

Early Intervention in Autism May 2005

Introduction

Recent research has shown that children with an autism spectrum disorder (ASD) can be reliably diagnosed as young as two years of age. With an increase in the prevalence of ASD and earlier diagnosis, early intervention is critical. The article *Early Intervention in Autism* published in the April-May issue of *Infants & Young Children*, attempts to review existing intervention programs for young children with ASD and present the research findings supporting these intervention programs. The article focuses on programs available in the birth-three age group and outlines the issues relevant to early intervention, support for early intervention programs, and suggested steps to implementing these interventions.

Issues in Early Intervention

Interventions for children with ASD are based on many theoretical frameworks, including: behavioral interventions, developmental interventions, and cognitive interventions. When reviewing the literature, two common aspects of intervention for children with ASD have documented support:

1. Most programs offer intensive interventions, involving 15 to 25 hours of intervention a week.
2. Children that enter programs at younger ages make greater gains than those who enter programs at older age; however, children tend to make intelligence quotient (IQ) gains regardless of intervention in the younger ages.

Early Intervention Programs for Toddlers (Birth – Three)

Walden Infant Toddler Program

- Focus:
 - Incidental teaching (a method of Applied Behavior Analysis (ABA) that utilizes a behavioral approach in the natural environment)
 - Social inclusion
- Program Participants: Children with autism, between the ages of 15 and 36 months.
- Format: Interventions are provided in a childcare setting. Supports are child centered and involve adult expansion on the requests and activities the child initiates. The environment is set-up in a structured manner with toys and activities; the program focuses on individual goals within planned activities.
- Frequency of Interventions: 30+ hours a week of intervention in a group format with parents or the educational staff
- Research Support: Currently, no scientific studies have investigated the outcomes of this program. However, data found from program evaluations include that 82% of the toddlers leaving the program used meaningful words and that 71% showed improvements in their proximity to other children.

Pragmatic Communication Developmental Approach (Wetherby & Prizant, 1999)

- Focus:
 - Natural Environments
 - Facilitative style of teaching
 - Providing opportunities for communication
 - Consistently reinforcing communication attempts.
- Program Participants: Children younger than 3 years
- Format: Interventions to support the communication needs of children with ASD are provided in the home. It is a child-directed program that parents, therapists, and teachers can implement in a 1:1 session. This approach to communication utilizes strategies that incorporate environmental supports to create a predictable environment and teaches peers to initiate and respond to children with ASD.
- Frequency of Interventions: Variable
- Research Support: Currently, no scientific studies have investigated the outcomes of this program.

Comprehensive Programs

Many comprehensive programs have been designed for children with ASD of preschool age or older. These programs include young children (ages between 30 and 47 months), active family involvement, and intensive hours of intervention (12-36 hours a week). Most of the programs are directed by well-trained staff experienced in working with children with ASD. Some of the most widely known programs include: Developmental Intervention Model (Greenspan Approach), the TEACCH Model, the UCLA Young Autism Project, the LEAP (Lifeskills and Education for Students with Autism and other Pervasive Developmental Disorders), and the Denver Model.

Each program focuses on developmental skills and goals, and contains ongoing assessments of progress. Many programs use teaching strategies to assist with generalization and maintenance of new skills, individualized intervention plans, and transition planning to school-based programs. Currently, there are no scientific studies to support one program over another.

TEACCH

- Focus
 - Environmental Organization
 - Visual Supports
 - Individualization of Goals
 - Teaching of Independence
 - Developmental Skills
- Program Participants: Children with autism
- Format: Statewide, community-based intervention program that views ASD as lifelong, and emphasizes the lifespan and community-based interventions. The intervention is adult-directed and implemented by parents and school staff. Teaching strategies include making the intervention meaningful to the child, teach within the natural environment, provide skills that are important for future independence.

- Frequency of Interventions: Variable
- Research Support: There is a lack of scientific studies to support the program. Although the program has been in existence for 30 years, only two studies have compared the TEACCH interventions with public education interventions. The children receiving services through the TEACCH program had higher scores on the Psychoeducational Profile – Revised (PEP-R). The studies involved children ages 31-69 months, but had small sample groups with poor research methods (neither study was a randomized trial).

Applied Behavior Analysis (ABA) Programs

Programs based on behavioral principles. Most people commonly associate Ivar Lovaas and the discrete trial format of instruction with ABA interventions. Other popular ABA programs include the UCLA Young Autism Project and the Douglass Developmental Center at Rutgers in New Jersey.

Recently, contemporary ABA techniques including embedded trials, pivotal response training, and incidental teaching have emerged as components of many intervention programs. These techniques utilize strategies such as naturalistic teaching methods, use of natural reinforcers (reinforcing children for requesting by giving them what they are asking for), and child initiated systematic trials. Research studies have shown good outcomes for teaching language content, single word vocabulary, describing objects and pictures, speech, and responding to questions.

