

Nonpharmacologic intervention for ASDs



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Applied Behavior Analysis (ABA)



- **Applied**
- **Behavioral**
- **Analytic**
- **Technological**
- **Conceptually Systematic**

Applied Behavior Analysis Intervention Methods



Behavior(s)	Type of intervention
Social, play, and leisure skills	Imitation training
	Peer tutoring
	Modeling (in vivo and video) Application to classrooms
Communication	Discrete trial instruction
	Incidental teaching
	Augmentative communication
Daily living and occupational skills	Task analysis training
Problem behavior	Functional communication training
	Differential reinforcement

Applied Behavioral Analysis (ABA) and Discrete Trial Training (DTT)?

- These are repeated in multiple trials during any single session in order to condition the new behavior. For this reason, the term Discrete Trial Training became synonymous with ABA.
- However, ABA refers to a research methodology based on behavioral principles and is not a treatment in and of itself.

The basic components of a DTT program



- • Intensive training is given in the home from 30–40 hours a week.
- • Direct services are provided in a one-on-one context.
- • Behaviors are broken down into discrete tasks.
- • Tasks are repeated until achieved before moving on to more difficult tasks.
- • A child is rewarded for each instance when a desired behavior is demonstrated.
- **Especially useful for teaching new forms of behavior and new discriminations between stimuli**

Target behaviors



- Language and communication,
- Social and play skills,
- Cognitive and academic skills,
- Motor skills,
- Independent living skills,
- Problem behavior

Advantages of DTT



- A clear set of expectations,
- Breaking tasks into small attainable parts,
- Teaching attention to task.
- Scientific evidence has lent substantial support to the use of behavioral approaches such as in working with individuals with ASD.

Disadvantages of DTT



- Considerable time demands;
- The limited generalization of skills beyond what is conditioned;
- The potential for learned helplessness and prompt dependence;
- A focus on learning to respond rather than initiating;
- Task redundancy;
- The reliance on artificial reinforcements not likely to be found elsewhere in daily life.

Incidental teaching



- **Using daily or commonly occurring events to:**
- Promote language within everyday contexts
- Arise from an individual's motivation or desire for something
- May promote generalization of skills to new situations to a greater extent
- However, individuals cannot generalize skills unless they have first learned them,
- Some individuals with ASDs may learn skills more rapidly from discrete trial instruction than from incidental teaching (Kok et al. 2002).
- Thus, a combination of discrete trial instruction and incidental teaching is often recommended

Task analysis



- Dressing,
- Brushing teeth,
- Food preparation,
- Community skills (e.g., crossing the street).
- Breaking down a complex behavior into small steps,
- Use of visual schedules

Augmentative Communication (AC) and PECS



- Stephen Hawking.
- He communicates by using a personal computer system referred to as Augmentative Communication (AC), sometimes called “alternative communication” or “assistive technology.”
- It is a way for individuals to communicate who are either nonverbal or whose speech is significantly impaired and limited in its use.
- Prior to the advent of computers, Augmentative Communication was primarily accomplished through sign language and picture symbols and drawings.
- These low technology options continue to be excellent choices for many

Early Intensive Behavioral Intervention (EIBI)



- Developed by Lovaas and colleagues for toddlers and preschoolers
- 20–40 hours per week of treatment
- For 2 or more years,
- Beginning before age 5 years
- Carefully structured,
- One-on-one and small-group interventions
- Communication, social skills, cognition, and pre-academic skills

Learning Experiences: An Alternative Program for Preschoolers and Parents (LEAP)



- Place at school rather than home.
- Children with ASDs are integrated with typically developing peers
- Parents of the children with ASDs are given extensive training.
- Promoting social skills using ABA teaching methods.
- Currently, there are no controlled studies evaluating the efficacy of LEAP; nor has it been determined if LEAP is a more effective intervention than similar programs, such as TEACCH.

Pivotal Response Training (PRT)



- It is considered a behavioral treatment based upon applied behavior analysis principles.
- The emphasis is on teaching an individual the pivotal skills associated with communication (e.g., motivation) to facilitate their development in a variety of areas (play skills, social skills, language development).
- PRT is based upon empirically supported research.

Floor Time



- This approach is based upon play therapy approaches and the Developmental, Individual Difference, Relationship Model (DIR) developed by Dr Stanley Greenspan and Serena Wieder.
- The underlying philosophy of this approach is to help the child make an emotional connection to his world.

