, a child hits people to get attention. There is an intervention in place to eliminate this behavior from the child's repertoire. Teachers reward the child for the absence of hitting on a half-hour schedule. For every 10 minutes that pass within the half-hour interval that your child has not hit, he or she receives a token. When your child has earned 3 tokens, he or she earns the big reward, which can be 10 minutes of playtime with a game device.

Let's say the child arrives in school and the morning is going pretty well. She has earned 2 tokens so far and is currently working on the third. However, the child is sits next to Christine, who isn't acknowledging the child's attempts to get her attention, so finally, the child hits her. The teacher observes this and says, "No hitting. I am taking one token." She then removes a token from the child's token board, and the child has to start the last 10-minute interval over in order to earn the last token, which will allow the child to gain access to the big reward.

Positive punishment is the addition of a stimulus following the occurrence of a behavior to decrease the probability that the behavior will occur in the future. An example of positive punishment is as follows: a teen is sitting at the back of math class and is generally behaving disruptively while the rest of his classmates work quietly in-class on their homework. As a consequence for his disruptive behavior, his teacher assigns him 30 additional problems to complete for his assignment. The next day, the teacher observes that the teen is attentive during instruction and that he works quietly and independently when the class is given the opportunity to begin their assignments.

The teacher has applied positive punishment procedures in that additional work has been given to the student following the occurrence of his disruptive behavior (thus, a stimulus was added), and the disruptive behavior decreased over time.

Negative punishment is the removal of a stimulus following the occurrence of a behavior to decrease the probability that the behavior will occur in the future. This could mean giving the child a time-out, taking away privileges, taking away things closely related to the behavior (if the inappropriate behavior was caused by misusing a toy, take the toy away, not a different toy or a dessert at dinnertime). Here is an example of the application of negative punishment in order to eliminate an inappropriate behavior:

> Tad is kicking a soccer ball around the front yard and he begins to kick the ball into the garage door. Tad's father asks him to stop. "Tad, please play with the ball in the yard only. Do not kick the ball into the door." He then gives Tad a warning: "If you continue to kick the ball into the door, you will lose your soccer ball privileges."

At first Tad complies, but later he kicks the ball into the door again. His father responds by taking the ball away. "Tad, I asked you not to kick the ball into the garage door but you did it again. You lose the ball." Tad asks for the ball back, but his father says, "I need to be sure you understand that it is inappropriate to kick the ball into the door. The rule with the ball is, it stays in the yard only." Tad agrees, and then complies with his father's request, keeping the ball in the yard only. The father's removal of the soccer ball decreased Tad's inappropriate kicking behavior through the use of negative punishment.

Did you know?

Recent studies show that adherence to 40 hours a week of ABA therapy results in better interpersonal skills, higher IQ levels and improved decision making.

Pairing

The concept of pairing is very important in effectively implementing ABA practices. Pairing is the act of associating oneself with reinforcers and reinforcement to become "the giver of goods" in the eyes of the child. You want the child to associate you with good things. Allowing the child access to good things while interacting and playing with you results in them associating you with positive things.

Any interaction you have with a child should start with pairing. Pairing is ongoing throughout the time you spend with a child and never ends. You might be asking the question, "Why is pairing so important?" Pairing is the foundation of successful teaching. More importantly, it fosters motivation in your learner. Pairing turns *you* into a reinforcer, thus creating a more positive teaching and learning environment.

Pairing ultimately increases both compliance and instructional control. When a child begins to associate you with things that are positive and fun, they will be more likely to comply with your requests. Likewise, after a child has gotten to know you through pairing they will understand that they will gain more access to reinforcement if they comply with your requests, thus giving you more instructional control.

Pairing allows you to assess a child's preferences and determine what is indeed reinforcing to the child and what is not. It allows you to reassess preferences frequently to test reinforcer effectiveness and keep interactions positive.

