

## **Evidenced Based Practice in Autism Spectrum Disorder**

Autism Spectrum Disorder (ASD) is a developmental disability characterized by impairments in social reciprocity and communication, and stereotyped and repetitive behaviors, with onset during early childhood. The incidence of autism spectrum disorder has increased dramatically over the past three decades, with a prevalence of 1 in 88 from the CDC's most recent report.

Autism is estimated to cost the United States \$35 billion dollars a year. Thus, the provision of intervention services which improve outcomes for individuals with ASD are extremely important.

Historically, research on the efficacy of intervention and treatment in ASD has been limited. However, more recently, evidenced based practices and established treatments are emerging as a result of three national efforts: the National Research Council, the National Standards Project, and the National Professional Development Center on ASD.

### National Research Council

Based on evidence review, The National Research Council (2001) identified three autism treatments as "scientifically based". These included Applied Behavioral Analysis, Discrete Trial Teaching, and Pivotal Response Treatment. Several others were identified as "promising practices": Picture Exchange Communication System, Incidental Teaching, Structured Teaching, Joint Action Routines, Augmentative Communication, and Social Stories.

Based on their review, NRC also made recommendations about the content of effective early intervention programs for ASD.

- 1) at least 25 hours/week of active engagement,
- 2) instruction that blends knowledge of autism with principles of direct instruction,
- 3) intervention aimed at communication, joint attention, and symbolic play,
- 4) techniques to promote generalization, and
- 5) parental involvement.

### National Standards Project (National Autism Center)

National Standards Project, a multi-year project of the National Autism Center, was completed in 2009. It included review of 775 research studies and was designed to provide information about which treatments have been shown to be effective for individuals with ASD.

A Scientific Merit Rating Scale was developed as a means of objectively evaluating the studies. In addition, each study was rated on its treatment effects. Based on these ratings, 38 treatments were identified which had adequate research support. The Strength of Evidence Classification System was then used to determine effectiveness of each treatment and treatments were put into one of four

categories: Established, Emerging, Unestablished, and Ineffective/Harmful. The following interventions were identified as Established Treatments:

- Antecedent Package – involve modification of situational events that precede behaviors
- Behavioral Package – involve utilizing basic principles of behavior change
- Comprehensive Behavioral Treatment for Young Children –comprehensive treatment programs that include a combination of ABA procedures which are used with young children
- Joint Attention Intervention – involve foundational skills needed in regulating the behavior of others
- Modeling – demonstration of target behaviors
- Naturalistic Teaching Strategies – using child directed interactions to teach functional skills
- Peer Training Package – teaching individuals without disabilities strategies for facilitating social interactions
- Pivotal Response Treatment – focuses on targeting “pivotal” behavioral areas such as motivation to engage, self-management, responsiveness; involves parents in natural environment
- Schedules – presentation of task lists that communicates series of steps required to complete specific activities
- Self Management – teaching individuals to regulate their behavior by recording incidents, and securing reinforcement
- Story-based Intervention Package –written descriptions of situations where specific behaviors are expected

There were 22 treatments identified as Emerging, including Cognitive Behavioral Intervention, Developmental Relationship-based Treatment, Picture Exchange Communication System, and Structured Teaching (see National Standards Report for complete list).

The report noted that two-thirds of the Established Treatments came exclusively from behavioral literature. Of the remaining one-third, 75% have research support that comes predominately from behavioral literature. This pattern suggests that treatments from behavioral literature have the strongest research support at this time.

#### National Professional Development Center on ASD

The National Professional Development Center on ASD (NPDC) was created to promote the development and learning of individuals with ASD from birth to 22 years of age by increasing practitioners’ use of Evidence-Based Practices (EBPs) in their programs and building states’ capacity to implement EBPs. The national center operates through three sites: FPG Child Development Institute at the University of North Carolina at Chapel Hill, the M.I.N.D. Institute at University of California at Davis Medical School, and the Waisman Center at the University of Wisconsin at Madison. Now in its third year, NPDC is funded by the U.S. Department of Education’s Office of Special Education Programs.

The National Professional Development Center uses rigorous criteria to determine whether a practice is evidence-based. Currently, the Center has identified 24 evidence-based practices. To be considered an evidence-based practice, efficacy must be established through peer-reviewed research using:

- Randomized or quasi-experimental design studies – two high quality experimental or quasi-experimental group design studies,
- Single-subject design studies – three different investigators or research groups must have conducted five high quality single subject design studies, or
- Combination of evidence – one high quality randomized or quasi-experimental group design study and three high quality single subject design studies conducted by at least three different investigators or research groups( across the group and single subject design studies).

The 24 Evidenced-Based Practices include:

- Prompting
- Antecedent-Based Intervention
- Time Delay
- Reinforcement
- Task Analysis
- Discrete Trial Training
- Functional Behavior Analysis
- Functional Communication Training
- Response Interruption/Redirection
- Differential Reinforcement
- Social Narratives
- Video Modeling
- Naturalistic Interventions
- Peer Mediated Intervention
- Pivotal Response Training
- Visual Supports
- Structured Work Systems
- Self Management
- Parent Implemented Intervention
- Social Skills Training Groups
- Speech Generating Devices
- Computer-aided Instruction
- Picture Exchange Communication
- Extinction

The NPDC on ASD is developing on-line modules for each of these evidenced-best practices. These modules are available on the [Autism Internet Modules \(AIM\)](#) website. The NPDC will continue to evaluate the effectiveness of these practices, as well as additional practices.

## Summary

The research on evidenced-based practice in ASD is increasing and these three national efforts have improved the access to information on effective treatments. There has been a shift from identifying “programs” as best practice to identifying specific treatment components as best practice. For example, several of the practices identified by NPDC would all fall under the category of “Behavioral Package” in the NSP. The move to more specific treatment elements will allow for more individualized treatments and approaches based on individual needs and preferences.

National Research Council (2001) *Educating Children with Autism*. Committee on Educational Interventions for Children with Autism. Catherine Lord and James P. McGee, eds. Division of Behavioral and Social Sciences and Education. Washington, DC: National Academy Press.

National Autism Center *National Standards Report: Addressing the Need for Evidence-Based Practice Guidelines for Autism Spectrum Disorders*. National Autism Center: Massachusetts. 2009.

National Professional Development Center on Autism Spectrum Disorders. Autism Internet Modules. [www.autisminternetmodules.org](http://www.autisminternetmodules.org)

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