Floor Time



- It has underlying principles that serve to motivate and guide the interaction with the child.
- These revolve around facilitating communication and problem solving and include:
 - following the child's lead
 - joining the child at his or her developmental level
 - building on the child's interest and then motivating the child to build on what the adult has said or done (referred to as opening and closing circles of communication)
 - finding individual ways of reaching the child emotionally.

Principles of DIR approach



- *Developmental: This principle deals with the child's emotional, social and cognitive developmental levels. The DIR approach identifies six stages of development that a child needs to master in relating to others.*
- *2. Individual Differences: This principle addresses the uniqueness of each child and tailoring an individual approach that takes a child's specific pattern of behaviors into account.*
- *3. Relationship based: This principle is the basis of the DIR approach in recognizing and emphasizing the child's emotionally based interactions.*

DIR/Floortime assessment process



- 1) Two or more 45-minute clinical observations of child-caregiver and/or clinician-child interactions;
- 2) Developmental history and review of current functioning;
- 3) Review of family and caregiver functioning;
- 4) Review of current programs and patterns of interaction;
- 5) Consultation with speech pathologists, occupational and physical therapists, educators, and mental health colleagues
- 6) Biomedical evaluation.

Advantage of Floor Time approaches



- Include multiple components of development in functional wholes and do not only address individual parts or symptoms.
- It incorporates a child's interests and emotions and is therefore tailored to a specific child and not his or her diagnostic label.

SCERTS Model



- SCERTS is an acronym for Social Communication, Emotional Regulation and Transactional Support.
- It is an educational/ treatment approach for enhancing communication and socio-emotional abilities in individuals with Autism Spectrum Disorders.
- The SCERTS model was developed by a team of individuals including speech language pathologists: and occupational therapist,
- It was designed to provide an integrated approach to working with ASD individuals across various settings. This approach is derived from the collaborators' 25 years of research, clinical and educational experience and incorporates empirical research and sound clinical/educational practice from children with and without disabilities.

Occupational Therapy



- Occupational Therapy is a form of treatment that focuses on the skills necessary for daily living.
- This usually includes addressing three different areas: self-care, sensory motor and fine motor skills.
- Research supports Occupational Therapy services for some motor impairments

Sensory Integration Therapy (SI)



- Sensory Integration Therapy is a specialized means of intervention that focuses on the brain's ability to interpret the information from the senses.
- Based upon the idea that the body receives information through various senses and people with motor and sensory impairments have difficulty processing that information accurately.
- Disturbances in touch, movement, and balance are often addressed with SI.
- Techniques such as brushing, deep pressure massage and exposure to various textures while increasing one's tolerance for them are some of the therapeutic methods used to address tactile sensitivity.
- Few empirically supported data are available for Sensory Integration Techniques.

Physical Therapy



- Physical Therapy is a form of treatment that addresses the rehabilitation of gross motor skills.
- Physical Therapy is an empirically supported treatment for specific motor deficits.

Speech-Language Therapy



- This discipline utilizes various approaches to facilitate all aspects of communication including: the physiological aspects such as respiration and oral-motor skills, speech (articulation/ pronunciation), language comprehension, language expression (vocabulary, grammar, syntax), pragmatic language (social language), voice, fluency and Augmentative Communication.
- There is a strong base of empirically supported data for Speech-Language Therapy in the ASD population.

skills that are addressed in Speech-Language Therapy



- • Speech (articulation or pronunciation of sounds)
- • Oral-motor skills (ability to use the muscles of the mouth to produce sounds as well as to eat)
- • Voice (rate, volume, rhythm)
- • Fluency (stuttering)
- • Expressive language (using grammatically and syntactically complete sentences to express thoughts, ideas and feelings)
- • Receptive language (understanding language or language comprehension)
- • Pragmatic (social) language
- • Body language (gestures, facial expressions)
- • Auditory processing skills (the ability of the brain to make sense of what the ear hears)
- • Attention and behavior.

Structured teaching – the TEACCH program



- TEACCH is an acronym for Treatment and Education of Autistic and Related Communication Handicapped Children.
- It is a highly structured program developed in the early 1970s by Eric Shopler at the University of North Carolina. It is an educationally based approach, which includes specific classroom methods, involvement of community agencies and support services for families.
- It is based upon empirically supported research gathered over a span of more than 20 years.