Here is an example of how to pair with a child:

Molly enjoys coloring. When she gets home from school, her therapist Megan has a coloring book with some of her favorite cartoon characters ready to color. Megan joins Molly in coloring a picture from the book. As they color, Megan reviews the different colors of crayons and some of the noted colors of the items in Molly's picture. Megan tells Molly what a good job she is doing paying attention to and staying in the lines. After they finish coloring, Megan helps Molly cut out her picture and tapes it to the wall so that she can look at it later.

A Special Note on Pairing

There are several key points to remember to make pairing more effective. Since you want to be associated as the "giver of goods," it's important not to give the learner free access to reinforcers outside of pairing time. What you give them access to must be in your control. Try to find reinforcers that you can control both the delivery of and the frequency of. These types of reinforcers would include edibles, drinks, physical interactions like tickles, hugs or high fives, and activities that go away or end quickly like bubbles, singing songs, or a spinning toy.

Chapter 6: *Applied Behavior Analysis Strategies*

Various strategies are used within ABA. These strategies are how behavior analysts apply the principles of ABA. These strategies focus on increasing skills and reducing problem behaviors in children with autism. No singular treatment or strategy works for every child, so his or her behaviorist may recommend a combination of strategies to achieve the best possible outcome. Here are some of the most common strategies used in ABA programs:

Task Analysis

Task analysis is a process wherein a single task is broken down into sequential steps so a child taught using this strategy can learn the whole task faster and easier. This strategy is often combined with another ABA strategy called chaining.

Chaining

Chaining is an ABA strategy in which a sequence of responses or actions serves as a cue to perform the next response or action. An example of chaining might be teaching a child the process of preparing his or her breakfast cereal. The first thing to teach is how to open the cereal box. This action will later be pointed out as a cue to do the next step, which is to pour the cereal into a bowl. Then you teach the step of pouring milk into the bowl, and so forth. One task at a time is mastered until it becomes a cue for the next task.

Prompting

Prompting is when a parent or therapist engages in encouraging the desired response from the child while still using the least intrusive level of intervention.

There are different forms of prompting:

1. Verbal Cues – this is what one tells a child to do in order to complete a certain task. An example is a parent teaching a child to spell the word "ball" by saying, "Spell Ball," then prompting the child for the correct response, "B-A-L-L."

2. Visual Cues – uses physical or tangible objects to aid in completing a certain task. An example would be presenting a picture of a ball with the word "ball" spelled on it to a child to teach the child how to spell the word "ball".

3. Demonstration – here a parent or therapist teaches a child how to complete a task by acting out the task and having the child follow. An example is telling the child to "touch the ball" and touches the ball with his or her own hand.

4. Physical Guidance – this involves manipulation in order to teach a child. An example of physical guidance would be a parent or therapist actually guiding the child's hand towards the ball to touch it.

Prompt Fading

Prompt fading is the process of transitioning the child gradually from being prompted to having no need for one. For example, if you asked your child to raise her hand, you might start by providing *physical guidance* in raising your child's hand for her. Once she has learned to raise her hand by herself, move on to *modeling* the response by demonstrating how with your own hand. Once she is accustomed to this cue, begin simply gesturing to the area above the child's head (*visual cue*). Finally, remind the child verbally without any visual or physical signals (*verbal cue*).

Errorless Learning

Errorless learning is employing the use of prompting techniques immediately during learning opportunities, so that the learner does not have the opportunity to complete the task incorrectly. As the learner begins to show more independence with the tasks, the prompts are faded, until the task is done independently.

An example is an instructor working with a child on colors. She lays out 3 markers and asks him to find the blue one. She then immediately guides his hand to the blue marker and has him touch it. She praises him for finding the blue one and asks him again to find the blue one. She guides his hand again toward the blue one, and he rests his hand on the marker without her assistance. She again praises him and asks a third time. The child begins to reach toward the markers, and the instructor immediately points to the blue one to facilitate a correct response. When he touches the blue marker a third time, she again praises him and asks a fourth time. The child immediately reaches out and touches the blue marker, without any assistance from his instructor. She rewards him with tickles and praise.

