



Behavioural Interventions in ASD

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The Child Neurology Division, Department of Pediatrics, All India Institute of Medical Sciences, New Delhi provides evidence based practices to parents of children with autism, so that they are empowered to take informed decisions. The following focuses on the behavioural interventions for management of Autism.

Need for evidence

There are several unsupported and often controversial interventions that claim to be in “miracle” interventions, which have led to unrealistic expectations about treatment results. Empowerment of parents and caregivers of ASD by information regarding evidence base for each treatment intervention is warranted. There is no single universally effective intervention for all children with ASD. The best programs often incorporate several research-based interventions and attend to the individual needs of children with ASD and their families.

Each type of ASD treatment may be categorized into one of four categories based on the scientific evidence supporting the treatment:

1. **Significant scientific evidence** : if there is significant and convincing empirical efficacy and support for the treatment.

2. **Promising or emerging scientific evidence** : if there is some scientific support for the treatment having efficacy and utility with individuals with ASD, but the evidence is not yet convincing without further replication through quality research.
3. **Limited scientific evidence** : refers to treatments that currently lack objective and convincing supporting evidence and thus have undetermined utility and efficacy.
4. **Not recommended** : practices are those determined to lack efficacy and to be potentially harmful based on available data.

Interventions Supported by Significant Scientific Evidence

A. Applied Behavior Analysis (ABA)

ABA is defined as the process of applying behavioral principles to change specific behaviors and simultaneously evaluating the effectiveness of the intervention. ABA focuses on modification of physical environment and antecedent situations, which result in and maintain abnormal behavior.

Numerous empirical studies have documented the effectiveness of ABA with individuals with ASD. This intervention can be used with all ages and ability levels. The following specific ABA interventions are described in greater detail

- **Discrete Trial Training (DTT)** - a discriminative stimulus is presented, the child responds, and then the child receives a consequence (e.g., reward) based on the response. Research indicates that DTT can produce powerful behavioral outcomes in the areas of language, motor skills, imitation and play, emotional expression, academics, and the reduction of self-stimulatory and aggressive behaviors.
- **Functional Communication Training (FCT)** - is a behavioral methodology that replaces disruptive or inappropriate behavior with more appropriate and effective communication. FCT has been shown to significantly reduce problem behavior and to increase communication and social interaction.
- **Pivotal Response Training (PRT)** - PRT builds on a child's initiative and interests, which makes it particularly effective in developing communication, play, and social behaviors.
- **Antecedent-Based Interventions** - This involves setting up antecedent conditions that increase the likelihood of success and reduce the probability of problem behaviors occurring including choice, behavioral momentum, cueing and prompting, modifying task demands, errorless learning, priming, non-contingent reinforcement, and time delay.

B. Early Intensive Interventions

Intensive early intervention programs that provide ABA strategies in combination with developmental approaches have been shown to produce improvements in behavior, communication and cognitive abilities.

C. Social Skills Training

There is good evidence that interventions to directly train social skills can be effective. There is evidence that specific aspects of social interaction (e.g., eye contact, joint attention, verbal greetings, etc.) can be learned with focused training.

D. Cognitive-Behavioral Therapy

The scientific basis for the use of cognitive behavior therapy (CBT) with adolescents and adults with mood or adjustment problems is extensive and diverse. CBT focuses on replacing negative or ineffective patterns of thought and behavior with structured strategies that are effective in improving mood and adaptive functioning. CBT is especially appropriate for use with older children and adolescents or adults with Asperger's syndrome or high functioning autism, for whom the cognitive demands of the therapy are manageable.

E. Other Evidence-Based Interventions

- **Augmentative and Alternative Communication (AAC)** devices and tools can help compensate for expressive communication deficits. These interventions range from the use of sign language to picture systems and more complex electronic communication devices.. This type of intervention can be used with individuals with communication deficits at any age.
- **Picture Exchange Communication System (PECS)** - Individuals are trained to exchange picture cards for desired items, which the therapist pairs with a verbal label for the item. In addition to targeting communication skills, PECS also provides opportunities for social contact. Empirical studies have documented an increase in functional communication following this intervention, especially when used as part of ABA treatment.
- **Modeling** especially using video technology to record actions for later review can provide a visual model to assist in building skills in communication, play, or social interaction.
- **Visual Supports** including the use of schedules and structured work tasks presented visually are effective for individuals with ASD across many work and learning environments.
- **Computer-Aided Instruction** can assist individuals with ASD in learning communication and academic skills.
- **Parent-Implemented Intervention** is a core component of many evidence-based interventions for ASD, including functional communication training and social skills training.

