

Overview of Treatment Approaches for Children with Autism Spectrum Disorders

There are numerous instructional approaches, treatment protocols, and specialized programs specifically designed for children with autism spectrum disorders. The evidence for the effectiveness of methods rooted in Applied Behavior Analysis is extensive:

“No other educational or treatment approach to autism meets the standards of scientific proof that are met by ABA and there are no other scientifically valid treatments for autism that produce similar treatment, educational, or outcome results” (Jacobson, Foxx & Mulick, *Controversial Therapies for Developmental Disabilities: Fads, fashion and science in professional practice*, Mahwah, NJ: Lawrence Erlbaum Associates, 2005.)

In addition to methods that fall under the “umbrella” of ABA, other strategies may be considered when developing personalized programs for young children with autism spectrum disorders. Provided below is a list followed by brief descriptions of some interventions that have received much attention in recent years:

- Applied Behavior Analysis
 - Natural Environment Strategies
 - Discrete Trial Training
 - Errorless Learning
 - Verbal Behavior Analysis/Mand Training
 - Picture Exchange Communication System (PECS)
 - TEACCH strategies
 - Positive Behavioral Support
- Family-Guided Routines-Based Intervention
- Floortime/DIR (Developmental, Individual-Difference, Relationship-Based)
- Relationship Development Intervention
- Integrated Play Groups Model
- Sensory Intervention Plans
- Assistive Technology

It should be noted that different approaches or models use some of the same strategies and are based on similar principles. The approaches may differ on a number of variables such as:

- Teacher versus child initiation for interaction
- Use of secondary reinforcement versus naturally occurring consequences
- Use of elicited responding versus modeling
- Use of predetermined stimulus material versus naturally occurring environmental stimuli
- Predetermined sequence of instruction versus variable sequence of instruction
- Goal selection based on didactic principles versus the sequence of normal development

Applied Behavior Analysis

“Applied Behavior Analysis (ABA) is the science in which procedures derived from the principles of behavior are systematically applied to improve socially significant behavior...” (Baer, Wolf, and Risley, 1968). The defining assumption of ABA is that behavior is learned and controlled by contingencies within the environment. ABA practitioners maintain close and continual contact with relevant outcome data in order to make empirical-based decisions across individual programs. There are numerous teaching procedures and practices that have evolved from the science of ABA that have been shown to be effective with children with developmental disabilities, predominantly autism spectrum disorders. These different applications, including but not limited to natural environment strategies, discrete trial training, errorless learning, and verbal behavior analysis, are considered when developing individualized educational programs for children.

Natural Environment Strategies

Natural Environment Strategies include several specific methodologies derived from Applied Behavior Analysis including “Incidental Teaching” and “Pivotal Response Training,” which target global deficits such as motivation, initiation, engagement, and attention to multiple and relevant cues, as well as individual skill sets. Natural Environment Strategies are child-directed and target language skills within naturally contrived opportunities throughout the day. These methodologies have been shown to be very effective for many children with autism spectrum disorders and as a model for parent training.

- A natural environment is arranged to attract children to desired materials and activities
- The child initiates the teaching process by indicating an interest in an item or activity
- The teacher uses the child’s initiation as a teaching opportunity
- The child’s response results in a natural consequence, contingent access to the item or activity of interest.

Discrete Trial Training

Derived from Applied Behavior Analysis, Discrete Trial Training is a method of instruction in which skills are broken down into teachable steps, then presented and reinforced in a repetitive fashion until the student demonstrates mastery of the skill (ex. teacher presents a question or instruction → student responds → teacher presents appropriate consequence). 3-Step Guided Instruction is a form of Discrete Trial Training that uses systematic least-to-most prompting that ensures follow-through and access to reinforcement based on level of independence.

- Say (provide verbal instruction) ex: “point to ball.” If student responds correctly, provide reinforcement. If incorrect or no response...
- Show (restate verbal instruction and provide a visual cue) ex: “point to ball” then point to the ball as a model. If student responds correctly, provide reinforcement. If incorrect or no response...

- Do (restate verbal instruction and provide a physical prompt) ex: “point to ball” then guide the student’s hand to point to the ball. No reinforcement is provided for physically prompted responses.