TEACCH



- One of the most common methods taken from the TEACCH program is the use of visual schedules.
- These are essentially a visual way to organize the child's world for him or her by listing with pictures, symbols or words what the sequential steps are for the child to follow throughout the day or for a given period of time.
- This organization and sequencing of behaviors helps provide a structure for a child who might otherwise be stressed or highly agitated by not knowing what to expect or to do next.

Advantages of TEACCH



- It is an individualized, multi-dimensional treatment,
- It doesn't necessarily subscribe to only one methodology,
- It encourages and helps develop greater independence.

Disadvantages of TEACCH



- It is potentially too structured with its reliance on routines,
- It is typically offered in a segregated educational setting,
- It encourages an intra-dependence rather than an appropriate inter-dependence that might facilitate more social interaction.

The HANDLE Institute approach



- HANDLE is an acronym for Holistic Approach to Neurodevelopment and Learning Efficiency.
- The HANDLE Institute approach was originated 30 years ago by educator Judith Bluestone in order to provide a holistic, non-drug alternative for diagnosing and treating many neuro- developmental disorders.
- The HANDLE approach focuses primarily on various types of sensory stimulation (exercises and activities) for individuals with ASD.
- There are many personal and professional testimonials about the HANDLE approach

The Linwood Method



- The Linwood Method was developed in the 1950s by Jeanne Simons for a residential program in the United States for Autistic individuals.
- It was described in detail in her book *The Hidden Child: The Linwood Method for Reaching the Autistic Child* (Woodbine House, 1986).
- The approach used in this method is to develop an individualized program that addresses the underlying motivations behind behaviors rather than treating symptoms alone.

The Options Institute Method ("The Son Rise Program")



- The work of Barry and Samahria Kaufman with their own son, Raun, is the foundation for The Options Institute.
- They designed their own intensive stimulation program based upon an attitude of unconditional love and acceptance.
- Barry Kaufman has written about their experience in his books *Son-Rise* (Warner Books, 1976) and *Son-Rise: The Miracle Continues* (H.J. Kramer, 1995). Kaufman's latest book *No Regrets: Last Chance for a Father and Son* is expected to be published this year (2003).
- The Kaufmans report that after three years of this constant stimulation and effort in joining Raun in his own world, he no longer shows any signs of his Autism.
- Controversy surrounds this approach, however, because it is very expensive and requires a level of intensity that few people can provide.
- There are no scientific data supporting this approach.

Auditory Integration Training (AIT)



- Hearing sensitivity has been reported in the ASD literature for many years.
- The need to address this common symptom resulted in the development of Auditory Integration Training (AIT)
- In general, AIT involves listening to processed music through headphones for a designated period of time.
- This is done by a piece of equipment that attenuates the low and high frequencies randomly called “modulation.”
- The music choice is based upon the range of sound frequencies, and is individualized according to the results of an audiogram
- When the audiogram is initially given, any frequencies at which a person is hypersensitive show up on the graph as an “auditory peak.”
- The goal of AIT is to reduce these peaks so that all frequencies are perceived equally well and the hearing system can better respond to the sounds in the environment.

Advantages of AIT



- Increased attention span,
- Responsiveness in general to others,
- An increased ability to tolerate sounds in the environment
- Greater production of speech.

Disadvantages of AIT



- Reports of behavioral problems for some individuals have been noted including agitation, increased activity level and mood swings
- Some reports indicate, that the positive effects are not sustained over time.
- There has been no research to date to indicate there is a benefit in repeating AIT once it has been tried.
- AIT alone does not purport to address all of the aspects or characteristics of ASD
- Results are considered most beneficial when a multidisciplinary team of professionals is involved with the individual receiving AIT.

Art Therapy



- Art Therapy, like Music Therapy, is a less traditional, complementary form of intervention.
- Some studies have suggested that it can be a useful means of breaking through the barriers of Autism by connecting with an individual emotionally and allowing for some personal expression even if nonverbally.
- Art Therapy is not meant to be a “cure,” but rather is another vehicle for trying to reach ASD individuals and expand their means of communication, social interaction, self-confidence and sensory integration.
- Typically, art therapists begin their training as mental health clinicians who then specialize in utilizing the medium of art to engage clients and help expand their skills.