Shaping

Shaping involves providing reinforcement for successive approximations of a behavior, until the desired response is performed. An example is a father who has observed that his daughter has finally grown too big for her tricycle, and that she may be ready for a "two wheeler." However, since she has not yet developed the balance needed for it, her first "big girl bike" has training wheels on it. Her father feels that she is ready to ride without her training wheels, so he removes them and holds onto her bike seat to keep her balanced while she pedals. When he releases his grasp on her seat, the girl rides only a short distance before she falls. Her father continues to provide her assistance in getting started, and over time, she becomes able to travel longer and longer distances before falling, until she no longer needs his assistance. Her father is sure to praise her efforts and reward her attempts; however, he only provides her reinforcement for her closest attempt at independent bike riding. This way, her father has helped shape her bike riding behavior by providing the multiple supports necessary, until the behavior of independent "two wheeler" bike riding has been accomplished.

Chapter 7: *Applied Behavior Analysis Methodologies*

There are several methodologies applied by ABA in dealing with autism. These methodologies basically provide guidelines and structure on how to teach new skills to a child with autism or other developmental disability.

Discrete Trial Training (DTT)

Discrete Trial Training (DTT), based on the principles of ABA, is an intensive treatment program used to help children with developmental disabilities such as autism. DTT involves teaching a child with autism a variety of skills that they may not pick up on their own. In DTT, new skills are broken down into very short and simple components. These components are implemented with the child in repetition, and reinforcement is delivered for correct responses. Prompting strategies are also used to ensure that the child is successful in learning the new skill.

DTT programs usually start by training essential pre-learning skills such as sitting and looking at the teacher, and social skills such as looking at other people, talking and interacting with others appropriately. Once the basic skills have been mastered, DTT works towards teaching higher-level skills.

There are 5 parts to DTT, one being optional:

1. Discriminative Stimulus (SD) – The instruction or environmental cue the teacher would like the child to respond to. Telling the child, "Look at me," is an example of an SD.

2. Prompting Stimulus (SP) – A prompt or cue from the teacher to help the child respond correctly (*optional*). Initially guiding the child's face toward the instructor's is an example of a prompting stimulus.

3. Response (R) – The skill or behavior that is the target of the instruction, or a portion thereof. An example of a response might be when the child responds by looking and making eye contact.

4.

5. Reinforcing stimulus (SR) – A reward designed to motivate the child to respond and respond correctly. A verbal praise or a favorite snack may be given as a reward for responding.

6. Inter-Trial Interval (ITI) – A brief pause between consecutive trials.

Natural Environment Training (NET)

Natural Environment Training (NET) is another methodology used in ABA. This model focuses on establishing operations to build spontaneity and relies heavily on capturing a child's motivation in the moment and uses it as an opportunity to provide instruction. It maximizes teaching and learning opportunities in a day using naturally occurring activities and increases the child's participation. NET was designed to offset a weakness of DTT, in that DTT is primarily initiated by the teacher or parent rather than the child. NET also focuses on areas such as emotional understanding, perspective taking and problem solving that are not directly addressed by DTT. In NET, skills are taught in a more natural environment and in a less contrived manner. For example, if the child is interested in playing with toy cars, the instructor may join in play with the child and begin a conversation about cars by saying, "I drive a red car. What color car does your mom drive?", while prompting the child to keep eye contact and provide a proper verbal response. This way, the child is taught how to respond to social conversation cues.

Pivotal Response Treatment (PRT)

- PRT is also one of the methodologies based on the principles of ABA. Pivotal response treatment targets the areas, also commonly known as the pivotal behaviors, of motivation, the ability to respond to multiple cues, self-management skills, and social behavior which are also commonly known as the pivotal behaviors, rather than teaching a progression of skills according to developmental sequence. It is structured in such a way that follows the child's lead. The theory behind this type of behavioral intervention is that if pivotal behavior is developed appropriately, the results will impact other areas of development. Formerly known as the natural language Paradigm (NLP), it was developed through the efforts of multiple researchers, including Koegel, Schreibman, Dunlap and Horner.