Errorless Learning

Errorless Learning is an instructional procedure derived from the field of Applied Behavior Analysis that is similar to Discrete Trial Teaching, but uses prompts in a most-to-least fashion in order to elicit only correct responses. Prompted trials are followed by less prompted or “transfer” trials until the student demonstrates mastery of the skill. Specific reinforcement and momentum strategies are used to combat prompt-dependency and keep the child motivated through teaching sessions. Errorless learning is considered when least-to-most teaching procedures are determined to be ineffective for individual students.

Verbal Behavior Analysis

Verbal Behavior Analysis (VBA) uses the principles of Applied Behavior Analysis and focuses on the development of functional communication by establishing motivating conditions in which to teach language. This approach is based on B.F. Skinner’s analysis of verbal behavior and uses errorless learning and specific quick-transfer procedures within the natural environment as well as during intensive teaching sessions. At the core of this analysis is the distinction between the *mand* (i.e. requesting), *tact* (i.e. labeling, commenting), and *intraverbal* (i.e. responding to questions). Children with no spoken language are often taught to use sign language, when appropriate, as a jump-start to functional communication and a bridge to spoken language with a strategy called “mand training.” This intensive technique targets items or activities of high interest in order to motivate the child to request items and activities in his/her environment many times throughout the day.

Picture Exchange Communication System

The Picture Exchange Communication System, otherwise known as PECS, is a structured training program that teaches children to communicate by selecting picture symbols or words from a visual display and handing them to a communication partner. There is a specific progression of teaching phases that first focuses on establishing the ‘exchange’, and builds up to picture discrimination and language expansion. PECS is widely used with children with autism due to the frequent difficulties that many children encounter with developing purposeful pointing skills and verbal language. Some parents worry that PECS will prevent their child from using spoken language. Research supports the opposite conclusion – children who have developed some means of communication, even if it is nonverbal, will more quickly increase speech skills.

Treatment and Education of Autistic and related Communication handicapped CHildren (TEACCH strategies)

The TEACCH program, developed at the University of North Carolina, provides individualized instruction emphasizing completion of independent work tasks presented in highly structured learning environments. TEACCH practitioners develop clearly defined workstations, utilize

individual picture schedules, and organize instructional materials in a clear visual manner. Many TEACCH strategies, primarily the development of highly structured visual-based systems, are considered when developing individualized educational programs for children with autism spectrum disorders.

Positive Behavioral Support

Positive Behavioral Supports are used within a program to promote behavioral change. These supports are driven by a thorough understanding of the problem behavior and its function. Reduction of problem behaviors is a result of ongoing team analysis and problem solving to develop preventative strategies, teach alternative skills, design crisis management procedures, and modify contingencies in the child's environment. The positive behavioral supports approach holds a broadened view of intervention success by evaluating whether improvements in the use of alternative behaviors have been maintained across time and generalized across settings, whether improvements have occurred in the child's quality of life, and whether the intervention has positively impacted on the child's health and well-being.

Family-Guided Routines-Based Intervention

Family-guided routines based intervention is a systematic approach to embed intervention consistently by all family members and service providers throughout the day rather than in individual, isolated therapy sessions. Routines are functional events of daily living that offer opportunities to teach and practice meaningful skills in settings and situations, as they are needed. By definition, they occur on a regular basis and are repeated frequently, offering multiple opportunities for teaching and learning. Family-guided routines are those functional and predictable activities that match the interests and individual schedules of the child and family. The family guides the selection of appropriate targets and contexts for intervention. Routines that are selected for intervention are predictable and positive for both the child and care provider to enhance the ease of use and the potential for positive outcomes.

Developmental, Individual differences, Relationship-based (DIR) Approach

The Developmental, Individual differences, Relationship-based (DIR) Approach was developed by Drs. Stanley Greenspan and Serena Wieder and focuses on the child's social-interaction development, primarily the core processes of relating, attending, communicating, and thinking. These processes are targeted through a set of strategies known as "floortime" play with the child. "Floortime" is a series of reciprocal child-directed interactions resulting in "communication circles." The goal of "floortime" is to sustain interactions between the child and the adult by gradually increasing the circles of communication. These interactions become the basis for further play development.