Music Therapy



- Music Therapy was first introduced in the United States as a therapeutic intervention for war veterans in the 1940s.
- With the ASD population, music is used as the vehicle or tool to try to connect with and expand an individual's communication skills, social abilities and behavior.
- Music Therapy is tailored to the individual's unique needs.
- For some who may be severely impaired and not seemingly connected to the outside world, the goal of Music Therapy may simply be the initial connection with someone else.
- This can be seen when a music therapist uses a child's self-stimulating behaviors (e.g., rocking, hand flapping, jumping) as a means to match the child in his or her own world with the beat of the music. Then slowly changing the rhythm can implement a change in the child's behavior. Or, for a higher functioning child who has some vocabulary but does not use it effectively or socially, he or she may find the value of communication by learning to ask for a favorite song or permission to play a musical instrument.

Vision Therapy



- Vision Therapy is a rehabilitative therapy shown to be effective in the treatment of binocular vision impairments and visual perceptual deficits.
- This includes conditions such as strabismus (being cross-eyed) and amblyopia (lazy eye).
- The core feature of Vision Therapy is to get the brain and eyes working together so that the information coming in from the eyes is accurately perceived and interpreted by the brain.
- But research has yet to support these approaches as efficacious with ASD individuals.
- The benefits attributed to the method have been primarily anecdotal. Thus, this approach is controversial.

Comprehensive Autism Planning System (CAPS)



- The CAPS model answers the questions
- (a) What supports does my student/child need in each class to be successful?
- (b) What goals is my student/child working on? and
- (c) Is there a thoughtful sequence to the student's/child's day that matches his learning style.
- This timely resource addresses adequate yearly progress (AYP), response to intervention (RTI), and positive behavior support (PBS) in a common-sense format.
- The structure of this innovative tool ensures consistent use of supports to ensure student success as well as data collection to measure that success.
- In addition, CAPS fosters targeted professional development.
- Because CAPS identifies supports for each of the student's daily activities, it is possible for all educational professionals working with the student to readily identify the methods, supports, and structures in which they themselves need training (Henry, Smith Myles, 2007).

Essential Components of an Instructional Program



- **Family Involvement**
- **Earliest Intervention**
- **Intensity**
- **Predictability and Structure**
- **Generalization of Skills**
- **Functional Analysis of Behaviors**
- **Communication**
- **Assistive Technology**
- **Sensory Motor Processing**
- **Social, Emotional, and Sensory Regulation**
- **Social Development**
- **Inclusion with Typically Developing Peers**
- **Progress Monitoring**
- **Supported Transitions Across Multiple Environments**
- **Sexuality**
- **Lifelong Support**

Relationship Development Intervention (RDI)



- Steven Gutstein created this intervention based on the theory that inflexible thinking and theory of mind deficits are the most salient core deficits in autism.
- His approach targets perspective-taking and the processing of nonverbal cues through naturalistic strategies.
- Children in RDI engage in “games” in which the target response can only be reached through the interpretation of a companion’s gestures and facial expressions.
- These objectives can also be attained through an understanding of facial expressions; a child walking toward a small precipice must interpret the look of shock on his teacher’s face to realize that he should stop.
- The hierarchy of gestural and emotional referencing is systematically introduced to teach the motivation for “experience sharing.”
- In a nonrandomized trial of 17 children with autism, Gutstein (2005) reported positive outcomes on the ADOS following an RDI intervention.
- Future outcome research should employ a more controlled methodology and larger sample sizes.

Peer interventions



- **Target-Child Interventions**
- **Inclusion**

Inclusion (Advantages)



- Increases proximity to typical peers.
- Can improve the frequency of interactions.
- Can improve peers' understanding of disabilities.

Inclusion (Disadvantages)



- Can increase loneliness for children with autism.
- Does not necessarily include children with autism fully into the classroom social networks.
- Social inclusion is more difficult with increasing grades.
- Peers rate children with autism less favorably than typical peers.

Target-child interventions (Advantages)



- Have shown limited improvements in social skills.
- Multiple methods available and tested with limited success:
 - • Self-management
 - • Pivotal response training
 - • Differential reinforcement of appropriate behavior
 - • Discrete trial instruction
 - • Reciprocal imitation training
 - • In vivo modeling
 - • Video modeling

Target-child interventions (Disdvantages)



- Generalization of skills is limited.
- Methods have not been systematically compared.
- It is unclear if there are specific interventions that might differentially benefit subsets of children.