PRT can be done at home or in school and can involve many hours a day depending on the goals established for the child. Motivational strategies are utilized throughout the intervention as often as possible. For example, a child's purposeful attempts in appropriately communicating are rewarded with reinforcement related to their effort to communicate. If the child shows a natural preference for a train toy, the instructor may first require the child to request it prior to getting to play with it. The instructor may then deliver the train as a reward for appropriately requesting and then join the child in play, engaging him or her in conversation related to the train (such as asking about sounds the train makes, or who rides a train, or where a train is found, or what type of item the train is).

Incidental Teaching

The initial concept of incidental teaching was originally developed by Risley and Hart in the 1970's (Risley & Risley, 1978) and then expanded as part of the Walden Project under the supervision of Dr. Gail McGee and her colleagues at Emory University in the 1990's. (McGee, Morrier, & Daly, 1999). Incidental teaching involves teaching while examining naturally-occurring events within in an environment and utilizing those events to create "teachable moments," during which instruction is presented. For example, if your child asks for a glass of water, the therapist would then ask your child, "Which glass? The small one or the big one?", thus encouraging more elaborate language from your child.

Fluency Building

Fluency building is a teaching model that encourages educators to teach specific elements of behavior over and over again until the behavior becomes fluent.

Michael Fabizio and Alison Moors, behavior analysts, stated that the teaching of a skill should not cease simply because a learner has demonstrated independent performance of a skill, but ongoing evaluation is needed to determine if the skill is being performed with fluency. Children with autism spectrum disorders and other developmental disabilities often need to perform tasks more often, not only to learn the skill, but to learn to perform the skill easily and accurately. Fluency building has 4 measurable components, (Fabrizio, M., & Moors, A., 2003) namely:

- Skill retention - wherein the skill can be demonstrated following a period of time when the skill was unpracticed or when opportunities to gain access to reinforcement were not available.

- Skill endurance – wherein the skill can be demonstrated for a prolonged period of time without fatigue.

- Skill stability – wherein the skill can be demonstrated in the presence of significant distraction.

- Skill application – wherein the skill can be demonstrated with materials or within contexts that were not specifically taught.

For example, when a child washes their hands, the whole activity is broken down into small steps, with each step being mastered and focused on before moving onto the next step.

Mom: "When washing your hands, you first turn on the water tap."

Mom: Demonstrates actual act of turning on water tap.

Mom: "Now you give it a try."

Child: Demonstrates how to open water tap.

Mom: "Good!"

Mom: "What's the first thing you do when washing your hands again?"

Child: "Turn on the tap."

Mom: "Can you show me how that is done?"

Child: Opens tap.

Mom: "Good!"

Mom: "Next would be getting your hands wet."

Mom: Demonstrates how to wet hands ... and so forth.

A complex behavior such as hand washing is broken into individual steps, such as turning on the water, wetting hands, and getting soap.

This is done with a specific repetition until the behavior is considered. 'fluent.' This method is also being used to teach children with autism how to read, interact with peers, bathe, and any activity that follows a step by step approach. Once the behavior is learned, it becomes an automatic function for the behavior or activity.

Functional Communication

Functional Communication Training (FCT) is a differential reinforcement procedure in which an individual is taught an alternative response that results in the same class of reinforcement identified as maintaining problem behavior (NCBI, 2008). It came about within the literature when behavior analysts explored a systematic method to identify potential replacement behaviors for problem behavior. It requires identification of why the behavior is occurring, first through functional behavioral analysis procedures, and then teaches the child an appropriate means to communicate his or her wants and needs, with use of sign language, vocalization, utilizing picture exchange communication system cards, etc. The hypothesis behind this procedure is that teaching the alternative behavior of appropriate communication will lead to a reduction in the problem behavior because the problem behavior is actually a means of communication.