During "floortime," the adult joins in the child's play to increase opportunities for pleasurable interaction and engagement. The child's actions are considered intentional and purposeful. The adult follows the child's lead to validate the child's sense of "self." Preferred objects and activities are used to motivate the child and facilitate persistence and patience. Higher level skills and concepts are taught through interactive play.

Relationship Development Intervention (RDI)

Relationship Development Intervention is a cognitive-developmental treatment program developed by Dr. Steven Gutstein. RDI focuses on family empowerment in which parents are trained to act as participant guides, creating daily opportunities for their child to respond in more flexible, thoughtful ways to novel, challenging and increasingly unpredictable settings and problems. The RDI approach targets core areas of “dynamic intelligence” including declarative communication, referencing, regulating, episodic memory, and flexible thinking. Parents are taught to re-think their daily lifestyle, structuring activities throughout the day to provide safe, but challenging opportunities for discovery.

Integrated Play Groups Model

The Integrated Play Groups Model was developed by Dr. Pamela Wolfberg at San Francisco State University to enhance peer relations and social development in children with autism. The model consists of three main steps, including thorough assessment, play group development, and guided participation. IPG assessments identify the child’s level of functioning and preferences across several skill areas and play domains. Integrated playgroups, consisting of a small group of children with diverse abilities, are then specifically tailored around the child’s strengths, interests, and target objectives. Play sessions are structured by establishing routines and rituals that foster familiarity, predictability and a cohesive group identity with an emphasis on using visual aids. Guided participation is enacted through a carefully designed system of support. The play guide methodically guides novice and expert players to engage in mutually enjoyed play activities that encourage social interaction, communication, play and imagination. Play guides apply a key set of practices including monitoring play initiations, scaffolding play, and providing social-communication and play guidance.

Sensory Intervention Plans

Sensory processing refers to the ability of the central nervous system to take in and respond to environmental input from all of the senses, including vision, hearing, touch, responses to movement and pressure on the body, taste, and smell. Self-regulation refers to the ability to maintain a calm, alert, and attentive state, which promotes involvement in learning experiences and interaction with others. Many people with autism are believed to demonstrate atypical reactions to sensory input. The self-stimulatory or perseverative behaviors exhibited by persons with autism are possibly attempts to seek out calming and organizing sensory input or to avoid disorganizing input from the environment. Examples of difficulty with sensory processing and self-regulation may include:

- Excessive jumping, running, or spinning which indicates a need for vestibular (movement of the head through space) and proprioceptive (movement and position of the body) input
- Biting, sucking, and chewing excessively which indicates a need for proprioceptive input through the mouth

- Excessive toughing or avoidance of touching which indicates atypical reactions from the tactile (touch) system
- Agitated behavior or under-responsive behavior in loud, crowded, or visually stimulating situations which indicates over-reactivity to noise, touch, or visual input.

Difficulties with sensory processing and self-regulation can be addressed through careful assessment of the individual student's needs. A sensory intervention plan is developed based on the specific sensory needs of the child. The learning environment is modified to reduce sensory defensiveness and enhance self-regulation. Specific activities are planned throughout the student's day to promote better attention and engagement in learning.

Assistive Technology

Assistive technology is any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities. The most widely used assistive technology applications for young children with autism include those that address communication skills.

Low Tech Augmentative Communication Aids

Strategies and devices that supplement speech skills are typically termed "augmentative communication" approaches. Materials that do not have electronic components are often referred to as "low tech" augmentative communication aids and include picture symbol communication boards and books. For preliterate children, words and concepts are represented by photographs or picture symbols which accompany the printed words. Messages are communicated by pointing to the corresponding picture symbols or by handing the picture symbol to a communication partner.

High Tech Voice Output Communication Aids

Augmentative communication devices, which have electronic components, are often referred to as "high tech." Those devices permit an adult to program corresponding spoken messages for the picture symbols selected for the child. The child is able to communicate the messages by selecting a picture symbol. The spoken message often provides a model for the child and cues the child to say the word or phrase. Use of the voice output communication device also permits the child to communicate more effectively in group situations than use of low tech communication aids.