UCLA Young Autism Project

- Focus: Uses the Lovaas method with an emphasis on discrete trial intervention. This is a two-year program focusing on imitation, interaction, play, requests, language, emotions, and preacademic skills.
- Program Participants: Children with ASD
- Format: Interventions occur in a one-to-one setting by trained ABA therapists. Supports are adult directed and occur at home and in the classroom. Once children have “mastered” new skills in a one-to-one setting, they practice the skills in other situations and with other people.
- Frequency of Interventions: 40 hours/week
- Research Support: There have been several scientific studies on discrete trial training and ABA. The original study by Lovaas (1987) children who received 40 hours a week of one-to-one interventions had significantly higher IQ scores than children who only received 10 hours a week of “standard interventions.” The study did not include any randomization and has been criticized for such a large difference between the two sample groups. Recent studies with better controls and design, suggest that children receiving Lovaas method interventions improve more than they would in early education and focused parent support or education, but do not reach the initial IQ gains proposed in earlier studies.

Douglass Developmental Center

- Focus: Models after ABA principles and focuses on discrete trial interventions
- Program Participants: Children with ASD
- Format: The program has different levels that begin with a one-to-one format for the younger children and then progress to a small classroom with a 2:1 ration and then to a classroom with typical peers.
- Frequency of Interventions: 35-40 hours/week
- Research Support: A study of children in the program found that 33% of the children had average IQs when they completed the program. Only six children were studied, and upon exit from the program, 3 children were receiving special education services, 2 were in integrated classrooms with support, and 1 child was in a general classroom without any supports.

LEAP

- Focus: Program that emphasizes including peers in intervention programs. Program incorporates incidental teaching, ABA methods, and peer-mediated techniques.
- Program Participants: Children with and without ASD between the ages of 3 and 5 years
- Format: Each classroom includes 10 children without ASD and 6 children with autism. Interventions are provided in the classroom and are both child and adult directed.
- Frequency of Interventions: 15 hours/week
- Research Support: One study has investigated the effectiveness of the LEAP program and found that the interventions were effective in increasing social interactions, which were maintained overtime.

Developmental Interventions

Developmental interventions are based on specific strategies for working with children with autism. Interventions are child-directed, and the environment is organized to support communicative and social interactions. There are some studies that support developmental interventions for improved language outcomes. One study found that developmental interventions improved symbolic play and improvements in turn taking, object use, and joint attention with a child-directed imitation strategy. Developmental interventions require that the child engage in behaviors before the adult can respond. Teachers and therapists must know how to engage children with autism and how to appropriately respond to the child's behaviors.

Greenspan Model

- Focus: Uses the Developmental Individual Difference (DIR) Model which is a "relationship-based model." The goal of this model is to help the child develop connections with others that will improve cognitive and developmental skills such as attention, engaging, nonverbal gesturing, problem solving, symbolic communication, and logical thinking.
- Program Participants: Children with ASD

- Format: The interventions follow the child's lead and attempts to respond in a way that lead to expanding a skill. In addition to the time spent with developmental supports, the program is to be supplemented with an inclusive preschool program, speech language pathology service, and occupational therapy.
- Frequency of Interventions: Recommends 4 hours a day in spontaneous play interactions with an adult, at least 2 hours a day in semi-structured skill building activities with an adult, and at least 1 hour a day in sensory-motor play activities.
- Research Support: Currently there are no controlled studies investigating this program.

Denver Model

- Focus: This model utilized developmental interventions emphasizing positive affect, pragmatic communication, and interpersonal interactions within a structured environment. Goals of the program include increasing the child's motivation and interest in an activity or person, using reactive language strategies to increase communication, and teaching mental representation.
- Program Participants: Children with ASD
- Format: The program occurs in a classroom setting and incorporates all activities and supports within a play situation.
- Frequency of Interventions: 12 month program, 5 days/week, 4-5 hours/day
- Research Support: Outcome data for 31 children that completed the program shows significant developmental improvements in cognition, language, social and emotional development, perceptual and fine motor development, and gross motor development. Also, many children demonstrated an improvement in functional speech (from 53% to 73%).

Conclusion

There are many early intervention programs available for young children with ASD. Many studies have shown that children make greater gains when they enter a program at a younger age; however, most of the studies compared children younger than 4 or 5 years to children older than 4-5 years of age. Parents must continue to critically evaluate the scientific evidence supporting interventions for children with ASD. Future research is needed to investigate the benefits of program interventions for the birth to 3 age group.

Intervention Programs

Method	Authors/program	H/wk	Format	Setting	Implementer	Adult- or child-directed
Incidental Teaching	Walden Infant Toddler Program	30+	Group	Child care center	Parents	Child
			1 to 1	Home	Educational staff	
Social Pragmatic Developmental Approach	Wetherby & Prizant	Variable	1 to 1	Home	Parent Therapist Teacher	Child
Structured Teaching	TEACCH	Variable	Group	Classroom Home	Parents School staff	Adult
Discrete Trial	Lovaas (1987)	40	1 to 1	Home	Student therapists Trained consultants	Adult
Discrete Trial	Douglas Developmental Disabilities Center	35-45	1 to 1 Small group	Class Home	School staff Parents Student therapists	Adult
Pivotal Response Intervention	Koegel, Koegel, & Harrows (1999)	Variable	1 to 1 Group	Inclusive setting Home Preschool	Highly skilled specialists Family Consultants School staff	Child
Behavioral and Inclusion	LEAP*	15	Group	Integrated classroom	Teacher	Adult and child
Developmental	Greenspan	Variable	1 to 1	Home	Parents, educational staff	Child
Developmental	Denver Model	22	Group	Classroom	Trained staff	Child

Table from: Corsello, C.M. (2005). Early intervention in autism. *Infants & Young Children*, 18, 74-85.