For example, when a child who is primarily non-verbal has a tantrum to get out of a task, the behavior analyst's first function is to identify the cause of the tantrum.

When the cause has been identified, the behavior analyst would then teach the child to appropriately convey that he or she needs a break from the task either by teaching the child to use an exchange icon or by using sign language.

These are just some of the ABA methodologies commonly used at present. Learning about these methodologies will further aid in the understanding on what behavior intervention programs are designed to achieve, which is to aid your the child's development and growth in terms or language, social and behavior difficulties.

Chapter 8: *What a Parent Should Know about Behavioral Programs based on ABA*

Program Frequency

Originally, Dr. Lovaas' research recommended between 32 to 40 hours of tutoring per week in sessions of two or three hours at a time (Smith, T. et al, 2000). According to the 1987 study Dr. Lovaas conducted, 40 hours a week of intensive behavioral intervention is optimal to generate the best outcome. More recent studies have also shown that adherence with the 40 hour requirement can result in better interpersonal skills, higher IQ levels, and improved decision making (Smith et al, 2000). Behavioral intervention services based on the principles of ABA aim to help children with autism lead more independent and socially active lives. Research shows that intensive behavioral intervention services produce the most dramatic results when accessed early in a learner's life, quite possibly because of the rapid and substantial changes the brain undergoes early in life.

Forty-seven percent of children with autism who were treated with interventions based in ABA before the age of 4 made significant gains in the areas of cognitive development, language development, and social skill development, as stated in the original Lovaas study (1987). Even those who had not demonstrated such significant gains in identified areas of deficit still demonstrated important skill acquisition. Additionally, children in that 47% maintained those gains even after intervention had been discontinued, and were able to begin elementary school without the need for additional support. In fact, their development in the identified areas of deficit had progressed so much that they were declared "indistinguishable" from same-aged peers who were not diagnosed with ASD (McEachin et al, 1993). In the 1993 replication of the Lovaas study, a similar procedure of testing in a group of 19 pre-school age children with autism showed that behavioral treatment such as ABA-based therapy may produce long-term and noteworthy improvements for children with autism (McEachin et al, 1993).

Finding an ABA Service Provider

It is helpful to keep in mind that an ABA service provider is an individual who oversees and develops behavioral intervention services based on the principles of ABA. One should not confuse service providers with other professionals like speech language pathologists, occupational therapists, physical therapists, etc.

ABA service providers can be single-operators or part of a larger organization that is normally supervised by a clinical director. No matter which classification of service provider chosen, it is important to establish a good working relationship with that person since the child will be spending significant amounts of time with him or her.

One way of looking for an ABA service provider is by consulting the Behavior Analyst Certification Board (BACB) at www.bacb.com, where you can search for registered analysts by location. Local hospitals, autism clinics, schools or support groups may also be consulted for recommendations for a certified ABA provider.

The Cost of an ABA Program

The cost of an ABA program depends on the format of the program, the way it is structured, and the services that are provided. Generally it is expensive, but to reduce your costs, volunteers may be sought for help and materials can be borrowed from toy libraries or local autism associations. Sometimes, families may be able to find funding sources through their local government health care systems.

One of the most important ways families can minimize costs is by implementing some of the activities that are involved in the treatments themselves. There is no question that learning how to apply ABA-based interventions in the home is worthwhile. In a review of numerous studies on the effectiveness of parental use of interventions in the home environment, researchers Helen McConachie and Tim Diggle found that:

Estimated cost of a behaviorist consultation can range from $70-$120 per hour.

"Both randomized and controlled studies tended to suggest that parent training leads to improved child communicative behavior, increased maternal knowledge of autism, enhanced maternal communication style and parent child interaction, and reduced maternal depression" (McConachie & Diggle, 2007).