Interventions with Promising or Emerging Evidence

A. Developmental Relationship-Based Treatment /Floor Time

These treatment programs may be referred to by other names such as Floor time, DIR (Differential, Individual differences, Relationship-based), or Relationship Development Intervention (RDI). Floor time seeks to facilitate the acquisition of social- communicative skills through intensive child-directed play and positive interactions. It is recommended that this strategy be integrated with other therapies (e.g., speech therapy and occupational therapy). Floor time has become a popular intervention among parents, but it continues to lack scientific evidence. This treatment is intended for young children, but can be used in some form with all ages and ability levels.

B. Play Therapy

Learning play skills is important for children with ASD, and providing guided opportunities for play-based interactions with peers is an important part of social skills training, which is an evidence-based intervention.

C. Supportive Therapies

The National Autism Center review designated music therapy and massage therapy as emerging treatments. Other therapies with some support include art therapy and pet/animal therapy although the scientific evidence supporting these interventions is not strong. Even without additional scientific evidence to support these therapies, it is likely that activities that are fun and engaging will provide opportunities for reinforcement, relaxation, and social interaction for individuals with ASD.

Interventions with Limited Scientific Evidence

A. Sensory Integration (SI)

The use of sensory integration (SI) therapy for treatment of ASD has been both popular and controversial. Many children with ASD are believed to have a form of sensory integration dysfunction, defined as neural dysfunction that causes the nervous system to inefficiently receive and process incoming information, which may lead to hypersensitivity or hyposensitivity to sensory input, unusually high or low activity levels, coordination problems, delays in speech or motor skills, and/or behavior problems. In SI, a child's individual sensory needs are evaluated, and a program of sensory therapies (e.g., riding scooter boards, swinging, jumping on trampolines, wearing weighted vests, wrapping in fabric) is developed and prescribed as a "sensory diet." Most SI therapy is implemented by occupational therapists. Proponents of this therapy argue that sensory integration therapy results in improved mental processing and organization of sensations, although this is difficult to measure objectively. Despite its widespread use, SI is most often considered a "complementary and alternative medicine" (CAM) treatment rather than an accepted treatment methodology, and the neurodevelopmental theories underlying SI are not generally accepted by medical scientists. The American Academy of Pediatrics (AAP) has summarized the scientific findings on SI by stating that "the efficacy of SI therapy has not been demonstrated objectively."

B. Auditory Integration Training (AIT)

AIT is a controversial intervention that intends to remediate problems with sound sensitivity and auditory processing, with the result of improved behavior, communication, and quality of life. Although several studies have been conducted, there is currently no scientific evidence that AIT retrains auditory systems of individuals with ASD with the result of improved functioning.

C. Facilitated Communication (FC)

Facilitated communication was designed to be an augmentative communication strategy that involves the use of a "facilitator" who gently provides hand-over-hand physical assistance to individuals with disabilities as they type (or point to pictures) to communicate. This method can be used with individuals of all ages who are otherwise unable to effectively communicate using speech. Facilitated communication is a highly controversial technique due to concerns that the facilitator may actually guide the individual's responses.

Interventions that are Not Recommended

Holding Therapy

Holding therapy

Holding therapy is designed to restore and strengthen the bond between the child and caregiver through forced physical proximity and eye contact. The child is expected to initially reject this treatment but will then develop closeness with the caregiver after realizing that his/her anger cannot break the parent-child bond. This treatment has several risks, including possible physical and psychological harm to the child and parent, and it has not received empirical support.

Using these Findings for Treatment Planning

An individualized program of services should be developed to meet the child's developmental, educational, behavioral, emotional, and social needs. A comprehensive treatment program for a child with ASD should include behavioral, speech and language, and educational interventions; pharmacological treatment of specific symptoms may also be appropriate. The effectiveness of all interventions a child receives should be evaluated regularly and adjusted as necessary. Finally, it is clear that the field of ASD would benefit significantly from continuing research into the effectiveness of proposed ASD interventions

Behavioral intervention therapies based on available evidence

Significant scientific	Promising and emerging evidence	Limited evidence	Not recommended
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Applied Behavioral Analysis

- Discrete Trial Training
- Functional Communication Training
- Pivotal Response Training
- Antecedent Based Interventions

Developmental Relationship-Based Treatment / Floor Time

Play therapy

Supportive therapies

- Music Therapy
- Massage Therapy
- Art Therapy
- Animal/pet therapy

Sensory Integration Therapy (SIT)

Auditory Integrated Therapy (AIT)

Facilitated Communication

Holding Therapy

Early Intensive Interventions

Social Skills Trainings

Cognitive Behavioral Therapy

Augmentative and Alternative Communication (AAC)

Picture Exchange Communication System (PECS)

Modeling

Visual supports

Computer aided instruction

Parent implemented intervention

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