Specialized ABA Facilities

Children can be involved in programs that specialize in ABA treatment. Most major cities and university towns include such programs. However, the cost of these schools is quite expensive, as the tuition fees may range between $25,000 to over $75,000 a year. However, parents in need may be offered scholarships by some facilities. Special Learning has a resource database to search for facilities in specified areas.

Home Program

Behavioral intervention services can take place in the comfort of one's home utilizing the services of behaviorists in training or undergraduates that have taken ABA workshops or even implemented by family members themselves. Home programs yield the best outcomes when monitored and supervised by experienced professionals like psychologists or certified behavior analysts. It is important to keep in mind that having a child's treatment at home has its price, with fees for home treatments costing up to $6,000 a month (Gillibrand, 2009).

Consultation fees

Consultation fees may vary per behaviorist. Fees are dependent on what the child needs and how the program is structured. It also depends on the location. Generally, the estimated cost can range from $70-$120 per one hour of consultation.

A successful behavior intervention program is a result of well-collaborated teamwork among parents, the analysts, teachers and the child. Each individualized program is aimed to help the child grow and develop the necessary skills needed to thrive independently in the future. The earlier these interventions are started, the better chances are that the child will reach his or her maximum potential.

References:

Overview

Lovaas, O. I. (1987). Behavioral treatment and normal educational and intellectual functioning in young autistic children. Journal of Consulting and Clinical Psychology, 55, 3–9.

Baer, D. M., Wolf, M. M., Risley, T. R. (1987). Some still-current dimensions of applied behavior analysis. Journal of the Association for Behavior Analysis, 20, 3131-327.

National Institute of Child Health and Human Development. Nichd.nih.gov. *Autism Overview: What are the treatments for autism?* Retrieved May 16, 2011

Autism Speaks. autismspeaks.org *Autism Treatments.* Retrieved May 16, 2011

History

American Psychological Association. Apa.org. Autism and Treatment Options. Retrieved May 12, 2011

The Lovaas Center. thelovaascenter.org. The Lovaas Center: Lovaas Young Autism Project. Retrieved May 12, 2011

McEachin, J. J., Smith, T., & Lovaas, O. I. (1993). "Long-term outcome for children with autism who received early intensive behavioral treatment." American Journal on Mental Retardation, 97 (4), 359-372. Retrieved May 31, 2011 from http://www.aba-parents.ch/fileadmin/ABA_in_der_schweiz/Long_Term_Outcomes_Lovaas.pdf

Who can Benefit form ABA?

Autism Speaks. autismspeaks.org. Eight Arguments Defining The Justification For Autism Insurance reform Legislation. Retrieved May 12, 2011 from www.autismvotes.org

What to Expect

Schreibman, L.(2000). Intensive behavioral/psychoeducational treatments for autism: research needs and future directions. Journal of Autism and Developmental Disorders, 30(5), 373-378.

Maurice, C. Green, G., & Luce, S. C. (Eds.). Behavioral intervention for young children with autism: A manual for parents and professionals. (pp. 45-67). Austin, TX: Pro-Ed.

Punishment

American Academy of Pediatrics. Aap.org. Guidance for Effective Discipline. Retrieved May 13, 2011

Discrete Trial Training

Autism Spectrum Disorders Fact Sheet: Lovaas Program and Discrete Training Trials. Retrieved May 16, 2011 from http://www.autism-help.org/intervention-lovaas-discrete-training.htm

Pivotal Response Training

Association for Science in Autism Treatment. Asatonline.org. *Pivotal Response Training/Treatment (PRT)/ Natural Language Paradigm (NLP)*. Retrieved May 16, 2011

Incidental Teaching

McGee, G. G., Morrier, M. J., & Daly, T. (1999). An incidental teaching approach to early intervention for toddlers with autism. *JASH* , 24(3), 133-146.

Association for Science in Autism Treatment. Asatonline.org. *Incidental Teaching*. Retrieved May 16, 2011 from http://www.asatonline.org/intervention/procedures/incidental.htm

Fluency Building

Fabrizio, M., & Moors, A. (2003). Evaluating mastery: measuring instructional outcomes for children with autism. *European Journal of Behavior Analysis*, *4*(1), 23-36.

Functional Communication

Carr, E.G., & Durand, V.M. (1985). Reducing behavior problems through functional communication training. *Journal of Applied Behavior Analysis*, *18*(2), 111-126.

National Center for Biotechnology Information. Ncbi.org. *Functional Communication Training: A Review and Practical Guide. Retrieved.* June 17, 2011

Program Frequency

Tristram Smith, Annette D. Groen and Jacqueline W. Wynn (*2000*) " *Randomized Trial of Intensive Early Intervention for Children With Pervasive Developmental Disorder."* American Journal on Mental Retardation: July 2000, Vol. 105, No. 4, pp. 269-285.

The Cost of ABA Program

McConachie H, Diggle T. (2007, February). *Parent implemented early intervention for young children with autism spectrum disorder: a systematic review*. Retrieved May 16, 2011

*Lovaas, O.1987. "Behavioral Treatment and Normal Educational and Intellectual Functioning in Young Autistic Children." J Consult Clin Psychol. 55(1):3-9.*Retrieved May 16, 2011

Specialized ABA Facilities

Healing Thresholds. Healthingthreshold.com *Applied, Behavior Analysis for Children with Autism*: *Cost.* Retrieved May 31, 201

Home Treatment

Kirsten Gillibrand (2009-2015). *Making Quality Autism Treatment Affordable For Families.* Retrieved May 31, 2011 from http://gillibrand.senate.gov/agenda/item/?id=9b134754-cbd7-4708-9b51-5e74f578897b

Tristram Smith, Annette D. Groen and Jacqueline W. Wynn (*2000*) Randomized Trial of Intensive Early Intervention for Children With Pervasive Developmental Disorder. American Journal on Mental Retardation: July 2000, Vol. 105, No. 4, pp. 269-285.

1   U.S. Department of Health and Human Services, *Mental Health: A Report of the Surgeon General*, 163-64 (1999) quoted in Autism Speaks. autismspeaks. org. *Eight Arguments Defining The Justification For Autism Insurance reform Legislation.* Retrieved May 12, 2011 from

http://www.autismvotes.org/atf/cf/%7B2A179B73-96E2-44C3-8816-1B1C0BE5334B%7D/Arguments_for_private_insurance_%20coverage.pdf

2   New York Department of Health, Clinical Practice Guideline: Report of the Recommendations, Autism/Pervasive Developmental Disorders, Assessment and Intervention for Young Children (Age 0-3 Years) (1999) quoted in Autism Speaks. autismspeaks.org. *Eight Arguments Defining The Justification For Autism Insurance reform Legislation.* Retrieved May 12, 2011 from

http://www.autismvotes.org/atf/cf/%7B2A179B73-96E2-44C3-8816-1B1C0BE5334B%7D/Arguments_for_private_insurance_%20coverage.pdf

3 Maine Administrators of Services for Children with Disabilities, Report of the MADSEC Autism Task Force. (2000). quoted in Autism Speaks. autismspeaks. org. *Eight Arguments Defining The Justification For Autism Insurance reform Legislation.* Retrieved May 12, 2011 from

http://www.autismvotes.org/atf/cf/%7B2A179B73-96E2-44C3-8816-1B1C0BE5334B%7D/Arguments_for_private_insurance_%20coverage.pdf

4   National Research Council, Educating Children with Autism.(Catherine Lord & James P. McGee eds2001) quoted in Autism Speaks. autismspeaks. org. *Eight Arguments Defining The Justification For Autism Insurance reform Legislation.* Retrieved May 12, 2011 from

http://www.autismvotes.org/atf/cf/%7B2A179B73-96E2-44C3-8816-1B1C0BE5334B%7D/Arguments_for_private_insurance_%20coverage.pdf

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THE ABC's of AUTISM

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